

DRAFT
ENVIRONMENTAL ASSESSMENT/OVERSEAS ENVIRONMENTAL ASSESSMENT
for
Training and Testing of the Extra Large Unmanned Undersea Vehicles and
Unmanned Surface Vessels
at
Naval Base Ventura County, Port Hueneme, California
July 2024



This page intentionally left blank.



DRAFT

**ENVIRONMENTAL ASSESSMENT/OVERSEAS ENVIRONMENTAL
ASSESSMENT**

for

**Training and Testing of the Extra Large Unmanned Undersea Vehicles
and Unmanned Surface Vessels**

at

Naval Base Ventura County, Port Hueneme, California

July 2024



This page intentionally left blank.



Abstract

Designation:	Environmental Assessment/Overseas Environmental Assessment
Title of Proposed Action:	Training and Testing of the Extra Large Unmanned Undersea Vehicles and Unmanned Surface Vessels
Project Location:	Naval Base Ventura County, Port Hueneme, California
Lead Agency for the EA/OEA:	U.S. Department of the Navy
Affected Region:	Ventura County, California
Action Proponent:	United States Fleet Forces Command and Naval Sea Systems Command, Department of the Navy
Point of Contact:	Sarah Stallings, Code EV2 Naval Facilities Engineering Systems Command Atlantic 6506 Hampton Boulevard Norfolk, VA 23508
Date:	July 2024

United States (U.S.) Fleet Forces Command and Naval Sea Systems Command, commands of the U.S. Navy, propose to establish training and testing support facilities at Naval Base Ventura County (NBVC), Port Hueneme, California, for up to six Extra Large Unmanned Undersea Vehicles (XLUUVs) and two Unmanned Surface Vessels (USVs).

The Proposed Action would include construction of approximately 123,000 square feet of permanent facilities to support administrative, maintenance, and training and testing needs of the unmanned systems. Construction of permanent facilities and pierside renovations are anticipated to begin no earlier than 2026. The Proposed Action would also include training and testing of the XLUUVs and USVs in the Pacific Ocean waters nearshore and offshore to the west and southwest of NBVC Port Hueneme. There are no explosive ordnance or detonation events anticipated as part of training and testing. This Environmental Assessment/Overseas Environmental Assessment (EA/OEA) addresses training and testing that would occur from 2024 through 2026. Training and testing beyond 2026 would be addressed under future National Environmental Policy Act documentation.

This EA/OEA evaluates the potential environmental impacts associated with the No Action Alternative and the Proposed Action Alternative to the following resource areas: air quality, water resources, noise, biological resources, infrastructure, public health and safety, hazardous materials and wastes, land use and recreation, and environmental justice.



This page intentionally left blank.

EXECUTIVE SUMMARY

ES.1 Proposed Action

United States (U.S.) Fleet Forces Command and Naval Sea Systems Command, commands of the U.S. Navy (hereinafter, jointly referred to as the Navy), propose to establish training and testing support facilities at Naval Base Ventura County (NBVC), Port Hueneme, California, for up to six Extra Large Unmanned Undersea Vehicles (XLUUVs) and two Unmanned Surface Vessels (USVs). The Proposed Action includes construction of training support facilities in the Onshore Proposed Action Area, and the training and testing of the XLUUVs and USVs in the Nearshore Proposed Action Area and the Offshore Proposed Action Area.

The Proposed Action would include construction of approximately 123,000 square feet (ft) of permanent facilities to support administrative, maintenance, and training and testing needs of the unmanned systems at NBVC Port Hueneme. Permanent facilities include: laboratories; cranes; assembly/disassembly areas; a vehicle staging area; Command, Control and Coordination area; expeditionary support and material storage areas; locker rooms; applied instruction classrooms; multi-purpose training rooms; training simulator; watch area; areas to support research, development, testing, and evaluation (RDT&E, referred to hereafter as testing) activities; administrative space; battery shop; warehouses; and a vehicle wash rack. Construction of permanent facilities and pierside renovations are anticipated to begin no earlier than 2026.

The Proposed Action would also include training and testing of the XLUUVs and USVs in the Pacific Ocean waters nearshore and offshore to the west and southwest of Port Hueneme. The unmanned systems would be evaluated for autonomous transit capability; system navigation and communications functionality; system mission execution capability; system response to abnormal situations; response to/recovery from major and minor failures; and their ability to reliably complete a representative operational mission. System at-sea functionality is evaluated in a range of sea states, water depth, activity length, surface and subsurface obstacle conditions, and with varying mission objectives. There are no explosive ordnance or detonation events anticipated as part of training and testing. This Environmental Assessment/Overseas Environmental Assessment (EA/OEA) addresses training and testing that would occur from 2024 through 2026. Training and testing beyond 2026 would be addressed under the Hawai'i-California Training and Testing (HCTT) Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS). (HCTT EIS/OEIS is Phase IV of the 2018 Hawai'i-Southern California Training and Testing [HSTT] EIS/OEIS).

ES.1.1 Purpose of and Need for the Proposed Action

The Navy conducts both training and testing activities to be able to protect the United States against its potential adversaries, to protect and defend the rights and interests of the United States and its allies to move freely on the oceans, and to provide humanitarian assistance. The purpose of the Proposed Action is to improve unmanned vehicle assimilation into the fleet by providing training and testing for improved intelligence, surveillance, and reconnaissance, electronic, undersea, and mine warfare capabilities at NBVC Port Hueneme.

The need for the Proposed Action is to support the Navy's execution of its congressionally mandated roles and responsibilities under 10 U.S. Code (U.S.C.) section 8062.

ES.1.2 Alternatives Considered

Alternatives were developed for analysis based upon the following reasonable alternative screening factors: launch and wet berth capability; existing suitable land facilities for training and testing, maintenance, and administrative uses; proximity to large, open ocean Navy ranges; proximity to suitable airports capable of landing military aircraft and military-used ports for transportation of XLUUVs; proximity to XLUUV original equipment manufacturer; proximity to multiple warfare centers for maintenance, operation, and testing; and proximity to existing industrial enterprises, facilities, services, and personnel for maintenance of vehicles.

Based on the reasonable alternative screening factors, one action alternative (Proposed Action Alternative) was identified as meeting the purpose of and need for the Proposed Action and will be analyzed in this EA/OEA.

ES.1.2.1 No Action Alternative

Under the No Action Alternative, the Navy would not conduct the proposed XLUUV and USV training and testing activities, nor construct the facilities associated with the Proposed Action. The Navy would not conduct the proposed live at-sea training and testing. Consequently, the No Action Alternative is inherently unreasonable in that it does not meet the Navy's purpose and need. However, the No Action Alternative is carried forward in order to compare the magnitude of the potential environmental effects of the Proposed Action with the conditions that would occur if the Proposed Action did not occur.

ES.1.2.2 Proposed Action Alternative

The Proposed Action Alternative is the Preferred Alternative. The Proposed Action Alternative reflects the construction, support and maintenance, and training and testing necessary for XLUUV and USV readiness to meet the purpose and need for the Proposed Action. Under the Proposed Action Alternative, the Navy proposes to conduct XLUUV and USV training and testing activities in waters off NBVC Port Hueneme as necessary to meet current and future readiness requirements.

ES.2 Summary of Environmental Resources Evaluated in the EA/OEA

The National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations, and Navy regulations specify that an EA/OEA should address those resource areas potentially subject to impacts. In addition, the level of analysis should be commensurate with the anticipated level of environmental impact. The following resource areas have been addressed in this EA/OEA: air quality, water resources, noise, biological resources, infrastructure, public health and safety, hazardous materials and wastes, land use and recreation, and environmental justice. Because potential impacts were considered to be negligible or nonexistent, the following resources were not evaluated in this EA/OEA: airspace and airfield operations, cultural resources, geological resources, visual resources, socioeconomics, and transportation.

ES.3 Summary of Potential Environmental Consequences of the Proposed Action and Potential Impacts

Table ES-1 provides a tabular summary of the potential impacts to the resources associated with each of the alternative actions analyzed. Note that an acronym key is provided at the end of the table.

The analysis contained in this EA/OEA has determined that the Proposed Action would not result in significant environmental impacts.

Table ES-1 Summary of Potential Impacts to Resource Areas

Resource Area	No Action Alternative	Proposed Action Alternative
Air Quality	The Proposed Action would not be implemented and there would be no impact to air quality.	No significant impacts to air quality. Anticipated air quality impacts from construction and training and testing activities are not expected to impact the attainment of NAAQS. Estimated GHG emission increases over the construction period and during training and testing would not be large enough to impact the attainment of DoD and federal GHG goals. A Record of Non-Applicability is provided in Appendix B.
Water Resources	The Proposed Action would not be implemented and there would be no impact to water resources.	Impacts to groundwater, surface water, marine waters, wetlands, and floodplains associated with implementation of the Proposed Action would not be significant, and all impacts and potential impacts to wetlands and WOTUS would be further minimized through use of BMPs. Therefore, implementation of the Proposed Action would not result in significant impacts to water resources.
Noise	The Proposed Action would not be implemented and there would be no impact from noise.	Noise levels from short-term construction of facilities and from XLUUV and USV operations would not significantly impact the environment.
Biological Resources	The Proposed Action would not be implemented and there would be no impacts to biological resources.	No significant impacts to biological resources with implementation of BMPs, SOPs, and mitigation measures: • No impacts to terrestrial vegetation. • No significant impacts to, and no take of birds protected under the MBTA and the BGEPA. • No significant impacts to marine vegetation. • No significant impacts to marine invertebrates. • No significant impacts to marine fishes. • No significant impacts to, and no take of, marine mammals protected under the MMPA. • The Navy has initiated informal consultation as required by section 7(a) (2) of the ESA, seeking concurrence of the Navy's determination of "may affect, but is not likely to adversely affect" ESA-listed marine species, designated critical habitat for the Central America and Mexico DPSs of humpback whale, and proposed critical habitat for green turtle from the Proposed Action. • No adverse effects to Essential Fish Habitat protected under the MSA.
Infrastructure	The Proposed Action would not be implemented and there would be no impact to infrastructure.	The Proposed Action would fit within the installation's existing infrastructure capacity and therefore would not result in significant impacts to potable water, wastewater, stormwater, solid waste management, energy, or communications.
Public Health and Safety	The Proposed Action would not be implemented and there would be no impacts to public health and safety.	The Proposed Action would not result in significant impacts to public health and safety. • The Proposed Action would not impact existing regional and local geologic, tsunami, flooding, or inundation hazards to the general public. Potential hazards from existing infrastructure (i.e., natural gas lines) and cleanup sites would be avoided during the construction phase, and the potential for impacts during training and testing would be

Resource Area	No Action Alternative	Proposed Action Alternative
		avoided through ongoing cleanup efforts, and appropriate designs (e.g., location-specific building codes and engineering controls) for the facility. - No significant impact on safety from maritime training and testing activities would be expected; SOPs would be implemented to prevent vessel-to-vessel or vessel-to-object incursions. - There are no environmental health and safety risks associated with the Proposed Action that would disproportionately affect children.
Hazardous Materials and Wastes	The Proposed Action would not be implemented and there would be no impacts associated with hazardous materials and wastes.	No significant impacts related to hazardous materials, hazardous waste, toxic substances, and contaminated sites associated with implementation of the Proposed Action. Minor short- and long-term increases in hazardous material use and hazardous waste generation from construction and testing activities would not exceed current management and disposal capacities.
Land Use and Recreation	The Proposed Action would not be implemented and there would be no impacts to land use and recreation.	No significant impact to land use or recreation. Under the Proposed Action, a portion of the activities occur on land owned by the Navy (NBVC Port Hueneme) in an area already used for similar purposes so there would be no change to the existing land use. With regard to recreation, activities from the Proposed Action would occur within the Navy-owned harbor where recreational activity is not allowed. As such, training and testing events associated with the Proposed Action would not interfere with any potential recreational activities within the Nearshore Proposed Action Area.
Environmental Justice	The Proposed Action would not be implemented and there would be no impact to environmental justice.	The Proposed Action would not result in disproportionately high and adverse effects to minority and/or low-income populations.

Legend: BGEPA = Bald and Golden Eagle Protection Act; BMP = Best Management Practice; DoD = Department of Defense; DPS = distinct population segment; ESA = Endangered Species Act; GHG = greenhouse gases; MBTA = Migratory Bird Treaty Act; MMPA = Marine Mammal Protection Act; MSA = Magnuson Stevens Fishery Conservation and Management Act; NAAQS = National Ambient Air Quality Standards; Navy = United States Department of the Navy; NBVC = Naval Base Ventura County; ROI = Region of Influence; SOP = Standard Operating Procedure; USV = Unmanned Surface Vessel; WOTUS = waters of the United States; XLUUV = Extra Large Unmanned Undersea Vehicle

ES.4 Public and Agency Involvement

NEPA and its implementing regulations require federal agencies to involve the public in preparing and implementing their NEPA procedures. The Navy has prepared this Draft EA/OEA to inform the public of the Proposed Action and to allow the opportunity for public review and comment.

The Draft EA/OEA review period will begin with the publication of a Notice of Availability (NOA) of the Draft EA for three consecutive days in the Ventura County Star starting on July 5, 2024, and for three consecutive weeks in the weekly Spanish publication, La Vida, starting on July 11, 2024 (Appendix A will contain the notices after they are published). The notices describe the Proposed Action, solicit public comments on the Draft EA/OEA, provide dates for the public comment period, and announce that the EA/OEA will be available for download at www.nepa.navy.mil/XLUUV, and for viewing at the following libraries:

- South Oxnard Branch Library, 4300 Saviers Road, Oxnard, California 93033
- E.P. Foster Library, 651 East Main Street, Ventura, California 93001

The public is invited to submit comments by any of the following methods:

- electronically, via the project website www.nepa.navy.mil/XLUUV
- in writing, by mail to: XLUUV USV EA/OEA Project Manager, Naval Facilities Engineering Systems Command Atlantic, Attn: Code EV2, SS, 6506 Hampton Blvd, Norfolk, Virginia 23508

All comments must be postmarked or received online by August 4, 2024, to be considered in the final EA/OEA.

The Navy has prepared and submitted a Coastal Consistency Negative Determination to the California Coastal Commission in compliance with the Coastal Zone Management Act Program. The Navy has also initiated informal consultation with the National Marine Fisheries Service pursuant to section 7(a)(2) of the ESA, seeking concurrence with the Navy's determination that the Proposed Action "may affect, but is not likely to adversely affect" Endangered Species Act-listed fish, sea turtles, and marine mammals and designated critical habitat for the humpback whale.

This page intentionally left blank.

TABLE OF CONTENTS

Abstract	Abstract-i
EXECUTIVE SUMMARY	ES-1
TABLE OF CONTENTS.....	i
Abbreviations and Acronyms	vii
1 Purpose of and Need for the Proposed Action	1-1
1.1 Introduction	1-1
1.2 Location	1-1
1.3 Background	1-7
1.3.1 XLUUV Description.....	1-7
1.3.2 USV Description	1-8
1.3.3 Support Vessel Descriptions	1-8
1.4 Purpose of and Need for the Proposed Action	1-9
1.5 Scope of Environmental Analysis	1-9
1.6 Key Documents	1-9
1.7 Public and Agency Participation and Intergovernmental Coordination	1-10
1.7.1 Public Notification	1-10
2 Proposed Action and Alternatives	2-1
2.1 Proposed Action	2-1
2.1.1 Construction Activities.....	2-1
2.1.2 Support and Maintenance Activities	2-2
2.1.3 Training and Testing Activities.....	2-3
2.2 Screening Factors	2-6
2.3 Alternatives Carried Forward for Analysis	2-7
2.3.1 No Action Alternative	2-7
2.3.2 Proposed Action Alternative.....	2-7
2.4 Alternatives Considered but not Carried Forward for Detailed Analysis.....	2-8
2.4.1 Alternative Locations	2-8
2.4.2 Simulated Training and Testing Only	2-9
2.5 Best Management Practices and Standard Operating Procedures Included in Proposed Action	2-9
3 Affected Environment and Environmental Consequences.....	3-1
3.1 Air Quality.....	3-3
3.1.1 Regulatory Setting	3-3
3.1.2 Affected Environment	3-3
3.1.3 Environmental Consequences	3-5

3.2	Water Resources	3-9
3.2.1	Regulatory Setting	3-9
3.2.2	Affected Environment	3-10
3.2.3	Environmental Consequences	3-13
3.3	Noise	3-17
3.3.1	Basics of Sound and Noise Metrics	3-17
3.3.2	Regulatory Setting	3-17
3.3.3	Affected Environment	3-18
3.3.4	Environmental Consequences	3-19
3.4	Biological Resources	3-24
3.4.1	Regulatory Setting	3-24
3.4.2	Affected Environment	3-25
3.4.3	Environmental Consequences	3-36
3.5	Infrastructure	3-49
3.5.1	Regulatory Setting	3-49
3.5.2	Affected Environment	3-49
3.5.3	Environmental Consequences	3-51
3.6	Public Health and Safety	3-54
3.6.1	Regulatory Setting	3-54
3.6.2	Affected Environment	3-55
3.6.3	Environmental Consequences	3-58
3.7	Hazardous Materials and Wastes	3-59
3.7.1	Regulatory Setting	3-59
3.7.2	Affected Environment	3-60
3.7.3	Environmental Consequences	3-65
3.8	Land Use and Recreation	3-67
3.8.1	Regulatory Setting	3-67
3.8.2	Affected Environment	3-67
3.8.3	Environmental Consequences	3-69
3.9	Environmental Justice	3-70
3.9.1	Regulatory Setting and Methodology	3-70
3.9.2	Affected Environment	3-71
3.9.3	Environmental Consequences	3-73

3.10	Summary of Potential Impacts to Resources and Impact Avoidance and Minimization.....	3-76
4	Cumulative Impacts	4-1
4.1	Definition of Cumulative Impacts.....	4-1
4.2	Past, Present, and Reasonably Foreseeable Actions.....	4-1
4.3	Cumulative Impact Analysis	4-7
4.3.1	Resources Dismissed from Cumulative Analysis	4-7
4.3.2	Water Resources.....	4-7
4.3.3	Noise	4-8
4.3.4	Biological Resources	4-9
4.3.5	Infrastructure.....	4-10
4.3.6	Hazardous Materials and Wastes	4-11
4.3.7	Land Use and Recreation	4-11
5	Other Considerations Required by NEPA.....	5-1
5.1	Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations	5-1
5.2	Irreversible or Irretrievable Commitments of Resources	5-3
5.3	Unavoidable Adverse Impacts.....	5-4
5.4	Relationship between Short-Term Use of the Environment and Long-Term Productivity	5-4
6	List of Preparers.....	6-1

List of Appendices

Appendix A	Public and Agency Participation	A-1
Appendix B	Best Management Practices, Standard Operating Procedures, and Mitigation Included in Proposed Action.....	B-1
Appendix C	Air Quality Record of Non-Applicability and Air Quality Calculations	C-1
Appendix D	Noise	D-1
Appendix E	Ship Strike Probability Calculation	E-1
Appendix F	Coastal Zone Management Act Documentation	F-1
Appendix G	References	G-1

List of Figures

Figure 1.2-1	Regional Location of NBVC Port Hueneme	1-2
Figure 1.2-2	Onshore Proposed Action Area at NBVC Port Hueneme.....	1-4

Figure 1.2-3	Nearshore Proposed Action Area	1-5
Figure 1.2-4	Offshore Proposed Action Area	1-6
Figure 1.3-1	Conceptual XLUUV in Water	1-7
Figure 1.3-2	Modular Sections of XLUUV	1-7
Figure 1.3-3	Ranger (Foreground) and Nomad (Background)	1-8
Figure 1.3-4	Mariner	1-8
Figure 3.2-1	Surface Water Features at NBVC Port Hueneme.....	3-12
Figure 3.3-1	Construction Noise Levels (Leq) at Parcel 19.....	3-21
Figure 3.3-2	Construction Noise Levels at Parcel 11.....	3-22
Figure 3.4-1	Surface Currents within the Offshore Proposed Action Area.....	3-32
Figure 3.4-2	Designated Critical Habitat within the Proposed Action Areas	3-34
Figure 3.4-3	Biologically Important Areas for Blue Whale.....	3-44
Figure 3.4-4	Biologically Important Areas for Fin Whale	3-45
Figure 3.4-5	Biologically Important Areas for Humpback Whale.....	3-46
Figure 3.4-6	Biologically Important Areas for Gray Whale	3-47
Figure 3.6-1	Public Health and Safety Considerations at NBVC Port Hueneme	3-57
Figure 3.7-1	Hazardous Materials Sites Near Parcel 19	3-62
Figure 3.7-2	Hazardous Materials Sites Near Parcel 10 and 11	3-63
Figure 3.9-1	Environmental Justice ROI	3-72
Figure 3.9-2	Proposed Noise Contours with Block Groups at Port Hueneme	3-75
Figure 4.2-1	Past, Present, and Reasonably Foreseeable Cumulative Actions	4-6

List of Tables

Table ES-1	Summary of Potential Impacts to Resource Areas	ES-3
Table 2.1-1	XLUUV and USV Support and Maintenance Activities	2-2
Table 2.1-2	XLUUV and USV Training and Testing Activity Descriptions	2-5
Table 3.1-1	2017 Emission Inventory for Ventura County (excluding wildfire emissions).....	3-5
Table 3.1-2	Estimated Annual Air Pollutant Emissions from Construction Activities under the Proposed Action.....	3-6
Table 3.1-3	Estimated Annual Air Pollutant Emissions from Training and Testing Activities under the Proposed Action	3-7
Table 3.1-4	Estimated Annual Air Pollutant Emissions from Conservatively Combined Construction and Training and Testing Activities under the Proposed Action.....	3-7

Table 3.2-1	Definition and Description of Water Resources	3-9
Table 3.3-1	Port Hueneme Municipal Code Exterior Noise Level Standards.....	3-18
Table 3.3-2	City of Oxnard Noise Standards	3-18
Table 3.3-3	Construction Noise Levels at Sensitive Noise Locations	3-20
Table 3.3-4	Training and Testing Noise Levels at Sensitive Noise Locations	3-23
Table 3.4-1	Common Taxonomic Groups of Fishes that May Occur within the Proposed Action Areas.....	3-28
Table 3.4-2	Non-Endangered Species Act-Listed Marine Mammals that May Occur within the Proposed Action Areas	3-29
Table 3.4-3	Endangered Species Act-Listed Species Known or Potentially Occurring within the Proposed Action Areas	3-31
Table 3.4-4	Designated and Proposed Critical Habitat in the Nearshore Proposed Action Area.....	3-35
Table 3.6-1	Active or Potentially Active Faults Near NBVC Port Hueneme	3-55
Table 3.9-1	Environmental Justice Communities Adjacent to NBVC Port Hueneme	3-73
Table 3.10-1	Summary of Potential Impacts to Resource Areas	3-77
Table 3.10-2	Impact Avoidance, Minimization, and Mitigation Measures for the Proposed Action.....	3-79
Table 4.2-1	Cumulative Action Evaluation	4-2
Table 5.1-1	Principal Federal and State Laws Applicable to the Proposed Action	5-1

This page intentionally left blank.

Abbreviations and Acronyms

Acronym	Definition
ACM	asbestos-containing material
AFFF	aqueous film-forming foam
AGL*	above ground level
AOC	Areas of Concern
BGEPA	Bald and Golden Eagle Protection Act
BIA	Biologically Important Area
BMP	best management practice
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CCR	California Code of Regulations
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH ₄	methane
CMH	Communication Maintenance Holes
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	CO ₂ Equivalent
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	decibel
dBA	A-weighted decibel
DD*	drainage ditch
DERP	Defense Environmental Restoration Program
DoD	United States Department of Defense
DTSC*	Department of Toxic Substances Control
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
ERP	Environmental Restoration Program

Acronym	Definition
ESA	Endangered Species Act
FL*	Flight Level
ft	feet (foot)
FUDS*	Formerly Used Defense Site
GHGs	greenhouse gases
gpd	gallons per day
HAPs	hazardous air pollutants
HSTT	Hawai'i-Southern California Training and Testing
INRMP	Integrated Natural Resources Management Plan
IRP	Installation Restoration Program
kV	Kilovolt
LCP	Local Coastal Plan
Leq	A-weighted equivalent sound level
Lmax	Maximum A-weighted sound level
MBTA	Migratory Bird Treaty Act
MMPA	Marine Mammal Protection Act
MLLW*	Mean Lower Low Water
MSL*	Mean Sea Level
MRP	Munitions Response Program
MSA	Magnuson Stevens Fishery Conservation and Management Act
Mw*	Moment magnitude
N ₂ O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
Navy	U.S. Navy
NBVC	Naval Base Ventura County
NEPA	National Environmental Policy Act
nm	Nautical miles
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NO _x	nitrogen oxides
NOTMAR	Notice to Mariners

* Acronym only used in figures.

Acronym	Definition
NPDES	National Pollutant Discharge Elimination System
NWSSB	Naval Weapons Station Seal Beach
ODD*	Oxnard Drainage Ditch
OEA	Overseas Environmental Assessment
OEIS	Overseas Environmental Impact Statement
OEM	Original Equipment Manufacturer
OHD	Oxnard Harbor District
PCB	polychlorinated biphenyl
PFAS	Polyfluoroalkyl substances
PFMC	Pacific Fisheries Management Council
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate
PH	Port Hueneme
PM ₁₀	particulate matter less than or equal to 10 microns in diameter
PM _{2.5}	particulate matter less than or equal to 2.5 microns in diameter
PMSR	Point Mugu Sea Range
RDT&E	Research, development, testing, and evaluation
ROI	Region of Influence
SF	square feet (foot)
SO ₂	sulfur dioxide
SOCAL	Southern California Range Complex

Acronym	Definition
SOPs	Standard Operating Procedures
SWEF	Surface Warfare Engineering Facility
SWMUs	Solid Waste Management Units
SWPPP	Stormwater Pollution Prevention Plan
tpy	tons per year
U.S.	United States
U.S.C.	U.S. Code
UFC	United Facilities Criteria
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
USV	Unmanned Surface Vessels
UUVs	Unmanned Undersea Vehicles
VCAPCD	Ventura County Air Pollution Control District
VOC	volatile organic compound
WBDG	Whole Building Design Guide
XLUUV	Extra Large Unmanned Undersea Vehicles

* Acronym only used in figures.

1 Purpose of and Need for the Proposed Action

1.1 Introduction

United States (U.S.) Fleet Forces Command and Naval Sea Systems Command, commands of the U.S. Navy (hereinafter, jointly referred to as the Navy), propose to establish training and testing support facilities at Naval Base Ventura County (NBVC), Port Hueneme, California, for up to six Extra Large Unmanned Undersea Vehicles (XLUUVs) and two Unmanned Surface Vessels (USVs). The Proposed Action for this Environmental Assessment/Overseas Environmental Assessment (EA/OEA) includes construction of training support facilities in the Onshore Proposed Action Area, and the training and testing of the XLUUVs and USVs in the Nearshore Proposed Action Area and the Offshore Proposed Action Area.

The Proposed Action would include construction of approximately 123,000 square feet (SF) of permanent facilities to support administrative, maintenance, and training and testing needs of the unmanned systems at NBVC Port Hueneme. Facility construction and pierside renovations are scheduled to commence no earlier than 2026. Temporary facilities would be utilized until permanent facilities are completed. Both terrestrial and in-water pierside facilities would be required to support the XLUUVs and USVs. The fully assembled XLUUV must be able to be transported from shore to the water, and back to shore efficiently. The XLUUVs would be moored at an existing in-water support platform at Wharf C that would not be moved post-construction. The USVs would be moored at Wharves 4 or 5.

The Navy conducts both training and research, development, testing, and evaluation (RDT&E, referred hereinafter as testing) activities to be able to protect the United States against potential adversaries, to protect and defend the rights and interests of the United States and its allies to move freely on the oceans, and to provide humanitarian assistance. When discussed together, training and testing are also referred to as “military readiness activities.”

The Navy has prepared this EA/OEA in accordance with the National Environmental Policy Act (NEPA), as amended by the Fiscal Responsibility Act of 2023, and as implemented by Council on Environmental Quality (CEQ) regulations (2022), Executive Order (EO) 12114, the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), the Coastal Zone Management Act, and other federal laws or Navy regulations.

1.2 Location

NBVC Port Hueneme is a component of NBVC, which was formed in 2000 with the consolidation of naval installations at Point Mugu and Port Hueneme (Figure 1.2-1), and the addition of San Nicolas Island in 2004. NBVC, in partnership with the Oxnard Harbor District (OHD) and Port of Hueneme, has agreements in place to operate the port for both military and commercial purposes. Port Hueneme is the only deep-water port sited between San Francisco and Los Angeles. As such, NBVC Port Hueneme is home to a strategic West Coast deep-water seaport.

The project would occur within NBVC Port Hueneme, with training and testing activities in Pacific Ocean waters nearby and offshore. The three Proposed Action Areas are: the Onshore Proposed Action Area, the Nearshore Proposed Action Area, and the Offshore Proposed Action Area.



Figure 1.2-1 Regional Location of NBVC Port Hueneme

The Onshore Proposed Action Area on NBVC Port Hueneme is where construction of a permanent facility to support training and testing activities would occur. Construction of a permanent maintenance and administrative facility would occur at one of two similar location options considered in this EA/OEA: Parcel 19 (Option 1) or Parcel 11 (Option 2) as shown on Figure 1.2-2. If Parcel 11 is chosen as the construction site, Parcel 10 would be used for storage/laydown. Construction is anticipated to begin no earlier than 2026.

Parcel 19 (7.4 acres in size) is located 0.5-mile north of the harbor and is bordered by Track No. 13 Road to the west, Patterson Road to the east, and Lehman Road to the north. Parcel 19 is unconstrained aside from existing communications, utilities, fencing, abandoned poles, and a fire hydrant. Parcel 19 is not within any explosive safety arcs, has no known flora or fauna species of concern, and no known open Installation Restoration Program (IRP) sites. Parcel 19 would be utilized as the location for XLUUV and USV temporary facilities until permanent facilities are funded and completed.

Parcel 11 (13.8 acres in size) is located directly west of Parcel 19, bordered by Track No. 13 Road to the east, an undeveloped parcel to the west (Parcel 10), Lehman Road to the north, and Pleasant Valley Canal Road to the south. Parcel 11 is currently used as a storage yard for another NBVC Port Hueneme tenant, and the storage function would be moved to Parcel 10 (6.6 acres in size), located just west of Parcel 11, prior to construction of the facility on Parcel 11. Similar to Parcel 19, Parcel 11 is not within any explosive safety arcs, has no known flora or fauna species of concern, and no known open IRP sites.

The Nearshore Proposed Action Area (Figure 1.2-3) and Offshore Proposed Action Area (Figure 1.2-4) extend from existing approved sea ranges where other Navy military readiness activities have been previously evaluated in environmental documents, including the Navy's Point Mugu Sea Range (PMSR) and the Southern California (SOCAL) Range Complex portion of the Hawai'i-Southern California Training and Testing (HSTT) Study Area (refer to Section 1.6 below). With the exception of entering or exiting the channel into Port Hueneme, training and testing events are expected to occur more than 0.4 mile from the Mean Low Water line. The Nearshore Proposed Action Area consists of two segments, one north and one west of PMSR, in the waters south of Port Hueneme. The Offshore Proposed Action Area is located immediately northwest of and adjacent to the SOCAL Range Complex. The SOCAL Range Complex connects the Offshore Proposed Action Area to the southernmost edge of the Nearshore Proposed Action Area (Figure 1.2-4). Therefore, while the SOCAL Range Complex is adjacent to both the Nearshore and Offshore Proposed Action Areas, it is not included in this EA/OEA, as training and testing with Unmanned Vehicles in SOCAL has been addressed in the 2018 HSTT EIS.

The XLUUV/USV activities evaluated in this EA/OEA would not add or modify activities in either PMSR or the SOCAL Range Complex portion of HSTT Study Area. The 2022 PMSR Environmental Impact Statement (EIS)/Overseas EIS (OEIS) does not evaluate potential impacts from XLUUV and USV training and testing activities, and thus no training and testing activities would occur in PMSR (U.S. Department of the Navy 2022a); however, XLUUVs/USVs may transit through PMSR to reach different parts of the Nearshore Proposed Action Area. The 2018 HSTT EIS/OEIS included an evaluation of training and testing activities to be performed by XLUUVs/USVs within the SOCAL Range Complex portion of HSTT, and thus have existing approval to operate in this location (U.S. Department of the Navy 2018). XLUUVs/USVs may transit, train, or test in the SOCAL Range Complex 50 percent of the time they are at sea. The present EA/OEA covers XLUUV/USV training and testing activities in the Nearshore and Offshore Proposed Action Areas from 2024 through 2026. After 2026, the XLUUV/USV activities would be addressed in Phase IV of HSTT EIS/OEIS also referred to as Hawai'i-California Training and Testing (HCTT) EIS/OEIS.

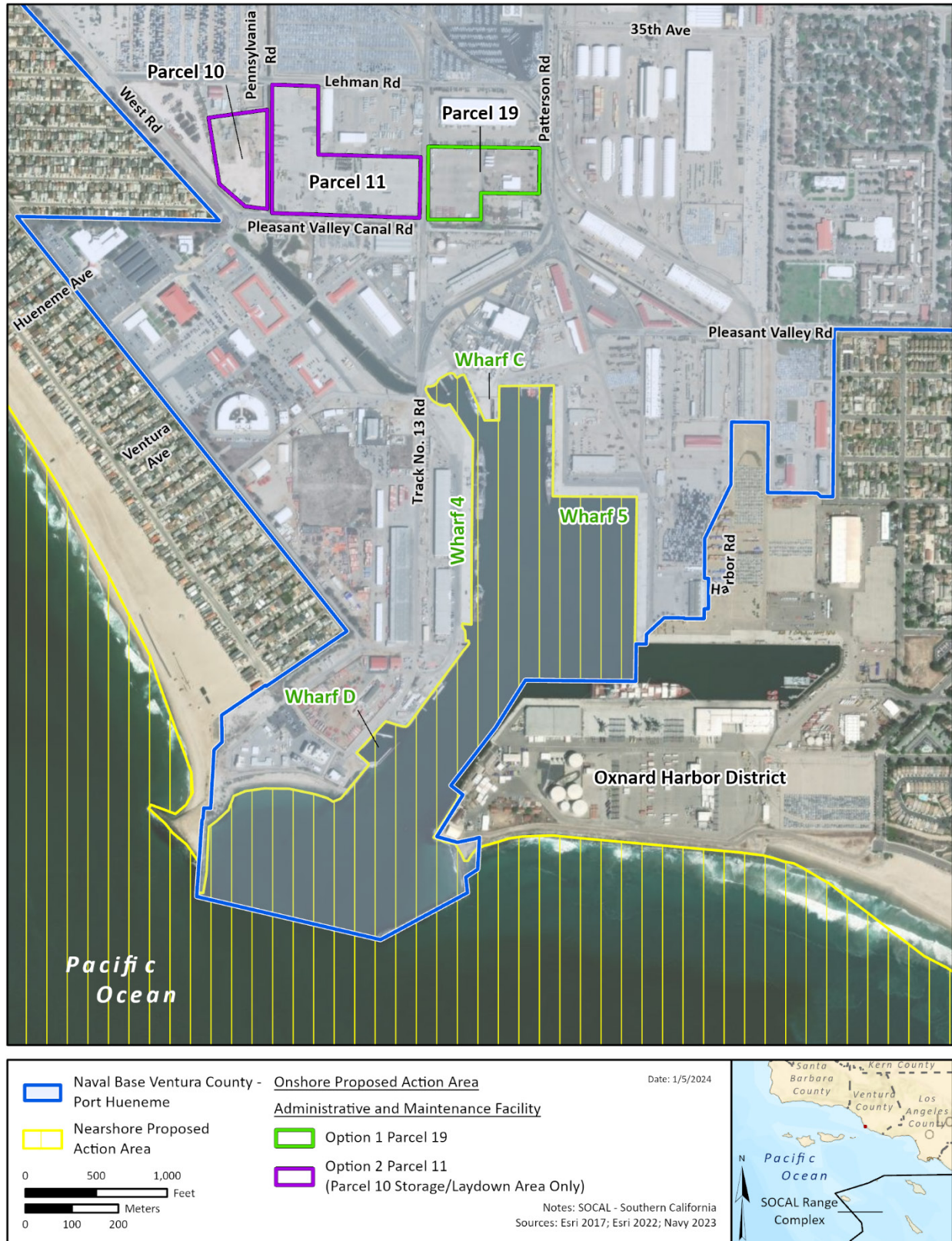


Figure 1.2-2 Onshore Proposed Action Area at NBVC Port Hueneme

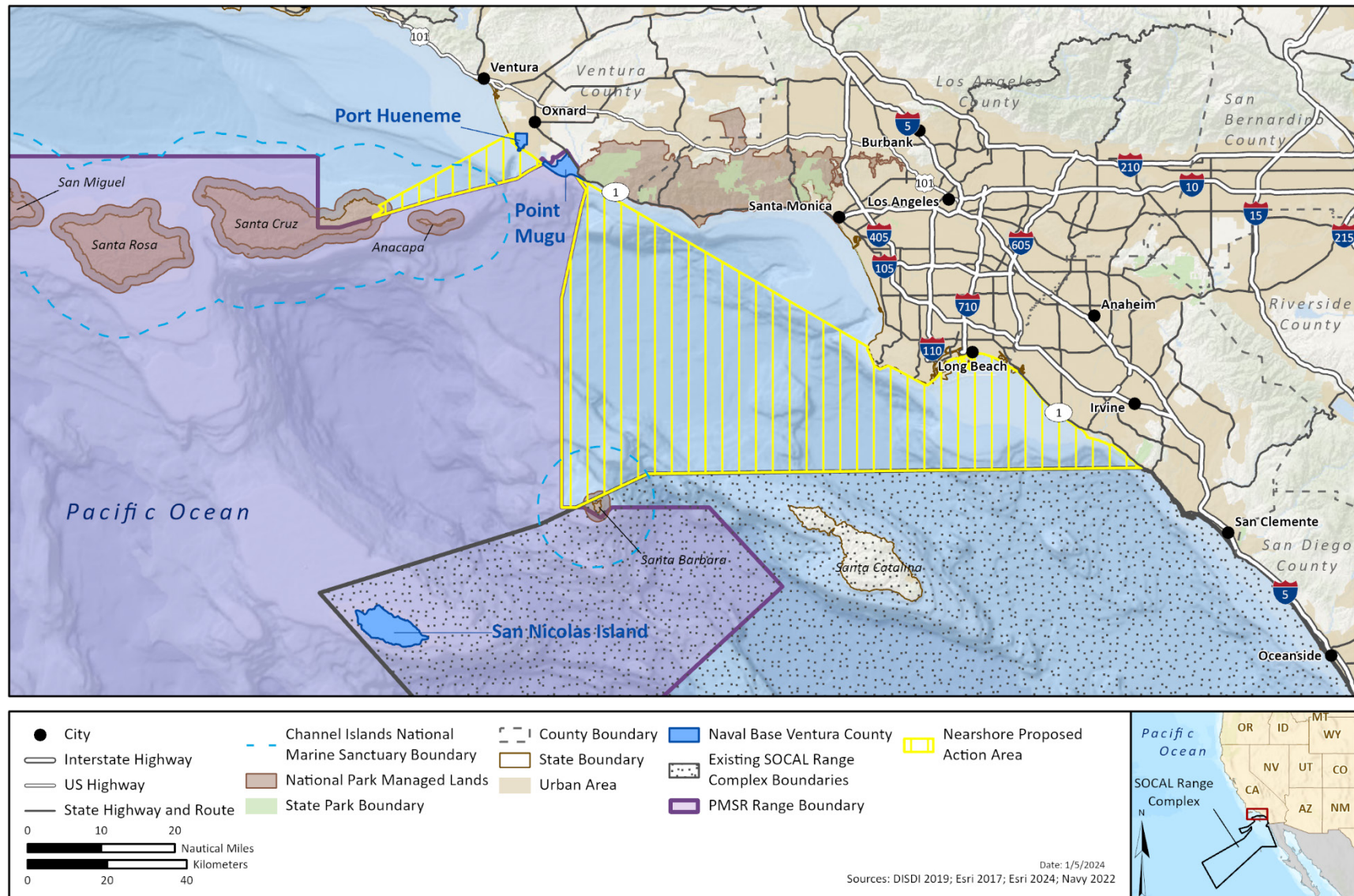


Figure 1.2-3 Nearshore Proposed Action Area



1.3 Background

1.3.1 XLUUV Description

The XLUUVs are designed as diesel-electric underwater vehicles capable of transiting long distances and durations and carrying a variety of large payloads (Figure 1.3-1). The term payload is used in this EA/OEA to describe an object or module that can be attached to the XLUUV that provides a certain function (e.g., sensors, deployment/delivery of objects, communication devices). The vehicle is made of four modular sections: the nose, payload, center, and tail (Figure 1.3-2), which can be disassembled for easier transport. When fully assembled, the XLUUV is approximately 85 feet (ft) long and 175,000 pounds.

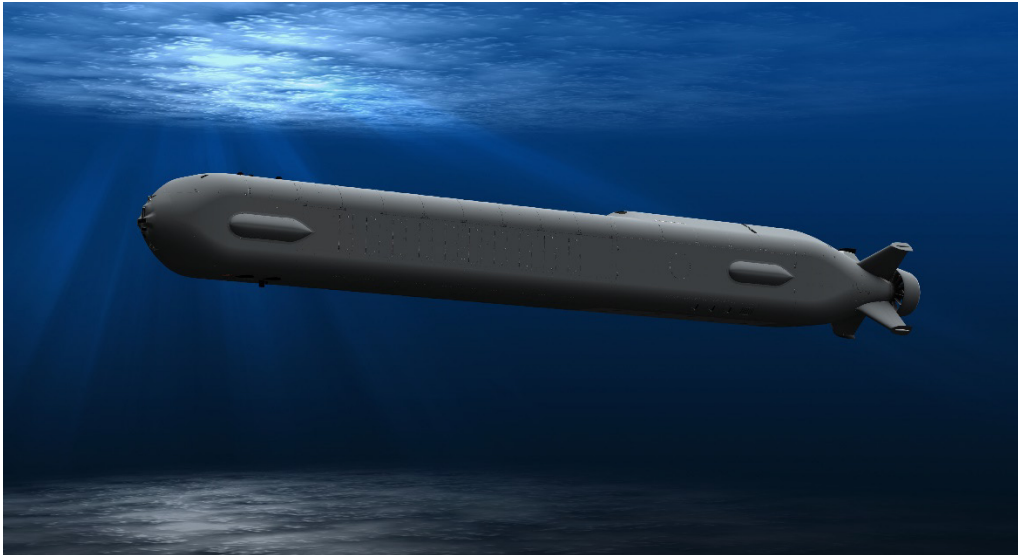


Figure 1.3-1 Conceptual XLUUV in Water

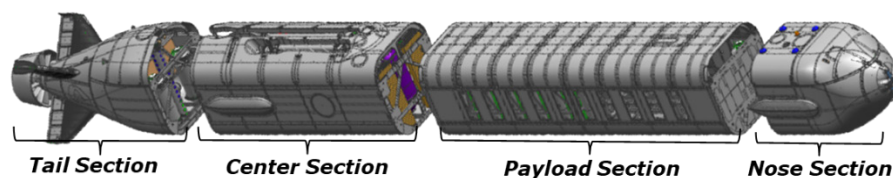


Figure 1.3-2 Modular Sections of XLUUV

The XLUUV center section is the core vehicle that would provide propulsion, maneuvering, navigation, autonomy, situational awareness, core communications, power distribution and energy, and mission sensors. The XLUUV's initial primary mission would be to support mine warfare, which includes deploying inert, non-explosive training shapes during training and testing. Payloads to support other mission needs may be developed in the future.

1.3.2 USV Description

The USVs are unmanned fully autonomous ships, built to accommodate various modular payloads. The USVs would be capable of weeks-long deployments and trans-oceanic transits. Initial carrying capacity for USVs would have intelligence, surveillance, and reconnaissance payloads and electronic warfare systems. Payloads to support other mission needs may be developed in the future.

The USVs that would undergo training and testing activities covered under this EA/OEA are approximately 200 ft to 300 ft in length, with full load displacements of approximately 1,000 tons to 2,000 tons (smaller than a frigate and larger than a patrol craft). The Navy currently has four USVs with these characteristics (the Nomad, Ranger, Mariner, and Vanguard – refer to Figures 1.3-3 and 1.3-4) and two of these would arrive at NBVC Port Hueneme for training and testing beginning in 2024.



Figure 1.3-3 Ranger (Foreground) and Nomad (Background)



Figure 1.3-4 Mariner

1.3.3 Support Vessel Descriptions

Both XLUUVs and USVs would have manned escort support vessels during training and testing activities. These support vessels may include smaller craft similar to the Combat Rubber Raiding Craft, 7-meter Rigid Inflatable Boat, High Speed Maneuverable Surface Target, and 11-meter Rigid Inflatable Boat. An

additional larger vessel, between 150 ft and 300 ft in length and comparable to a research vessel, offshore support vessel, or multi-purpose support vessel, would also be used to support training and testing activities.

1.4 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to improve unmanned vehicle assimilation into the fleet by providing training and testing for improved intelligence, surveillance, and reconnaissance, electronic, undersea, and mine warfare capabilities at NBVC Port Hueneme.

The need for the Proposed Action is to support the Navy's execution of its congressionally mandated roles and responsibilities under 10 United States Code (U.S.C.) section 8062.

10 U.S.C. section 8062: "The Navy shall be organized, trained, and equipped for the peacetime promotion of the national security interests and prosperity of the United States and for prompt and sustained combat incident to operations at sea. It is responsible for the preparation of naval forces necessary for the duties described in the preceding sentence except as otherwise assigned and, in accordance with integrated joint mobilization plans, for the expansion of the peacetime components of the Navy to meet the needs of war."

1.5 Scope of Environmental Analysis

This EA/OEA includes an analysis of potential environmental impacts associated with the action alternative and the No Action Alternative. The environmental resource areas analyzed in this EA/OEA include air quality; water resources; noise; biological resources; infrastructure; public health and safety; hazardous materials and wastes; land use and recreation; and environmental justice. The Region of Influence (ROI) or Study Area for each resource analyzed may differ due to how each action alternative interacts with or impacts the resource.

1.6 Key Documents

Key documents are sources of information related to this EA/OEA. Documents are considered to be key because of similar actions, analyses, or impacts that may apply to this Proposed Action. The following documents are related to the Proposed Action in part or in whole:

- **HSTT EIS/OEIS (2018).** The HSTT EIS/OEIS evaluates the potential environmental impacts of conducting training and testing activities in the HSTT Study Area. The XLUUVs and USVs may perform training and testing activities in the SOCAL Range Complex, which forms part of the HSTT Study Area. Environmental impacts resulting from XLUUV and USV training and testing activities within the HSTT Study Area are analyzed in the HSTT EIS/OEIS.
- **PMSR EIS/OEIS (2022).** The PMSR EIS/OEIS evaluates the potential environmental impacts of continued and increasing military readiness activities within the PMSR Study Area. The Nearshore Proposed Action Area analyzed in this EA/OEA borders the PMSR; therefore, existing environments may be similar (see Figure 1.2-3).
- **Port Hueneme Division Naval Surface Warfare Center Surface Warfare Engineering Facility Virtual Test Capability EA (2000).** This EA evaluates potential environmental impacts associated with the proposed development and operation of Virtual Test Capabilities at the Surface Warfare Engineering Facility (SWEF) at NBVC Port Hueneme. Potential environmental impacts from operating radars, antennae, transmitters, or electromagnetic radiation emitting equipment for testing or training activities are analyzed in the SWEF Virtual Test Capabilities EA.

1.7 Public and Agency Participation and Intergovernmental Coordination

CEQ regulations direct agencies to involve the public in preparing and implementing their NEPA procedures. The Navy has prepared this Draft EA/OEA to inform the public of the Proposed Action and to allow the opportunity for public review and comment.

1.7.1 Public Notification

The Navy published a Notice of Availability of the Draft EA/OEA for a 30-day public review period in the Ventura County Star on July 5, 6, and 7, 2024, and in the weekly Spanish publication La Vida on July 11, 18, and 25, 2024 (Appendix A). The notice described the Proposed Action, solicited public comments on the Draft EA/OEA, provided dates of the public comment period (July 5, 2024 – August 4, 2024), and announced that a copy of the EA/OEA was available for review at www.nepa.navy.mil/XLUUV, and at the following libraries:

- South Oxnard Branch Library, 4300 Saviers Road, Oxnard, California 93033
- E.P. Foster Library, 651 East Main Street, Ventura, California 93001

The public was invited to submit comments by any of the following methods:

- electronically, via the Navy's website www.nepa.navy.mil/XLUUV
- in writing, by mail to: XLUUV USV EA/OEA Project Manager, Naval Facilities Engineering Systems Command Atlantic, Attn: Code EV2, SS, 6506 Hampton Blvd, Norfolk, Virginia 23508

Comments received during the public comment period for the Draft EA/OEA will be considered in the Final EA/OEA.

The Navy has prepared and submitted a Coastal Consistency Negative Determination to the California Coastal Commission pursuant to the Coastal Zone Management Act. The Navy has also initiated informal consultation with the National Marine Fisheries Service pursuant to section 7(a)(2) of the ESA, seeking concurrence with the Navy's determination that the Proposed Action "may affect, but is not likely to adversely affect" ESA-listed fish, sea turtles, and marine mammals and designated critical habitat for the humpback whale.

2 Proposed Action and Alternatives

2.1 Proposed Action

The Navy proposes to establish training and testing support facilities at Naval Base Ventura County (NBVC) Port Hueneme for up to six Extra Large Unmanned Undersea Vehicles (XLUUVs) and two Unmanned Surface Vessels (USVs). The Proposed Action includes construction of training support facilities in the Onshore Proposed Action Area, and the training and testing of the XLUUVs and USVs in the Nearshore Proposed Action Area and the Offshore Proposed Action Area on the United States (U.S.) West Coast at NBVC Port Hueneme, California. The Proposed Action includes development of infrastructure, maintenance, training, research, and administrative spaces (see Figure 1.2-2), and the expansion of at-sea training and testing locations in waters off Port Hueneme (as shown in Figures 1.2-3 and 1.2-4) to enable training and testing of XLUUVs and USVs.

2.1.1 Construction Activities

The Proposed Action would include the construction of permanent facilities at NBVC Port Hueneme to support XLUUV and USV training and testing, maintenance, and administrative needs. As the building design and configuration is not yet available, for flexibility, this Environmental Assessment/Overseas Environmental Assessment (EA/OEA) includes construction of a permanent maintenance and administrative facility at one of two similar location options: Parcel 19 (Option 1) or Parcel 11 (Option 2) as shown on Figure 1.2-2. If Parcel 11 is chosen as the construction site, Parcel 10 would be used for storage/laydown. Construction associated with the Proposed Action would be funded by Military Construction Project P-487. In either option, the overall P-487 project scope includes the following key items (approximate square feet [SF] in parenthesis):

- One-story tall laboratory to support bay ships and marine systems integration with 30-ton bridge crane, a laboratory for underwater weapons systems with specialized crane system (either overhead dual cranes [60-ton] or single crane [125-ton]), assembly/disassembly area, and interior vehicle staging area (approximately 44,000 SF).
- A facility to support up to 330 personnel. The building may be up to two stories tall and would include areas to support testing activities and administrative space (approximately 67,000 SF).
- Vehicle wash rack to periodically remove salt and debris from vehicles. This facility includes capture and filtration systems (3,000 SF).
- Battery shop for charging, maintenance, and storage of up to 20 XLUUV and USV batteries. The shop design and location would meet applicable safety requirements, including a 50 foot (ft) offset from other buildings and requirements in National Fire Protection Association 855 (Standard for the Installation of Stationary Energy Storage Systems) (5,100 SF).
- Warehouse space (approximately 7,300 SF).
- Open-air laydown area (approximately 59,100 SF).
- Paving and site improvements, to include site paving and security fence demolition, access roadway improvements, privately owned vehicle parking lot improvements for about 225 vehicles, organizational vehicle parking for about 220 vehicles, sidewalks, curbs, gutters, laydown area pavement, landscaping, signage, trash enclosure, break shelter, and bike area (approximately 71,000 SF).
- Relocation of communications cabling and duct bank.

- Routine maintenance of facilities once constructed.

If construction of P-487 were to occur on Parcel 11, it would require construction of a fence around the adjacent Parcel 10 and the paving of Parcel 10 prior to construction beginning on Parcel 11. Once the Parcel 10 improvements are complete, the storage function currently occurring on Parcel 11 would be relocated to Parcel 10, and construction would begin on Parcel 11.

2.1.2 Support and Maintenance Activities

Table 2.1-1 lists regularly occurring activities that would provide support or maintenance to the XLUUVs and USVs. Potential environmental impacts from these activities are analyzed as part of the Proposed Action.

Table 2.1-1 XLUUV and USV Support and Maintenance Activities

Activity Name	XLUUV or USV	Activity Description
General Maintenance	XLUUV and USV	General maintenance encompasses both planned and corrective maintenance consisting of repair, removal, and replacement of pressure vehicles, components, and hull sections. Typically, this would occur at the existing Mission Package Support Facility at NBVC Port Hueneme or in the newly constructed permanent facilities on Parcel 19 or Parcel 11. However, some activities may occur at the pier or at other locations utilizing mobile cranes. Removed components may also require repairs in specialized electronics or mechanical repair shops. General maintenance may include: - Operation of components, including the internal generator systems. - Cleaning, degreasing, oiling, etc. of mechanical components. - The removal of paint and painting. These activities would be performed in a manner to minimize environmental impact. - Usage of various hazardous materials including degreasers, general cleaners, anti-seize, oils, corrosives, abrasives, and paints. XLUUV only: Maintenance on and usage of various support equipment including but not limited to: mobile cranes, forklifts, CONEX boxes (e.g., shipping/cargo containers), and generators.
System Dry Checks	XLUUV and USV	Sequence of verifying electrical and communication paths and potential short duration diesel generator runs, radio emissions, and other activities. These dry checks are completed post-maintenance and/or prior to each training and testing event. Dry checks are expected to occur several times per week. The checks include two 30-kilowatt diesel generators that would run for 10–60 minutes per dry check to ensure operational temperatures would be reached.

Activity Name	XLUUV or USV	Activity Description
Fueling and ballasting, including storage	XLUUV and USV	XLUUV Fuel (Diesel No. 2) and oil (marine hydraulic oil) (hazardous materials) would be on/off-loaded to the XLUUV by two existing Department of Transportation-approved mobile fuel tanks. The tanks may be temporarily stored at Wharf C or at the newly constructed support facilities on either Parcel 19 or Parcel 11 while the vehicle is waterborne and moored at the ISP. Fueling is predominantly done in water, and fuel must be removed prior to recovery of the XLUUV from the water. The transfer of smaller amounts of fuel or oil (approximately 100 gallons) to XLUUV may also occur at Building 1392, at the permanent support facilities constructed on Parcel 19 or Parcel 11, the proposed permanent storage location for the two mobile fuel tanks pierside, or at other locations at NBVC Port Hueneme utilizing the mobile equipment. Fueling would also be provided to support CONEXs that have back-up generators (approximately 80 gallons per CONEX). These would occur at the permanent support facilities constructed on Parcel 19 or Parcel 11, the existing Mission Package Support Facility, and adjacent to the piers. USV Fueling of the USVs would be accomplished from an existing off-base fueling tank.
Training shape maintenance and repair	XLUUV	Storage of inert training shapes for XLUUV training and testing would occur. Training shapes would require periodic cleaning and painting for preservation. Upon recovery, training shapes receive a freshwater wash-down and are then refurbished, which consists of abrasive cleaning, corrosion removal, and application of protectant coatings. Refurbishment may utilize epoxy, greases, military specification primers/paints, and other compounds.
Vehicle wash-down at wash rack	XLUUV	Following vehicle recovery, the vehicle would typically be moved to the wash rack to be rinsed to remove salts and ocean debris. The wash rack would capture and filter wash water prior to disposal.
XLUUV transportation	XLUUV	Movement of XLUUV is performed while the system is both in sections or fully assembled, by semi-truck or Self-Propelled Modular Transporter. Transportation is primarily constrained to NBVC Port Hueneme; however, the system would occasionally be transported off-base for exercises or repairs.

Legend: CONEX = shipping/cargo container; ISP = in-water support platform; NBVC = Naval Base Ventura County; USV = Unmanned Surface Vessel; XLUUV = Extra Large Unmanned Undersea Vehicle

2.1.3 Training and Testing Activities

After arriving at NBVC Port Hueneme, each of the six XLUUVs would undergo one 100-day training and testing event one time between 2024-2026. After arriving at NBVC Port Hueneme, each of the two USVs would undergo one 120-day training and testing event each year from 2024–2026. The events would be divided into approximately 10 daytime sub-events lasting 5–10 days in duration and 2 nighttime sub-events lasting 5–10 days in duration. Pierside corrective action down time is typically planned for 3–5 days between some of the sub-events. Table 2.1-2 lists regularly occurring activities included in a typical training and testing event for the XLUUV or USV.

All training and testing events analyzed in this document would occur in the NBVC Port Hueneme Wharf, Harbor, and nearshore and offshore areas, unless otherwise noted. Environmental impacts from training and testing events in Southern California (SOCAL) Range Complex are analyzed in the 2018 Hawai'i-

Southern California Training and Testing (HSTT) Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS).

The XLUUVs and USVs would be evaluated for autonomous transit capability, system navigation and communications functionality, system mission execution capability, system response to abnormal situations, response to/recovery from major and minor failures, and their ability to reliably complete a representative operational mission. System at-sea functionality is evaluated in a range of sea state, water depth, activity length, surface and subsurface obstacle conditions, and with varying mission objectives. Manned support vessels would accompany each XLUUV or USV during training and testing events. Support vessels may perform traffic management in the ocean, situation assessment during tow activities, and carry personnel to perform support activities (e.g., connect/disconnect the tow or who would be able to transfer to a USV at sea to perform various functions, as needed).

Pierside checks may include running generators, performing propulsion checks, performing communications checks, system fault checks, maintenance demonstrations, and cybersecurity evaluations. Pierside checks are typically followed by slow transit through a harbor to a pre-determined location to conduct testing and training, as described in Table 2.1-2.

After pierside checks, the XLUUVs and USVs would transit from NBVC Port Hueneme to a pre-determined location within the Nearshore or Offshore Proposed Action Areas to perform training and testing activities. The XLUUVs and USVs may transit under their own power or the XLUUVs may be towed by a support vessel. In either case, support vessels would accompany the XLUUVs or USVs to the Proposed Action Area where training and testing would occur and perform area overwatch at all times. Recoverable or non-recoverable inert training shapes may be deployed during training events, as described in Table 2.1-2. No explosive ordnance or detonation events would be conducted as part of XLUUV or USV training and testing.

XLUUVs and USVs may be equipped with sonar. Sonars and other transducers are grouped into classes that share an attribute, such as frequency range or purpose of use. Some active sonar sources have certain operational characteristics or a manner of system operation which exclude the possibility of any significant impact to a protected species (actual source parameters are classified). These sources are categorized as *de minimis* and have characteristics such as short pulse length, narrow beam width, downward-directed beam, and low energy release. Even if there is a possibility that some species may be exposed to and detect some of these sources, any response is expected to be short-term and inconsequential.

Navy underwater vehicles and surface vessels employ navigational acoustic devices, similar to commercial and private vessels, including speed logs, Doppler sonars for ship positioning, and fathometers. These sources are typically highly directional to obtain specific navigational data and may be in use at any time for safe operation. For this Proposed Action, all active sonar sources that would be used during training and testing activities would only be employed for safe operation and navigation of the vessel. These sources are categorized as *de minimis* sources and are qualitatively analyzed in this EA/OEA to determine the appropriate conclusions under the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA).

Table 2.1-2 XLUUV and USV Training and Testing Activity Descriptions

Activity Name	XLUUV or USV	Activity Description
Vehicle Launch and Recovery	XLUUV	XLUUV is launched and recovered (put in and out of the water) utilizing two mobile cranes at Wharf 5. Two small boats are utilized to then move the vehicle to/from the existing ISP for mooring to prepare the vehicle for training and testing activities. This would occur approximately two times per vehicle per month.
System pierside wet checks	XLUUV and USV	Pierside checks include raising and lowering vehicle masts, moving ballast oil, running generators, performing propulsion checks with slow propeller spin (5–10 revolutions per minute) and minimal thrust, and with full motion of control surfaces, performing acoustic and radio frequency communications checks, sonar checks, and validating variable buoyancy functionality.
Snorkeling and battery charging	XLUUV	While at sea, XLUUV would run two 30-kilowatt diesel generators to recharge Lithium-Ion batteries when necessary. The generators would be powered on for 4–8 hours to recharge while on the surface. When on land or while moored at the ISP, battery charging and discharging would be completed while connected to shore-power (rather than via onboard diesel-electric generators). This would typically occur prior to any training and testing event.
Pierside fuel and oil loads	XLUUV	Prior to training and testing activities, XLUUVs would be fueled, and ballast oil would be onloaded at the ISP utilizing mobile storage tanks located in the vicinity of Wharf C. This consists of marine diesel fuel (Diesel No. 2), and biodegradable marine hydraulic oil used in enclosed, variable ballast systems in each vehicle. After missions, prior to vehicle recovery, this fuel and oil would be removed from the system to shore-side, portable, Department of Transportation-approved tanks.
Acoustic transmissions	XLUUV and USV	For this Proposed Action, all active sonar sources that would be used during training and testing activities would only be employed for safe operation and navigation of the vessel. These sources are categorized as <i>de minimis</i> sources and are qualitatively analyzed in this EA/OEA to determine the appropriate conclusions under the MMPA and ESA.
Deployment of inert training shapes	XLUUV	The XLUUV is designed to support mine warfare and during training and testing this capability will utilize both recoverable and non-recoverable inert training shapes in the Nearshore Proposed Action Area outside of the harbor and in the Offshore Proposed Action Area. Up to 20 recoverable or non-recoverable training shapes may be released to the sea floor during each training and testing sub-event (up to 10 days in duration). The locations within the Proposed Action Areas where the XLUUV would conduct each training and testing sub-event would be pre-planned and would not occur within protected areas, areas containing known reefs, or high traffic areas. The recoverable training shapes are a maximum of 6 ft by 2 ft in size and would be recovered by divers in shallow waters (<350 ft) or with a crane/winch on the support vessel and a Remotely Operated Vehicle in deep water (>350 ft). The recoverable training shapes are stationary and would be recovered within less than 5 days. While the use of non-recoverable shapes is not planned, these shapes may also be recovered and reused. In total, up to 225 non-recoverable inert training shapes would be used over the duration of the training and testing program for all XLUUVs.

Activity Name	XLUUV or USV	Activity Description
Surface obstacle avoidance	XLUUV and USV	Both the XLUUV and USV are designed to avoid obstacles while transiting on the surface, or at snorkeling depth for the XLUUV. Scenarios would be developed to create obstacle avoidance interactions. These may include the use of various sized fleet, commercial, and recreational maritime vehicles to trigger obstacle avoidance maneuvers by the system. All surface obstacle avoidance “targets” would be recovered at the end of the exercise.
Submerged obstacle avoidance	XLUUV	The XLUUV is designed to operate submerged. Scenarios would be developed to create subsurface obstacle avoidance interactions including employment of nets and various submerged obstacles. All obstacle avoidance “targets” would be recovered at the end of the exercise and would be pre-planned to not occur within protected areas, areas containing known reefs, or high traffic areas.
Testing	USV	Evaluation, assessment, experimentation, and demonstration of USVs in support of USV research, development, and production. Activities may include evaluation of basic seakeeping functionality, autonomous mission execution functionality, and integrated payload functionality. Multiple USVs may execute a scenario as an individual event, unrelated to each other, but at the same time.
Small craft support vessel	XLUUV and USV	Various small craft and support vessels would support XLUUV and USV for the duration of each training and testing event. Small boats (less than 50 ft) would be utilized for small-scale maneuvering of XLUUV, short tows within the NBVC Port Hueneme harbor, traffic and range control, line-of-sight command and control, crew transfer, and other general use. Typically, 1–2 vessels would be utilized during various phases of the testing. Large support vessels (up to 300 ft) would be utilized for open ocean launch and recovery, open ocean towing, and command and control. During typical training and testing events, only one large support vessel would be required.

Legend: < = less than; > = greater than; EA = Environmental Assessment; ESA = Endangered Species Act; ft = feet; ISP = in-water support platform; MMPA = Marine Mammal Protection Act; NBVC = Naval Base Ventura County; OEA = Overseas Environmental Assessment; USV = Unmanned Surface Vessel; XLUUV = Extra Large Unmanned Undersea Vehicle

2.2 Screening Factors

The National Environmental Policy Act’s (NEPA’s) implementing regulations provide guidance on the consideration of alternatives to a federally Proposed Action and require rigorous exploration and objective evaluation of reasonable alternatives. Only those alternatives determined to be reasonable and to meet the purpose and need require detailed analysis.

Potential alternatives that meet the purpose and need were evaluated against the following screening factors:

- Launch and wet berth capability.
 - Adequate berth space for USVs.
 - Protected deep-water harbor under Navy access control, with available (or space for) wet berth space and Navy port services.
 - Launch and retrieval capability for the XLUUVs.

- Existing, suitable land facilities for training and testing, maintenance, and administrative use. In the absence of these facilities, available and suitable land for construction of said facilities. This includes facilities capable of housing and maintaining XLUUVs and berthing/administration facilities for the XLUUV Squadron and Surface Development Squadron. This also includes suitable onshore laydown, assembly, and storage area sufficient for at least five XLUUV vehicles.
- Proximity to large, open ocean Navy ranges. Nearby access to shallow water, open ocean, and instrumented ranges to provide a variety of training and testing opportunities.
- Proximity to suitable airports capable of landing military aircraft for transportation of XLUUV by air, and proximity to ports often traveled by military/maritime transportation crafts for transport of XLUUV by sea.
- Proximity to XLUUV original equipment manufacturer (OEM) to decrease maintenance costs and increase opportunities for collaboration, improvement, and testing. The XLUUV OEM is Boeing Defense, Space & Security segment in Huntington Beach, California.
- Proximity to multiple warfare centers needed to support maintenance, training, and testing of unmanned vehicles.
- Proximity to existing industrial enterprises, facilities, services, and personnel capable of assisting with maintenance capability for both vehicles.
- Ability to meet dynamic training and testing requirements to expedite unmanned vehicle and vessel assimilation into the fleet, including the priority to schedule the required training and testing activities.
- Availability of commercial logistics providers (cranes, trucks, etc.).
- Locations must support training and testing in the Pacific Ocean.

2.3 Alternatives Carried Forward for Analysis

Based on the reasonable alternative screening factors, one action alternative was identified as meeting the purpose of and need for the Proposed Action and will be analyzed within this EA/OEA.

2.3.1 No Action Alternative

Under the No Action Alternative, the Navy would not conduct the proposed XLUUV and USV training and testing activities, nor construct the facilities associated with the Proposed Action. Consequently, the No Action Alternative is inherently unreasonable in that it does not meet the Navy's purpose and need (see Section 1.4). However, the No Action Alternative is carried forward in order to compare the degree of the potential environmental effects of the Proposed Action with the conditions that would occur if the Proposed Action did not occur.

2.3.2 Proposed Action Alternative

The Proposed Action Alternative is the Preferred Alternative analyzed in this EA/OEA. The Proposed Action Alternative reflects the construction, support and maintenance, and training and testing necessary for XLUUV/USV readiness to meet the purpose and need for the Proposed Action. Under the Proposed Action Alternative, the Navy proposes to conduct XLUUV and USV training and testing activities in waters off NBVC Port Hueneme as necessary to meet current and future readiness requirements.

2.4 Alternatives Considered but not Carried Forward for Detailed Analysis

The following alternatives were considered, but not carried forward for detailed analysis in this EA/OEA as they did not meet the purpose of and need for the project and satisfy the reasonable alternative screening factors presented in Section 2.2.

2.4.1 Alternative Locations

Multiple locations outside of NBVC Port Hueneme were assessed for their suitability to support facilities and berthing of the XLUUVs and USVs. The following locations were found to not be suitable sites to establish the permanent presence of XLUUV and USV facilities and training and testing activities.

2.4.1.1 Pacific Northwest Locations

Multiple Naval installations in the Pacific Northwest with port facilities were considered, such as Naval Station Everett, Naval Magazine Indian Island, Naval Base Kitsap-Bremerton and Naval Base Kitsap-Bangor, and Naval Undersea Warfare Center Keyport.

The Pacific Northwest locations would require 24- to 36-hour tow or transit time to open ocean ranges, incurring higher costs and safety concerns for the vehicles and vessels involved. These locations are also not proximate to the XLUUV OEM in Southern California, creating additional obstacles as a training and testing location. Additionally, the Pacific Northwest locations do not have adequate space for secure storage facilities and would require significant infrastructure repairs/improvements to enable launch and retrieval capability. Vehicle launch would be a challenge due to limited assembly space and waterfront facilities.

2.4.1.2 Southern California Locations

Three locations in Southern California were assessed: Naval Base Coronado's Naval Air Station North Island, Naval Base Point Loma, and Naval Weapons Station Seal Beach (NWSSB). All of these locations are in proximity to open ocean Navy ranges and the XLUUV manufacturer, however, they were all lacking in other aspects of siting criteria. All three locations are congested with no available secure storage facilities, nor do they have available and suitable space to build such a facility. The operational requirements of the local active U.S. Navy assets at these locations would be given priority over the training and testing of assets such as XLUUV and USV. Additionally, Naval Base Point Loma and NWSSB do not have areas suitable and available for XLUUV assembly. Finally, NWSSB is an ordnance load-out station and the pier structure is not designed to support XLUUV launch and retrieval.

2.4.1.3 Mariana Islands Locations

Naval Base Guam could provide adequate assembly and launch and recovery spaces for XLUUV; however, those capabilities do not exist currently and would need to be constructed, in addition to the required secure storage facility. Guam is an isolated island, far from existing unmanned underwater vehicle (UUV) fleet structures, the OEM, and the government support teams – as such, it creates additional obstacles as a training and testing location. Commercial logistics providers (cranes, trucks, etc.) are limited on the island when compared to locations within the continental United States. Additionally, the operational requirements of the local active U.S. Navy assets would be given priority over the training and testing of assets such as XLUUV and USV.

2.4.1.4 Hawai'i Locations

Pearl Harbor's various naval bases offer close access to the submarine fleet and deep water; however, its location is far removed from the OEM and government support teams. There are no secure facilities available that can accommodate XLUUV, and the bases are congested and offer limited space for new facilities. Commercial logistics providers (cranes, trucks, etc.) are limited on the island when compared to locations within the continental United States. Additionally, the operational requirements of the local active U.S. Navy assets would be given priority over the training and testing of assets such as XLUUV and USV.

2.4.1.5 East Coast Locations

Consistent with DoD strategy, which calls for mission priorities to shift to the Asia-Pacific region (DoD 2012), and which recognizes USVs as critical investments in preparedness to support the Indo-Pacific Region (DoD 2019), the Proposed Action would provide critical training and testing facilities and associated infrastructure in the Pacific region to increase capabilities needed by the Navy to maintain a state of military readiness commensurate with the national defense mission. Accordingly, East Coast locations were not considered for this project.

2.4.2 Simulated Training and Testing Only

The Navy currently uses simulation for training and testing whenever possible; however, there are significant limitations, and its use cannot replace live training or testing. A simulator cannot perfectly replicate the system itself, nor match the dynamic nature of the environment, such as bathymetry and sound propagation properties, nor replicate the training activities involving several units with multiple crews interacting in a variety of acoustic environments. These limitations would prevent the U.S. Navy from accomplishing a significant portion of its goals.

2.5 Best Management Practices and Standard Operating Procedures Included in Proposed Action

Best Management Practices (BMPs), Standard Operating Procedures (SOPs), and mitigation are incorporated into the Proposed Action and are listed in Appendix B.

This page intentionally left blank.

3 Affected Environment and Environmental Consequences

This chapter presents a description of the environmental resources and baseline conditions that could be affected from implementing either of the alternatives (No Action Alternative and Proposed Action) as well as an analysis of the potential direct and indirect effects of each alternative.

In compliance with National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations, and Navy guidelines, the following discussion of the affected environment (i.e., existing conditions) focuses only on those resource areas potentially subject to impacts. Additionally, the level of detail used in describing a resource is commensurate with the anticipated level of potential environmental impact. An impact can be significant or less than significant.

According to 40 Code of Federal Regulations [CFR] section 1501.3(b), in considering whether the effects of the Proposed Action are significant, agencies shall analyze the potentially affected environment and degree of the effects of the action. Agencies should consider connected actions consistent with section 1501.9(e)(1).

(1) In considering the potentially affected environment, agencies should consider, as appropriate to the specific action, the affected area (national, regional, or local) and its resources, such as listed species and designated critical habitat under the Endangered Species Act. Significance varies with the setting of the Proposed Action. For instance, in the case of a site-specific action, significance would usually depend only upon the effects in the local area.

(2) In considering the degree of the effects, agencies should consider the following, as appropriate to the specific action:

- (i) Both short- and long-term effects.
- (ii) Both beneficial and adverse effects.
- (iii) Effects on public health and safety.
- (iv) Effects that would violate federal, State, Tribal, or local law protecting the environment.

The resource areas that are potentially subject to impacts resulting from the Proposed Action, and therefore carried forward for analysis, include air quality, water resources, noise, biological resources, infrastructure, public health and safety, hazardous materials and wastes, land use and recreation, and environmental justice. The potential impacts to these resource areas are analyzed in detail in this Environmental Assessment/Overseas Environmental Assessment (EA/OEA).

The potential impacts to the following resource areas are considered to be negligible or nonexistent so they were not analyzed in detail in this EA/OEA: airspace and airfield operations, cultural resources, geological resources, visual resources, socioeconomics, and transportation.

Airspace and Airfield Operations: To date, Naval Base Ventura County (NBVC) Port Hueneme does not have an airfield or host a flying mission and is not within any Clear Zones, Accident Potential Zones, Runway Protection Zones, or Runway Imaginary Surfaces associated with either NBVC Point Mugu or Oxnard Airport. An up to 300-foot (ft)-tall crane is proposed for development on either parcel chosen for facility development at NBVC Port Hueneme; however, the location and height would not interfere with Federal Aviation Administration's Part 77 Vertical Obstruction Compliance, the 500-ft minimum Approach/Departure Clearance Surface to any nearby airports, including the NBVC Point Mugu Runway 09/27, or the 500-ft minimum of the Outer Horizontal Surface for the NBVC Point Mugu airfield. Given

that airspace and airfield operations would not be subject to impacts through implementation of the Proposed Action or No Action Alternative, airspace and airfield operations were not carried forward for detailed analysis in this EA/OEA.

Cultural Resources: Analysis of cultural resources is not warranted because the Proposed Action at NBVC Port Hueneme is limited to construction in an in-fill soil context and in-water training and testing. The training and testing in Nearshore and Offshore Action Areas do not have the potential to affect cultural resources due to the BMP for avoidance of known shipwrecks and avoidance of seafloor disturbance and therefore are not an undertaking pursuant to Section 106 and its implementing regulations at 36 CFR 800.3(a)(1). The Onshore Proposed Action Area construction would occur on an empty paved parcel of NBVC Port Hueneme that is known to be filled from harbor dredging, thereby negating the potential for archaeological sites. There have not been any identified traditional cultural properties within the Onshore Proposed Action Area. Above ground, buildings on adjacent parcels have been determined to not be eligible for the National Register of Historic Places (Naval Base Ventura County 2019). Therefore, there are no historic properties present within the Proposed Action Area. In instances where no historic properties are affected, the installation is delegated authority under the *2015 Programmatic Agreement Between the Commanding Officer, Naval Base Ventura County, and the California State Historic Preservation Officer Regarding Navy Undertakings within Ventura County, California* to proceed without further regulatory review pursuant to Stipulation 8(a). Therefore, cultural resources were not carried forward for detailed analysis in this EA/OEA.

Geological Resources: Proposed construction would occur on existing pavement. As a result, ground disturbance would be negligible; therefore, geological resources were not carried forward for detailed analysis in this EA/OEA.

Visual Resources: Equipment used during the proposed construction, such as a construction crane, could create a short-term visual effect to residents in housing areas to the west of the Navy property. Construction would only occur on Navy property. There would be no changes to public views as the new building would be interior to the Navy property. Following completion of construction, these effects would be negligible. Therefore, visual resources were not carried forward for detailed analysis in this EA/OEA.

Socioeconomics: There would be a small increase in personnel numbers under the Proposed Action. An estimated 330 personnel are expected to work on the project, but 50 percent of these already work at NBVC Port Hueneme. As of 2022, the City of Port Hueneme has a population of 21,407 people (U.S. Census Bureau 2023). Thus, the small increase of 165 additional people would not have a major impact on socioeconomics (e.g., employment, population, housing, and public services such as schools to accommodate the changes in population) due to the Proposed Action. Construction projects would provide a beneficial one-time injection of funds to the local economy through 2029. Therefore, socioeconomics were not carried forward for detailed analysis in this EA/OEA.

Transportation: During the construction period, there would be a short-term increase in trucks traveling to and from NBVC Port Hueneme to deliver construction materials. Trucks would access NBVC Port Hueneme from the open gate entrances, using on-base roadways to access Parcel 19 or Parcel 11. There would also be construction workers traveling to the site. The additional truck and other construction vehicle traffic would be temporary and minor compared with existing daily vehicle trips on local roadways, and the level of service would not be expected to change.

In support of the training and testing activities, approximately 330 personnel would be employed within the program. Roughly half of these already live in the area and work at NBVC Port Hueneme in other capacities. Therefore, approximately 165 additional personnel would commute to the installation as added base population under the Proposed Action. This would account for approximately 1.8 percent of the daily vehicle traffic along State Route 1 at the intersection of 5th Street (Caltrans 2023). This small increase in personnel would not significantly increase traffic levels at intersections along major and secondary arterials surrounding the base. The small increase in personnel and associated vehicle trips, along with the dispersed nature of routes to the three gate entrances, would not be expected to have a significant impact on roadway level of service and implementation of the Proposed Action. Therefore, transportation was not carried forward for detailed analysis in this EA/OEA.

3.1 Air Quality

This discussion of air quality includes an evaluation of criteria pollutants, ozone precursors and greenhouse gases (GHGs), description of ambient air quality standards and emission sources, and an overview of permitting requirements. Air quality in a given location is defined by the concentration of various pollutants in the atmosphere. A region's air quality can be influenced by many factors, including the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions.

The principal pollutants defining air quality, called "criteria pollutants," include carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide, ozone, suspended particulate matter less than or equal to 10 microns in diameter (PM₁₀), fine particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5}), and lead.

3.1.1 Regulatory Setting

3.1.1.1 General Conformity

Areas that are and have historically been in compliance with the National Ambient Air Quality Standards (NAAQS) are designated as attainment areas. Areas that do not meet NAAQS for criteria pollutants are designated "nonattainment areas" for a specific pollutant. Areas that have transitioned from nonattainment to attainment are designated as maintenance areas and are also required to adhere to maintenance plans to ensure continued attainment. The USEPA General Conformity Rule applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The emissions thresholds that trigger requirements for a conformity analysis are called *de minimis* levels. *De minimis* levels (in tons per year [tpy]) vary by pollutant and also depend on the severity of the nonattainment status for the air quality management area in question. These thresholds can be seen in Appendix C.

3.1.2 Affected Environment

The project site is within the South Central Coast Air Basin, which consists of San Luis Obispo County, Santa Barbara County, and Ventura County. NBVC Port Hueneme is located in Ventura County, which comprises all of mainland Ventura County and extends 3 miles off the mainland shore. The Ventura County Air Pollution Control District (VCAPCD) is responsible for regulating stationary sources of air emissions within Ventura County and has prepared numerous air quality planning documents to meet state and federal clean air mandates.

Ventura County is designated by USEPA as in serious nonattainment for both the 2008 and 2015 ozone standards (USEPA 2023a) and in attainment for other criteria pollutants. The California Air Resources Board also designates areas of the state that are in attainment or nonattainment of the California Ambient Air Quality Standards (CAAQS). An area is in nonattainment for a pollutant if its CAAQS has been exceeded more than once in three years. Currently, the VCAPCD is in nonattainment of the CAAQS for ozone and PM₁₀ (California Air Resources Board 2023) and attainment for other criteria pollutants.

The most recent annual air emissions inventory data available for Ventura County is shown in Table 3.1-1. Volatile organic compounds (VOCs) and nitrogen oxides (NO_x) emissions are used to represent ozone generation because they are precursors of ozone. Note, the 2017 emission inventory for Ventura County does not include emissions from NBVC Port Hueneme. To understand the relative level of significance compared to Ventura County emissions, emissions from existing NBVC Port Hueneme site sources are also included in Table 3.1-1. These emissions represent permitted emissions from the existing 40 CFR Part 70 Title V Permit, Number 01006, issued by VCAPCD. NBVC Port Hueneme is subject to Title V permitting based upon potential emissions of reactive organic compounds and NO_x over the permitting thresholds of 25 tpy when including permit-exempt equipment. Reactive organic compounds are also known as VOCs.

Table 3.1-1 2017 Emission Inventory for Ventura County (excluding wildfire emissions)

Geographic Area	Criteria and Precursor Air Pollutant and GHG Emissions (tpy)								
	VOCs ¹	CO	NO _x ¹	SO ₂	PM ₁₀	PM _{2.5}	CO ₂	CH ₄	N ₂ O
Ventura County	10,686	34,972	7,392	230	5,669	1,923	4,786,668	11,833	94
NBVC Port Hueneme (permitted stationary source emissions) ²	22.67	2.33	4.43	0.18	0.83	0.83	--	--	--

Source: USEPA 2021; VCAPCD 2023

Legend: CH₄ = methane; CO = carbon monoxide; CO₂ = carbon dioxide; GHG = greenhouse gases; N₂O = nitrous oxide NO_x = nitrogen oxides; PM_{2.5} = fine particulate matter less than or equal to 2.5 micrometers in diameter; PM₁₀ = suspended particulate matter less than or equal to 10 micrometers in diameter; SO₂ = sulfur dioxide; tpy = tons per year; VOCs = volatile organic compounds

(1) Note: VOCs and NO_x are precursors to the formation of ozone.

(2) Note: Sources include but are not limited to space heaters and boilers; cranes; generators; sweeper vehicle auxiliary engines; woodchippers; surface coating and spray booth operations; solvent cleaning degreasers/operations; abrasive blasting; storage tanks; and stationary diesel-fired emergency standby engines.

3.1.3 Environmental Consequences

Effects on air quality are based on estimated direct and indirect emissions associated with the action alternatives. The Study Area for assessing air quality impacts is the air basin in which the project is located, specifically Ventura County within the South Central Coast Air Basin and on a global scale for GHG emissions.

Under NEPA, estimated emissions from a proposed federal action are typically compared with the relevant national and state standards to assess the potential for increases in pollutant concentrations. For this Proposed Action, NO_x and VOC emissions are also compared to the Clean Air Act (CAA) General Conformity *de minimis* threshold of 50 tpy for each pollutant because the area is designated as serious nonattainment under the federal standards for ozone and NO_x, and VOCs are precursors for ozone formation.

3.1.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to existing air emissions at NBVC Port Hueneme. There would be no new XLUUV and USV training and testing emissions and no construction-related emissions. Therefore, no significant impacts on air quality or air resources would occur with implementation of the No Action Alternative.

3.1.3.2 Proposed Action

Potential air quality impacts are evaluated for the years in which construction activities would occur, as well as a steady-state scenario when XLUUV and USV training and testing and personnel commuting would occur. Construction is anticipated to start in May 2026 and continue through October 2029. Construction activities and associated criteria pollutant and GHG emissions were estimated using the

Air Quality Potential Impacts:

- No Action: The Proposed Action would not be implemented and there would be no significant impacts to air quality.
- Proposed Action: No significant impacts to air quality. Impacts from construction, and training and testing activities are not expected to impact the attainment of NAAQS. Estimated GHG emission increases over the construction period and during training and testing would not be large enough to impact the attainment of Department of Defense and Federal GHG goals. A Record of Non-Applicability is provided in Appendix C.

California Emissions Estimator Model (CalEEMod), developed by the California Air Pollution Control Officers Association (California Air Pollution Control Officers Association 2022). See Appendix C for information on CalEEMod, the default data, assumptions, and inputs used to estimate emissions and the detailed results. Estimated annual air pollutant emissions from construction activities under the Proposed Action are presented in Table 3.1-2. Note, CO₂ (and CO₂e [CO₂ Equivalent]) emissions are typically much larger than other pollutants. As an example, the CO₂ emissions in 2017 for Ventura County were 4,786,668 tpy while NO_x emissions were 7,392 tpy.

As shown in Table 3.1-2, overall emissions from construction activities would be minimal. Emissions of all individual criteria pollutants would be less than 3 tpy.

Once specific equipment for the new facilities to support training and testing activities are known (e.g., abrasive blasting/cleaning, generators), they would require an evaluation to verify exemption and/or inclusion as a permitted source in the existing NBVC Port Hueneme Title V permit.

Training and testing emissions from the Proposed Action would include sources detailed in Appendix C.

XLUUV and USV training and testing would increase in phases over a period of a few years to the maximum anticipated of 120 days per year. Table 3.1-3 presents estimated annual air pollutant emissions assuming the steady-state 120 days of training and testing per year and commuting emissions from the associated additional personnel.

Table 3.1-2 Estimated Annual Air Pollutant Emissions from Construction Activities under the Proposed Action

Year	Criteria Air Pollutant and GHG Emissions (tpy)									
	VOC ¹	CO	NO _x ¹	SO ₂	PM ₁₀	PM _{2.5}	CO ₂	CH ₄	N ₂ O	CO ₂ e
2026	0.18	1.77	1.61	0.003	0.58	0.31	330.33	0.01	0.005	332.11
2027	0.16	2.05	1.35	0.004	0.15	0.07	474.06	0.02	0.02	479.86
2028	0.16	2.03	1.28	0.004	0.15	0.06	472.02	0.01	0.02	477.58
2029	0.40	1.14	0.69	0.002	0.07	0.03	239.78	0.01	0.01	242.25

Legend: CH₄ = methane; CO = carbon monoxide; CO₂ = carbon dioxide; CO₂e = carbon dioxide equivalent; GHG = greenhouse gases; N/A = Not Applicable; N₂O = nitrous oxide; NO_x = nitrogen oxides; PM_{2.5} = fine particulate matter less than or equal to 2.5 micrometers in diameter; PM₁₀ = suspended particulate matter less than or equal to 10 micrometers in diameter; SO₂ = sulfur dioxide; tpy = tons per year; VOCs = volatile organic compounds

(1) Note: VOCs and NO_x are precursors to the formation of ozone.

In addition to criteria pollutants, hazardous air pollutants (HAPs) regulated under Section 112(b) of the 1990 CAA amendments could result from the Proposed Action. During training and testing, HAPs emissions from the XLUUVs and USVs are primarily emitted from diesel engines. The XLUUVs would primarily be submerged underwater with minimal airborne emissions during training and testing events. For both the XLUUVs and USVs, the bulk of the training and testing would occur offshore and far away from on-land sensitive receptors, resulting in minimal localized health risks. HAP emissions from onshore combustion sources would likewise be minimal due to the small quantity of combustion equipment and limited frequency of training and testing. Therefore, potential impacts from HAPs would be negligible.

The CAA applies to the state territory including coastal waters within 3 nautical miles (nm) of shore. The Study Area includes the areas that are classified as nonattainment areas for ozone including state waters (less than or equal to 3 nm), and areas in federal waters (greater than 3 nm but less than 12 nm) and beyond (greater than 12 nm). CalEEMod, California's OFFROAD2021 emission factors, and engine emission factors taken from the Navy and Military Sealift Command Engine Emission Calculator, and USEPA's Port Emissions Inventory Guidance: Methodologies for Estimating Port-Related and Goods

Movement Mobile Source Emissions (April 2022) were utilized in the emissions estimate. Details on assumptions and resulting emission calculations are provided in Appendix C.

Table 3.1-3 Estimated Annual Air Pollutant Emissions from Training and Testing Activities under the Proposed Action

Distance to Shore	Air Pollutant Emissions (tpy)									
	VOC ¹	CO	NO _x ¹	SO _x	PM ₁₀	PM _{2.5}	CO ₂	CH ₄	N ₂ O	CO _{2e}
Onshore	1.0	3.4	1.4	0.01	0.6	0.2	1466.1	2.6	0.05	1546.9
0 nm - 3 nm	1.0	4.9	16.9	0.00	0.2	0.2	3474.8	0.012	0.19	3531.7
Total Emissions within State Territory	2.0	8.3	18.4	0.01	0.8	0.4	4940.8	2.6	0.2	5078.6
3 nm – 12 nm	1.9	5.7	26.2	0.0	0.2	0.2	3961.0	0.01	0.2	4027.0
>12 nm	5.9	14.0	75.8	0.0	0.4	0.4	9416.9	0.04	0.5	9575.7

Legend: CH₄ = methane; CO = carbon monoxide; CO₂ = carbon dioxide; CO_{2e} carbon dioxide equivalent; NA = Not Applicable; nm = nautical miles; N₂O = nitrous oxide; NO_x = nitrogen oxides; PM_{2.5} = fine particulate matter less than or equal to 2.5 micrometers in diameter; PM₁₀ = suspended particulate matter less than or equal to 10 micrometers in diameter; SO₂ = sulfur dioxide; tpy = tons per year; VOCs = volatile organic compounds

(1) Note: VOCs and NO_x are precursors to the formation of ozone.

Overall emissions from the steady-state training and testing and commuter emissions within 3 nm of shore would be minimal. Emissions of all individual criteria pollutants would be less than 20 tpy.

General Conformity

Table 3.1-4 presents total combined VOC and NO_x annual emissions conservatively assuming maximum overlap of both construction and training and testing emissions. As presented in Table 3.1-5, combined emissions of VOCs and NO_x would not exceed the 50 tpy *de minimis* threshold for General Conformity within 3 nm of shore for either construction activities or subsequent training and testing. As a result, the Proposed Action is exempt from conformity analysis under the CAA. A General Conformity Record of Non-Applicability has been completed and can be found in Appendix C, along with associated air emissions calculations.

Table 3.1-4 Estimated Annual Air Pollutant Emissions from Conservatively Combined Construction and Training and Testing Activities under the Proposed Action

Year	Air Pollutant Emissions (tpy)	
	VOC ¹	NO _x ¹
2026 (Construction + Maximum Training and Testing)	2.0	17.8
2027 (Construction + Maximum Training and Testing)	1.9	17.6
2028 (Construction + Maximum Training and Testing)	1.9	17.5
2029 (Construction + Maximum Training and Testing)	2.2	16.9
Training and Testing	1.8	16.2
<i>De Minimis</i> Threshold	50	50
Exceeds <i>De Minimis</i> Threshold?	No	No

Legend: NO_x = nitrogen oxides; tpy = tons per year; VOCs = volatile organic compounds

(1) Note: VOCs and NO_x are precursors to the formation of ozone.

Greenhouse Gases

Implementation of the Proposed Action would contribute directly to emissions of GHGs from the combustion of fossil fuels during temporary construction and would predominately be from mobile

source combustion when training and testing occur. When compared to the No Action Alternative in future years, the Proposed Action would result in slightly increased GHG emissions.

GHG's climate change effects are felt locally and regionally now. However, climate change effects experienced at local and regional levels are not the direct result of the Proposed Action's contributions, but the result of cumulative and global contributions unlike other air pollutants. Each emission source makes a relatively small contribution to global atmospheric GHG concentrations.

Future global GHG emission reductions will be affected by many factors but cannot be accurately accounted for at this time. Changes to air quality regulations, technologies that could improve fuel combustion efficiencies, changes to fuels and to how vessels or equipment are powered, etc. will affect GHG emissions. Nonetheless, the Navy Climate Action 2030 Plan commits to the GHG reduction goals of achieving a carbon pollution-free electricity sector by 2035 and net-zero emissions economy-wide by 2050 established in Executive Order (EO) 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability*, and provides measures that help reduce GHG emissions such as measuring and evaluating GHG emissions of tactical systems at a platform level in the acquisition process. In 2022 alone, the Navy and its partners made significant progress toward the initiatives outlined in the 2030 plan on implementation of energy efficiency, demand reduction, and operational improvements. The achievements include planting approximately 600,000 trees, ordering 1,000 electric vehicles, awarding three new microgrid projects, and achieving 6 percent reduction in purchased electricity between 2021 and 2022. These actions would contribute in the long-term to a meaningful cumulative reduction when considered across the Navy future programs, and they are consistent with both the Ventura County and State of California long-term GHG reduction plans to achieve the below goals as cited in the 2018 Ventura County 2040 General Plan Final Environmental Impact Report.

Ventura County:

- 41 percent below 2015 levels by 2030
- 61 percent below 2015 levels by 2040
- 80 percent below 2015 levels by 2050

State of California:

- 40 percent below 1990 levels in 2030
- 80 percent below 1990 levels by 2050

In addition to reducing GHG emissions to address climate change, the Navy is also addressing effects of climate change on infrastructure design to strengthen and prevent damage from climate change. Globally, climate change is expected to result in an increase in precipitation, rising temperatures and sea levels, and more intense storm surges. Flooding, storm surges, and erosion can damage building structures and adversely impact material transporting and commuting associated with training and testing.

3.1.3.3 Summary

Implementation of the Proposed Action would not result in significant impacts to air quality. Anticipated air quality impacts from construction, and training and testing activities are not expected to impact the attainment of NAAQS. Estimated GHG emission increases over the construction period and during training and testing would not be large enough to impact the attainment of Department of Defense (DoD) and Federal GHG goals.

3.2 Water Resources

This discussion of water resources includes groundwater, surface water, marine waters, wetlands, and floodplains (Table 3.2-1). Water resources include both natural and human-created sources of water that allow for both human and environmental benefits.

Table 3.2-1 Definition and Description of Water Resources

Water Resource	Definition/Description
Groundwater	Comprises the subsurface hydrologic resources of the physical environment and is an essential resource in many areas. Groundwater is commonly used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater characteristics are often described in terms of depth to aquifer, aquifer or well capacity, water quality, and surrounding geologic composition.
Surface Water	Comprised of lakes, rivers, and streams. These are important for a variety of reasons including ecological, economic, recreational, aesthetic, and human health.
Marine Water	Typically includes estuaries, waters seaward of the historic height of tidal influence, and offshore high-salinity waters. Marine water quality is described as the chemical and physical composition of the water and how it is affected by natural events and human influence. Additionally, marine waters include areas within a National Marine Sanctuary that require a federal agency to avoid water quality contamination and to avoid potential damage to sensitive resources within the sanctuary (Refer to Section 3.4 for further discussion of National Marine Sanctuaries).
Wetlands	Jointly defined by USEPA and USACE as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” Wetlands generally include “swamps, marshes, bogs and similar areas.”
Floodplains	Areas of low, level ground present along rivers, stream channels, or coastal waters that are subject to periodic or infrequent inundation because of rain or melting snow. EO 11988, <i>Floodplain Management</i> , requires federal agencies to determine whether a Proposed Action would occur within a floodplain and to avoid floodplains to the maximum extent possible wherever there is a practical alternative. A 100-year flood is a flood event having a 1 percent chance of being equaled or exceeded in any given year. A 500-year flood is a flood event having a 0.2 percent chance of being equaled or exceeded in any given year. Both 100-year and 500-year floodplains are designated as Special Flood Hazard Areas by FEMA.

Legend: EO = Executive Order; FEMA = Federal Emergency Management Agency; USACE = U.S. Army Corps of Engineers; USEPA = U.S. Environmental Protection Agency

3.2.1 Regulatory Setting

The Safe Drinking Water Act is the federal law that ensures safe water quality for public drinking water supplies throughout the nation. The USEPA regulates groundwater quality and quantity under several statutes and regulations, including the Safe Drinking Water Act.

The Clean Water Act (CWA) establishes federal limits through the National Pollutant Discharge Elimination System (NPDES) program based on the amounts of specific pollutants that can be discharged into surface waters to restore and maintain the chemical, physical, and biological integrity of the water. The NPDES program regulates the discharge of point (i.e., end of pipe) and nonpoint sources (e.g., stormwater) of water pollution. The CWA requires that California establish a Section 303(d) list to identify impaired waters and establish total maximum daily loads for the sources causing the

impairment. Under Section 401 of the CWA, a federal agency may not issue a permit or license to conduct any activity that may result in any discharge into waters of the United States (WOTUS) unless a Section 401 Water Quality Certification is issued, or certification is waived. States and authorized tribes where the discharge would originate are generally responsible for issuing water quality certifications.

The California NPDES stormwater program requires construction site operators engaged in clearing, grading, and excavating activities that disturb one acre or more to obtain coverage under an NPDES Construction General Permit for stormwater discharges. Construction or demolition that necessitates an individual permit also requires preparation of a Notice of Intent to discharge stormwater and a Stormwater Pollution Prevention Plan (SWPPP) that is implemented during construction. As part of the 2010 Final Rule for the CWA, titled *Effluent Limitations Guidelines and Standards for the Construction and Development Point Source Category* (as modified by the 2014 Final Rule for the CWA titled *Revision to the Construction and Development Effluent Guidelines*), activities covered by this permit must implement non-numeric erosion and sediment controls and pollution prevention measures.

Wetlands are currently regulated by USEPA and the U.S. Army Corps of Engineers (USACE) under Section 404 of the CWA as a subset of all WOTUS. WOTUS are defined as (1) territorial seas and traditional navigable waters, (2) tributaries, (3) certain lakes, ponds, and impoundments, and (4) adjacent wetlands. Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredge or fill into wetlands and other WOTUS. Any discharge of dredge or fill into WOTUS requires a permit from USACE (USEPA and USACE 2020). EO 11990, *Protection of Wetlands*, requires that federal agencies adopt a policy to avoid, to the extent possible, long- and short-term adverse impacts associated with destruction and modification of wetlands and to avoid the direct and indirect support of new construction in wetlands whenever there is a practicable alternative.

Section 438 of the Energy Independence and Security Act establishes stormwater design requirements for development and redevelopment projects. Under these requirements, federal facility projects larger than 5,000 square feet (SF) must “maintain or restore, to the maximum extent technically feasible, the pre-development hydrology of the property with regard to the temperature, rate, volume, and duration of flow.”

EO 11988, *Floodplain Management*, requires federal agencies to avoid, to the extent possible, long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development unless it is the only practical alternative. The flood potential of a site is usually determined by the 100-year floodplain, which is defined as the area that has a 1 percent chance of inundation by a flood event in a given year.

3.2.2 Affected Environment

The following discussion provides a description of the existing conditions for each of the categories analyzed as water resources at NBVC Port Hueneme, in Port of Hueneme Harbor, and offshore waters in the Nearshore Proposed Action Area and Offshore Proposed Action Area.

3.2.2.1 Groundwater

NBVC Port Hueneme is in the Oxnard Plain, a subbasin of the Santa Clara River Valley Basin. Underlying the Oxnard Plain is a substantial aquifer system that is the primary source of water for the region’s population, used for urban and agricultural purposes (NBVC Port Hueneme 2019). Groundwater in the Oxnard Plain is primarily managed by the United Water Conservation District. The United Water

Conservation District oversees groundwater pumping, facilitates recharge efforts, and provides drinking water to cities and urban areas in the Oxnard Plain (United Water Conservation District 2023). At NBVC Port Hueneme, the dominant groundwater flow direction is toward the southwest, though site-specific groundwater gradients are influenced by tidal effects (NBVC Port Hueneme 2019). Saltwater intrusion has impacted the Oxnard Plain Aquifer and is shown to have intruded the aquifer inland as far as Hueneme Road (Fox Canyon Groundwater Management Agency 2019).

3.2.2.2 Surface Water

The primary surface water features at NBVC Port Hueneme include four drainage channels, a tidal channel, wetlands at the northwestern corner of the base, and Port Hueneme Harbor. There are no natural streams on the installation (Figure 3.2-1) (NBVC Port Hueneme 2019).

Impermeable building and pavement surfaces cover most of the base, resulting in a high amount of surface runoff during storms. Surface water flow at the installation is in response to intermittent seasonal precipitation. Except for the northernmost portion of the base, stormwater runoff ultimately discharges into the Port of Hueneme Harbor, conveyed through a network of drainage channels that parallel roadways and intercept overland flows (NBVC Port Hueneme 2019). Stormwater in the northern portion of the base drains off-site into Channel Islands Harbor through the Channel Island Boulevard Canal immediately north of the base. NBVC Port Hueneme drainage channels carry surface water through the base from surrounding urban and agricultural land use discharges. The surface waters draining into NBVC Port Hueneme from surrounding agricultural lands are highly mineralized, meaning they contain many minerals collected from surrounding urban and agricultural uses (NBVC Port Hueneme 2019). NBVC Port Hueneme has a stormwater conveyance system that includes open channels, catch basins, curb inlets, culverts, and underground pipes. Port Hueneme complies with the General Permit for Storm Water Discharges Associated with Industrial Activities, the Construction General Permit, and the Phase II Small Municipal Separate Storm Sewer Systems General Permit and associated SWPPP (NBVC Port Hueneme 2019).

3.2.2.3 Marine Waters

The Port of Hueneme Harbor is currently on the CWA 303(d) list for arsenic, dichlorodiphenyltrichloroethane (more commonly known as DDT), dieldrin, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs) (State Water Resources Control Board 2020). Of these pollutants, only PAHs, arsenic, and dieldrin must adhere to the total maximum daily loads limit. As mentioned above, surface runoff at NBVC Port Hueneme is transported to the Port of Hueneme Harbor, and eventually to the Pacific Ocean via a system of drainage ditches and natural channels. Therefore, urban runoff is not treated before being discharged off-base.

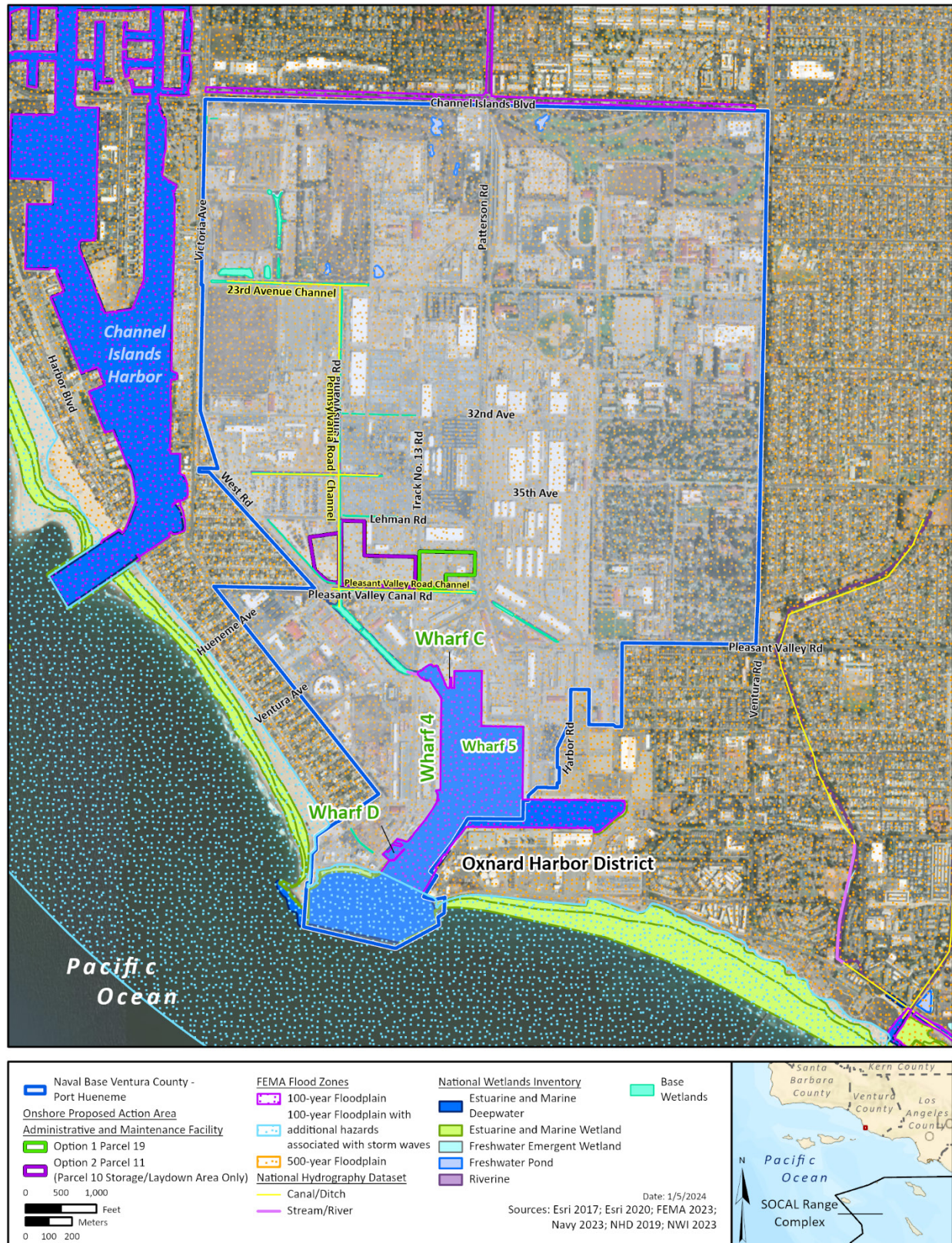


Figure 3.2-1 Surface Water Features at NBVC Port Hueneme

3.2.2.4 Wetlands

Jurisdictional wetlands, as defined under Section 404 of the CWA, were formally delineated at NBVC Port Hueneme by USACE in 2007 according to protocol set forth in the 1987 Corps of Engineers Delineation Manual (USACE 1987), Arid West Supplement (USACE 2008), and Rapanos Guidance (USACE 2007). The 12.45 acres of formally delineated jurisdictional wetlands at NBVC Port Hueneme largely consist of drainage channels that empty into traditional navigable waters and the arroyo willow thicket habitat north of the 23rd Avenue Channel, in the northwest portion of the installation (Figure 3.2-1). The majority of these wetlands are located on the western side of the installation, some of which are located within the canal/ditches on the installation. There is one wetland habitat located just outside the southern edge of Parcel 19 within the draining canal/ditch.

On August 29, 2023, the USEPA issued a final rule to amend the January 2023 Rule, to conform the definition of “WOTUS” to the Supreme Court’s decision in the case of *Sackett v. Environmental Protection Agency*. The rule became effective on September 8, 2023 upon publication in the Federal Register.

3.2.2.5 Floodplains

Within NBVC Port Hueneme, there is potential flooding from overflow of natural watercourses and manmade drainage systems due to excessive stormwater runoff or high tides. The tide gate at the intersection of the Pennsylvania Road Channel and Pleasant Valley Canal Road Channel prevents tidal water from backing up into the drainage channels. However, when extreme high tides coincide with a major storm, some flooding may occur in the drainage channels (NBVC Port Hueneme 2019). Primary flood areas are in the western portion of the base. The Federal Emergency Management Agency (FEMA) 100-year flood zone and 500-year floodplain are shown on Figure 3.2-1. The 100-year flood zone in NBVC Port Hueneme includes Port Hueneme Harbor, the flood control channels, and Surface Warfare Engineering Facility (SWEF) Beach (FEMA 2021). The remaining majority of the installation is within the 500-year floodplain (FEMA 2010).

Water Resources Potential Impacts:

- No Action: The Proposed Action would not be implemented and there would be no significant impacts to water resources.
- Proposed Action: Impacts to groundwater, surface water, marine waters, wetlands, and floodplains associated with implementation of the Proposed Action would not be significant, and all impacts and potential impacts to wetlands and WOTUS would be further minimized through the use of BMPs. Therefore, implementation of the Proposed Action would not result in significant impacts to water resources.

3.2.3 Environmental Consequences

This analysis of water resources includes the potential impacts on groundwater, surface water, marine waters, wetlands, and floodplains. Groundwater analysis focuses on the potential for impacts to the quality, quantity, and accessibility of the water. The analysis of surface water quality considers the potential for impacts that may change the water quality, including both improvements and degradation of current water quality. Marine waters analysis includes potential changes to physical and chemical characteristics. The impact assessment of wetlands considers the potential for impacts that may change the local hydrology, soils, or vegetation that support a wetland. The analysis of floodplains considers if any new construction is proposed within a floodplain or may impede the functions of floodplains in conveying floodwaters.

3.2.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to existing water resources. Therefore, no significant impacts to water resources would occur with implementation of the No Action Alternative.

3.2.3.2 Proposed Action

The Study Area for the analysis of effects to water resources associated with the Proposed Action includes waters within the project area as well as any adjacent or downstream water resources that may be affected by the Proposed Action.

Parcel 19

Onshore Proposed Action Area

Groundwater

The construction of the facilities associated with the implementation of the Proposed Action at Parcel 19 would not increase the impervious area located on NBVC Port Hueneme because Parcel 19 is already paved concrete. Stormwater management, landscaping zones, and low impact development methodologies, such as pervious pavements, would be implemented to reduce the final impervious cover of the Proposed Action. Stormwater BMPs would be implemented to maintain existing runoff rates at the project site. Stormwater management strategies would also include discharging roof drainage to grade and providing biofiltration swales in the open landscape areas to capture and filter stormwater. With implementation of low impact development methods and BMPs in the project areas, no significant net reduction of infiltration and recharge capacity is likely to occur.

None of the construction activities associated with the Proposed Action would extend below ground surface to a depth that would affect the underlying aquifer, as the depth to groundwater at NBVC Port Hueneme is between 25 and 100 ft (California Department of Water Resources 2023). BMPs identified in NBVC Port Hueneme's SWPPP for industrial activities would be implemented to contain any spill of hazardous substances and minimize the potential for contamination.

No impacts to aquifers or any other form of groundwater would be expected to occur from the Proposed Action. Therefore, implementation of the Proposed Action would not result in significant impacts to groundwater.

Surface Water

During construction activities, runoff associated with site improvements would likely increase local turbidity in the receiving waters of Port Hueneme Harbor. Local turbidity would be reduced with implementation of general construction BMPs (e.g., wetting soils, silt fencing, and detention basins) and with strict adherence to the Navy's erosion control and stormwater management practices. In addition, the stormwater management system would include pervious pavement for parking and walkways and subsurface detention chambers to prevent ponding. Construction activities associated with the Proposed Action are not expected to influence water quality nor affect uses of surface water.

The Navy would be required to obtain permit coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit; NPDES Permit No. CAS0000002) prior to implementation of construction activities associated

with the Proposed Action. In addition, the Navy would require a Water Quality Certification (per Section 401 of the CWA) prior to construction of facilities at Parcel 19.

Under the Proposed Action at Parcel 19, there would be no increase in impervious surfaces at NBVC Port Hueneme. The Navy is required to maintain pre-development hydrology according to Section 438 of the Energy and Independence Security Act (refer to Section 3.2.1). Stormwater runoff due to increased impervious surface area would be managed by NBVC Port Hueneme's SWPPP for industrial activities, and there would be no downstream impacts. Therefore, no significant impacts on water quality or surface water bodies would be expected from implementation of the Proposed Action at Parcel 19.

Marine Waters

Construction activities associated with the Proposed Action are not expected to influence marine water quality or affect uses of surface water. Implementation of the measures outlined above relative to permitting and BMPs identified in NBVC Port Hueneme's SWPPP for surface waters would prevent sedimentation and the introduction of pollutants to Port Hueneme Harbor and the Pacific Ocean as well as prevent violations of applicable regulations and standards. Therefore, implementation of the Proposed Action would not result in significant impacts to marine waters.

Wetlands

There are no identified wetlands within Parcel 19 where the proposed construction activities would be located. There is one small wetland identified by the installation just to the south of the parcel, but no construction activities would be conducted within the wetland. With implementation of standard BMPs and management strategies outlined in the NBVC Port Hueneme Integrated Natural Resources Management Plan (INRMP), any proposed construction activities located proximate to these wetlands would be minimized. Therefore, implementation of the Proposed Action would not result in significant impacts to wetlands.

Floodplains

The location of NBVC Port Hueneme makes the installation susceptible to flooding issues during storm events and impacts from sea level rise. The installation is within a 500-year floodplain (0.2 percent annual flood risk zone). The National Oceanic and Atmospheric Administration (NOAA) intermediate sea level rise prediction of a 3.15-foot rise in sea level by 2100 (NOAA 2022) could create a situation of chronic flooding and periods of inundation that could impact the installation.

The project areas for the proposed development at Parcel 19 would occur within the 500-year floodplain as shown in Figure 3.2-1. The Navy has determined that there is no practical alternative to implementing the construction activities associated with the Proposed Action in the floodplain.

Implementation of the Proposed Action would be consistent with regulations associated with EO 11988, *Floodplain Management*. Measures associated with flood proofing and flood protection would be implemented at the proposed project location, such as elevating critical equipment (e.g., electrical supply and hazardous materials and wastes) 1 to 2 ft above the base flood elevation (10.5 ft) for flood protection and stormwater management according to Section 438 of the Energy Independence and Security Act and Ventura County's stormwater management regulations. Specific design parameters, data, and stormwater calculations would be further developed during the design process, and stormwater management facilities would be designed to maintain or improve upon the pre-development drainage runoff characteristics. Stormwater detention would be sized for the 100-year storm event per Ventura County stormwater management requirements. These measures in addition to

existing storm drains, retaining walls, and berms at NBVC Port Hueneme would minimize flood hazards. Therefore, the Proposed Action would be consistent with EO 11988, *Floodplain Management*, and no significant impacts to floodplains would occur with the implementation of the Proposed Action at Parcel 19.

Parcel 11

If the Proposed Action was implemented at Parcel 11, the impacts to groundwater, marine waters, wetlands, and floodplains would be similar to those described above for Parcel 19. Parcel 11 would have the same impacts to the 500-year floodplain as those described for Parcel 19 above.

Implementing the Proposed Action at Parcel 11 would require the paving of Parcel 10, as described in Chapter 2, creating an additional 5.24 acres of impervious surfaces. Stormwater runoff due to increased impervious surface area would be managed by NBVC Port Hueneme's SWPPP for industrial activities, and there would be no downstream impacts. During construction, BMPs would be implemented, as described for Parcel 19, to reduce runoff from construction activities. The Navy would also require the necessary permits outlined above for Parcel 19 for proposed construction activities. Therefore, no significant impacts on water quality or surface water bodies would be expected from implementation of the Proposed Action at Parcel 11.

Nearshore and Offshore Proposed Action Areas

Marine Waters and Wetlands

Proposed training and testing activities would occur at the NBVC Port Hueneme Wharf, Port Hueneme Harbor, and offshore areas. The types of activities that have the potential to impact marine water quality and wetlands include vehicle washing and cooling nearshore and fueling and oil loading of XLUUVs nearshore and at sea. Any vehicle being washed in the wash rack would not discharge wash water to surrounding waters, and National Pollutant Discharge Elimination System (NPDES) permits would not be required.

Proposed training and testing activities would occur pierside, within the Port of Hueneme (which is designated as an estuarine and marine deep-water wetland), and in offshore areas labeled as the Nearshore Proposed Action Area and Offshore Proposed Action Area. Though no construction would occur within the estuarine and marine deep-water wetland, training and testing activities require fueling and oil loading to the XLUUVs/USVs. Any potential spills from prepping the XLUUV/USV prior or post-training and testing activities would be minimized through standard operating procedures (SOPs) for this type of in-water fueling. Additionally, any and all BMPs identified in the Navy SOP for in-water fueling would be implemented to prevent any such spills in nearshore or offshore areas. Training and testing activities would include the use of recoverable and non-recoverable training shapes, as described in Section 2.1.3. The non-recoverable training shapes are made mainly of non-reactive or slowly reactive materials that break down or decompose into benign byproducts (e.g., steel and concrete). The minimal number of training shapes that are not recovered would settle to the seafloor where they would (1) be exposed to seawater, (2) become lodged in or covered by seafloor sediments, (3) become encrusted by oxidation products such as rust, (4) dissolve slowly, or (5) be covered by marine organisms such as coral (U.S. Department of the Navy 2018). Consultation with USACE and the California Regional Water Quality Control Board would occur, as appropriate, to obtain the necessary permits (i.e., Sections 404 and 401 of the CWA) prior to implementation of the Proposed Action. Therefore, the project would be consistent with EO 11990, *Protection of Wetlands* and implementation of the Proposed Action would not result in significant impacts to marine waters and wetlands.

3.3 Noise

Noise is defined as unwanted or annoying sound that interferes with or disrupts normal human activities. Although continuous and extended exposure to high noise levels (e.g., through occupational exposure) can cause hearing loss, the principal human response to noise is annoyance. The response of different individuals to similar noise events is diverse and is influenced by the type of noise, perceived importance of the noise, its appropriateness in the setting, time of day, type of activity during which the noise occurs, and sensitivity of the individual. Underwater noise from XLUUV and USV training and testing is addressed in Section 3.4.

3.3.1 Basics of Sound and Noise Metrics

The decibel (dB) is a logarithmic unit used to represent the intensity of a sound, also referred to as the sound level. To mimic the human ear's non-linear sensitivity and perception of different frequencies of sound, the spectral content is weighted. Thus, the A-weighted noise scale is used for measurements and standards involving the human perception of noise. In this analysis, all noise levels are A-weighted and "dBA" refers to the A-weighted decibel.

A metric is a system for measuring or quantifying a particular characteristic of a subject. Since noise is a complex physical phenomenon, different noise metrics help to quantify the noise environment. The noise metrics (equivalent sound level [Leq] and maximum sound level [Lmax]) are used to complete the analysis in this EA/OEA. Additional discussion on the definitions of noise and noise metrics are presented in Appendix C.

3.3.2 Regulatory Setting

Navy regulations do not establish specific quantitative noise impact significance thresholds, but instead require that impacts be assessed in terms of the potentially affected environment and degree pursuant to the definition of significance in the CEQ regulations.

3.3.2.1 City of Port Hueneme

The City of Port Hueneme established criteria for exterior noise level standards that are useful as a point of reference. The Port Hueneme Municipal Code Section 3430 establishes allowable noise levels for properties within designated noise zones (Table 3.3-1). However, the city's Noise Ordinance does not have noise standards related to construction noise but contains construction activity parameters addressing the day of week and time of day such activities are permissible.

Table 3.3-1 Port Hueneme Municipal Code Exterior Noise Level Standards

Designated Zone		Time Intervals	Exterior Noise Level (dBA Leq)
Noise Zone 1	Noise sensitive Properties	7 a.m. to 10 p.m.	55
		10 p.m. to 7 a.m.	50
Noise Zone 2	Residential Properties	7 a.m. to 10 p.m.	55
		10 p.m. to 7 a.m.	50
Noise Zone 3	Commercial Properties	Anytime	65
Noise Zone 4	Industrial Properties	Anytime	70

Source: City of Port Hueneme 2021a

Legend: dBA = A-weighted decibel; Leq = equivalent sound level

3.3.2.2 City of Oxnard

The City of Oxnard has also adopted a Noise Ordinance (Oxnard City Code Chapter 7, Article XI), which identifies noise standards for various sources, specific noise restrictions, exemptions, and variances for sources of noise within the city (Table 3.3-2). The city's Noise Ordinance does not have noise standards related to construction noise but contains construction activity parameters addressing the day of week and time of day such activities are permissible.

Table 3.3-2 City of Oxnard Noise Standards

Sound Zone	Type of Land Use	Time of Day	
		7 a.m. to 10 p.m.	10 p.m. to 7 a.m.
Allowable Exterior Noise Level			
I	Residential	55 dBA	50 dBA
III	Commercial	65 dBA	60 dBA
III	Industrial	70 dBA	70 dBA
IV	As defined in the 2020 General Plan		
Allowable Interior Noise Level			
All	Residential	50 dBA	45 dBA

Source: City of Oxnard, Oxnard City Code Chapter 7, Article XI

Legend: dBA = A-weighted decibel

3.3.3 Affected Environment

3.3.3.1 Naval Base Ventura County Port Hueneme Noise Environment

Port Hueneme Harbor is a Joint Use Port shared between NBVC Port Hueneme and the Oxnard Harbor Authority and is bordered by both the City of Port Hueneme and City of Oxnard. Contributing noise levels within the port include barge and tugboat engines, shipping container handling equipment (both stationary and mobile), tractor trailers, and intermittent boat whistles. Additionally, the Ventura County Railroad bisects NBVC Port Hueneme and is used for the transfer of port cargo.

The Port Hueneme Municipal Code definition of noise sensitive properties is utilized in this EA/OEA as all permitted and conditional uses allowed within residential and park reserve zones. Permitted and conditional uses in the residential zone consist of the following: residential, parks, residential care, child/elder care facilities, schools, community centers, clubs, places of worship, hospitals and medical

offices, government/public facilities, harbor-related warehousing/science/research, and mixed commercial and residential uses. Permitted and conditional uses in the park reserve zone include public parks, recreational buildings and facilities, public parking, community centers, assembly buildings for public and private use, and commercial uses and buildings where incidental or accessory to any of these uses.

The nearest on-base noise sensitive locations to either proposed development at Parcel 19 or Parcel 11 include the fire station and military housing along the eastern side of NBVC Port Hueneme. The nearest off-base noise sensitive locations are residences in the cities of Oxnard and Port Hueneme at a distance of 475 ft and 2,520 ft, respectively.

3.3.4 Environmental Consequences

Analysis of potential noise impacts includes estimating likely noise levels from the Proposed Action and determining potential effects to sensitive receptor sites. The potential impacts of the Proposed Action at NBVC Point Hueneme were assessed by considering Leq and Lmax for both construction and training and testing and modeled using the Federal Highway Administration's Roadway Construction Noise Model 1.0.

3.3.4.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to existing noise levels. Therefore, no significant impacts to noise would occur with implementation of the No Action Alternative.

Noise Potential Impacts:

- No Action: Noise levels would not change from baseline, and therefore, would not result in significant impacts.
- Proposed Action: Noise levels from short-term construction of facilities and from XLUUV and USV operations would not significantly impact the environment.

3.3.4.2 Proposed Action

The Proposed Action would include construction of permanent facilities at NBVC Port Hueneme to support XLUUV and USV training and testing, maintenance, and administrative needs. The Study Area for noise through implementation of the Proposed Action includes the noise sensitive locations within NBVC Port Hueneme and the cities of Port Hueneme and Oxnard that are adjacent to the base.

Potential Impacts

Construction Activity

Construction activity associated with the Proposed Action in support of XLUUV and USV training and testing at NBVC Port Hueneme would be completed within the boundary of either Parcel 19 or Parcel 11.

The nearest on-base and off-base sensitive receptors and short-term construction noise levels are presented in Table 3.3-3. These construction noise levels would be noticeable and could potentially interfere with speech and cause annoyance. However, construction noise levels inside a building would be attenuated by the structure itself, by approximately 10-28 dBA depending on whether the windows were open or closed (Locher et al. 2018). The noise contours associated with construction equipment noise levels are depicted in Figure 3.3-1.

Table 3.3-3 Construction Noise Levels at Sensitive Noise Locations

Location	Parcel 19			Parcel 11		
	Distance from Construction	Lmax	Leq	Distance from Construction	Lmax	Leq
NBVC Fire Station	50 ft	90 dBA	87 dBA	620 ft	68 dBA	65 dBA
On-base Residential (East)	1,833 ft	59 dBA	56 dBA	2,660 ft	56 dBA	52 dBA
City of Oxnard Residential (West)	1,560 ft	60 dBA	57 dBA	475 ft	71 dBA	67 dBA
City of Port Hueneme Residential (Southeast)	2,520 ft	56 dBA	53 dBA	3,110 ft	54 dBA	51 dBA

Source: Federal Highway Administration 2006

Legend: dBA = A-weighted decibel; ft = feet; Leq = equivalent sound level; Lmax = maximum sound level; NBVC = Naval Base Ventura County

Neither the City of Oxnard nor Port Hueneme have noise level threshold criteria associated with construction noise but within their Noise Ordinance, limit construction activities to the time of day and day of the week. Given that the Proposed Action would occur on federal property such noise ordinances would not apply. Both on- and off-base noise sensitive receptors would be exposed to intermittent periods of increased noise during construction activities occurring sporadically over a period of three years (Figures 3.3-1 and 3.3-2). Construction based noise levels would be similar to activities that currently occur at an active port and within industrial land use. Construction BMPs defined in Table 2.5-1 would be implemented to the extent possible to reduce construction noise to nearby sensitive receptors. Implementation of the Proposed Action at either of the proposed development parcels would result in no significant impacts to sensitive receptors from construction-related noise. Pierside training and testing at either Wharf 4 or 5 would include various systems checks and would require the use of generators for up to 60 minutes several times a week. The Lmax and Leq would be identical given the assumption that the generator would be operating for the entire 60 minutes. With the assumption that an operating generator has a noise level of 82 Lmax at 50 ft, the outdoor areas of the NBVC Fire Station and nearest on-base residences would experience Lmax/Leq of 55 dBA and 48 dBA, respectively, from operations at either Wharf 4 or Wharf 5. Using the wharf nearest the off-base residences (i.e., Wharf 4 for Oxnard residences and Wharf 5 for Port Hueneme residences), generators would be located at a distance of approximately 925 ft and 1,410 ft to residences within the City of Oxnard and City of Port Hueneme, respectively. Therefore, outdoor noise levels at these residences within the City of Oxnard would be an Lmax/Leq of 57 dBA and an Lmax/Leq of 52 dBA to the residences within the City of Port Hueneme.

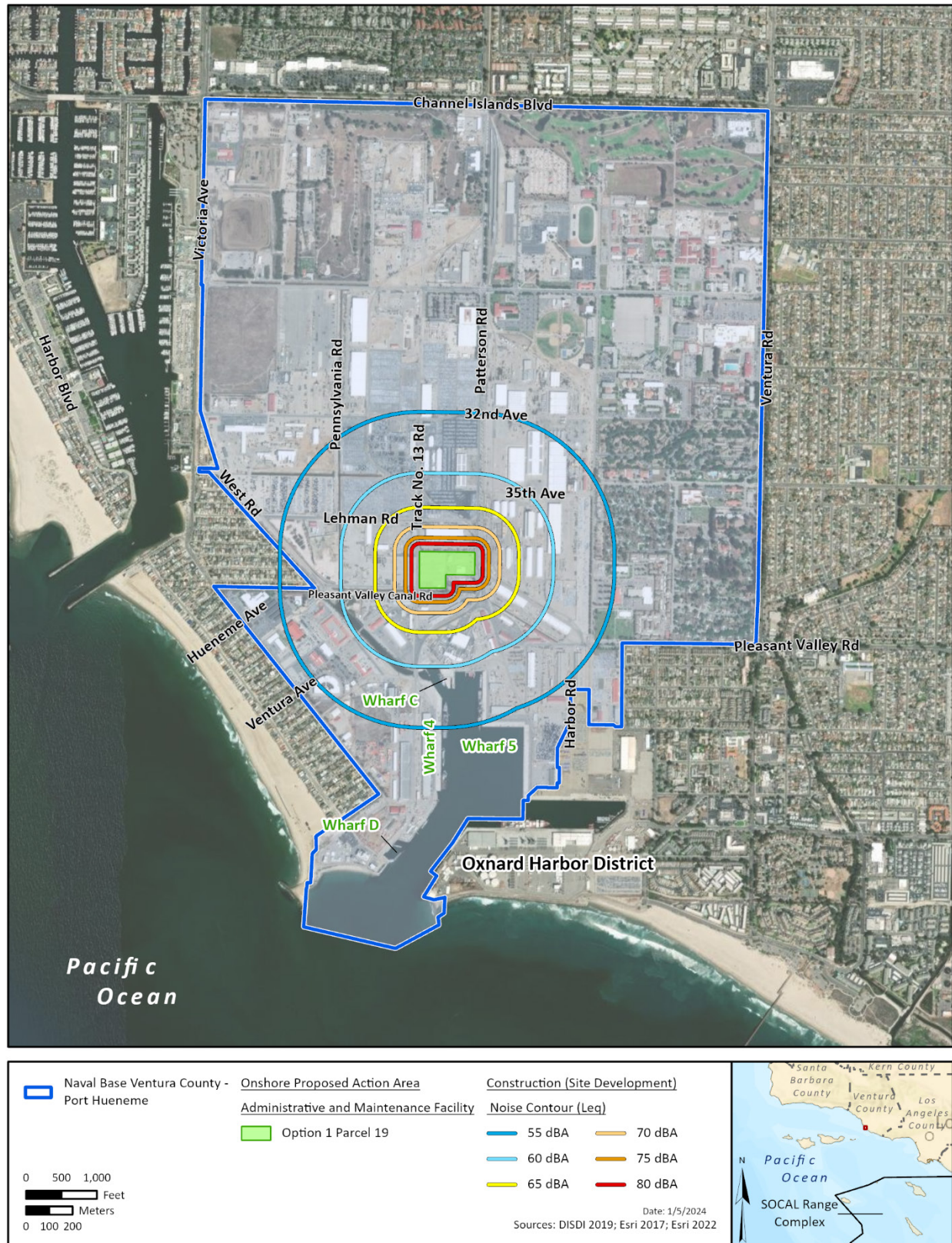


Figure 3.3-1 Construction Noise Levels (Leq) at Parcel 19

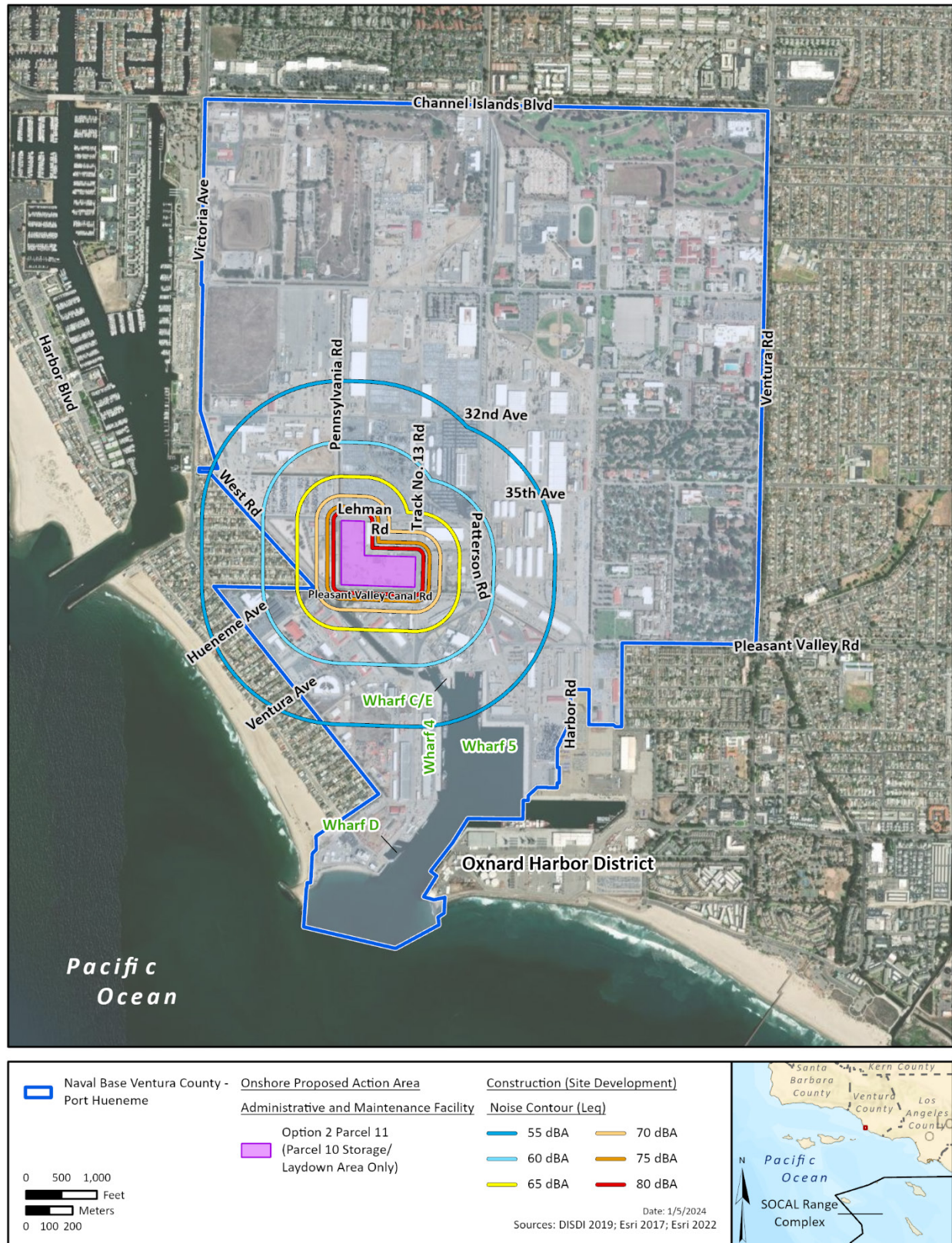


Figure 3.3-2 Construction Noise Levels at Parcel 11

The XLUUVs and USVs would be brought to NBVC Port Hueneme by truck on public roads. Noise levels associated with delivery of the XLUUV and USV to NBVC Port Hueneme would be similar to daily semi-tractor trailer operations that occur to and from the port and along similar roadways where an Lmax of 85 dBA at 50 ft from the roadway centerline would be expected per pass by.

It is estimated that 165 additional personnel would travel daily to NBVC Port Hueneme under the Proposed Action. The additional personnel trips would negligibly increase traffic noise levels along major and secondary arterials surrounding the installation based on the dispersed nature of routes to the three gate entrances.

Deployment of the XLUUVs and USVs would include delivery via Land Transport Vehicle from NBVC Port Hueneme to NBVC Point Mugu and subsequent air travel from NBVC Point Mugu to mission or deployment locations. Noise levels associated with deployment of the XLUUVs and USVs from NBVC Port Hueneme to NBVC Point Mugu would be similar to daily semi-tractor trailer operations that occur to and from the port and along similar roadways, where an Lmax of 85 dBA at 50 ft from the roadway centerline would be expected per pass by.

Therefore, implementation of the Proposed Action would not result in significant noise impacts from roadway vehicles associated with delivery or deployment of the XLUUVs and USVs or personnel to support training and testing activities.

For this analysis, noise estimates associated with watercraft of similar size (small- and mid-sized boats, fire boats, and public security boats) and speeds (up to 5 knots) with an Lmax of 84 dBA at 25 ft were utilized to determine anticipated noise levels of XLUUV, USV, and support watercraft (Bernardini et al. 2019). Noise levels at sensitive noise locations associated with XLUUV and USV training and testing activities are presented in Table 3.3-4. Both XLUUV and USV training and testing would not exceed the City of Port Hueneme's daytime noise level standards but would exceed the criteria established for nighttime. Within the City of Oxnard, both XLUUV and USV training and testing would exceed the noise level standards for the daytime and nighttime periods. However, these noise levels would occur only 24 times annually (20 day and 4 night) for short periods of time as the XLUUV, USV, and supporting watercraft exit or enter the port. Training and testing noise levels would be less than the typical watercraft utilizing the port (e.g., tug boats, cargo ships).

Table 3.3-4 Training and Testing Noise Levels at Sensitive Noise Locations

Location	Distance	Offshore Training and Testing (XLUUV/USV)		Pierside Training and Testing		Transport ¹
		XLUUV	USV	Lmax	Leq	
		Lmax	Lmax			Lmax
NBVC Fire Station	50 ft					85 dBA
	1,160 ft	57 dBA	54 dBA	55 dBA	55 dBA	
On-base Residential (East)	2,000 ft					53 dBA
	2,410 ft	50 dBA	47 dBA	48 dBA	48 dBA	
City of Oxnard Residential (West)	470 ft					66 dBA
	925 ft	59 dBA	56 dBA	57 dBA ⁽²⁾	57 dBA ⁽²⁾	
City of Port Hueneme Residential (Southeast)	1,700 ft					54 dBA
	1,410 ft	55 dBA	52 dBA	52 dBA ⁽³⁾	52 dBA ⁽³⁾	

Legend: dBA = A-weighted decibel; ft = feet; Leq = equivalent sound level; Lmax = maximum sound level; NBVC = Naval Base Ventura County; USV = Unmanned Surface Vessel; XLUUV = Extra Large Unmanned Undersea Vehicle

(1) Note: Assumes transport from either parcel closest to that receptor.

(2) Note: Generator at closest wharf to receptor, Wharf 4.

(3) Note: Generator at closest Wharf to receptor, Wharf 5.

Under the Proposed Action, no significant impacts from noise related to maintenance or training and testing of XLUUV or USV would occur. All maintenance and training and testing associated with the Proposed Action would be consistent with existing port operations and result in a negligible increase in overall activities at the port. Noise sensitive receptors on-base would not experience a discernible difference in the port's noise environment and off-base receptors would experience no discernible difference when compared to existing noise levels.

3.4 Biological Resources

Biological resources include living, native, or naturalized plant and animal species and the habitats within which they occur. Plant associations are referred to generally as vegetation, and animal species are referred to generally as wildlife, both of which include terrestrial and marine species. Habitat can be defined as the resources and conditions present in an area that support plants and wildlife.

Within this EA/OEA, biological resources are divided into six categories: (1) terrestrial vegetation, (2) terrestrial wildlife, (3) marine vegetation and invertebrates, (4) marine wildlife (fish and marine mammals), (5) federal Endangered Species Act (ESA)-listed species, and (6) Essential Fish Habitat (EFH). Species afforded federal protection under the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Protection Act (BGEPA), and the Marine Mammal Protection Act (MMPA) are discussed in their respective categories.

3.4.1 Regulatory Setting

3.4.1.1 Endangered Species Act

The purpose of the ESA is to conserve the ecosystems upon which threatened and endangered species depend and to conserve and recover listed species. Section 7 of the ESA requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service (NMFS) to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species or result in the destruction or adverse modification of designated critical habitat. Critical habitat cannot be designated on any areas owned, controlled, or designated for use by the DoD where an INRMP has been developed that, as determined by the Department of Interior or Department of Commerce Secretary, provides a benefit to the species subject to critical habitat designation.

3.4.1.2 Migratory Bird Treaty Act

The MBTA protects both migratory and most native-resident bird species, and their conservation by federal agencies is mandated by EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. Under the MBTA, it is unlawful by any means or in any manner to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, [or] possess migratory birds or their nests or eggs at any time, unless permitted by regulation. The 2003 National Defense Authorization Act gave the Secretary of the Interior authority to prescribe regulations to exempt the Armed Forces from the incidental taking of migratory birds during authorized military readiness activities. In February 2007, USFWS issued a Rule that authorizes incidental take of migratory birds for military readiness activities provided the installation has considered the environmental impacts of that activity through the NEPA process using the best scientific data available, and provided the Military Services confer and cooperate with USFWS to develop and

implement appropriate conservation measures to minimize or mitigate significant adverse effects of the Proposed Action.

3.4.1.3 Bald and Golden Eagle Protection Act

Bald and golden eagles are protected by the BGEPA. This Act prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*), including their parts, nests, or eggs. The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

3.4.1.4 Marine Mammal Protection Act

All marine mammals are protected under the provisions of the MMPA. The MMPA prohibits any person or vessel from "taking" marine mammals in the United States or on the high seas without authorization from NMFS. The MMPA defines "take" to mean "to harass, hunt, capture, or kill or attempt to harass, hunt, capture, or kill any marine mammal." The definition of "harassment" as it applies to military readiness activity (Section 3(18)(B) of the MMPA) is: (1) any act that injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild (Level A Harassment); or (ii) any act that disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to migration, surfacing, nursing, breeding, feeding, or sheltering, to a point where such behavioral patterns are abandoned or significantly altered (Level B Harassment). When an action is likely to result in the incidental taking of a marine mammal, an application to NMFS requesting authorization for the take is required.

3.4.1.5 Magnuson Stevens Fishery Conservation and Management Act

The Magnuson Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-276) led to the formation of eight fishery management councils that share authority with NMFS to help regulate and oversee fishery management in federal waters. The MSA authorizes fishery management councils to designate EFH and to establish regulations to conserve and enhance such habitat (10 U.S. Code [U.S.C.] section 1855(b)(1)(A)). EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity (10 U.S.C. section 1802(10)). The EFH designations include descriptions of the physical and biological environment and the location of all necessary habitats. The EFH regulations clarify that "waters" may include aquatic areas and their associated physical, chemical, and biological properties that are used by the managed fish species, and those areas historically used by those species, where appropriate. "Substrate" includes sediment, hard bottom, structures underlying the waters and associated biological communities (e.g., seagrass). "Necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem. "Spawning, breeding, feeding, and growth to maturity" covers a species' full life cycle (50 CFR section 600.10).

3.4.2 Affected Environment

3.4.2.1 Terrestrial Vegetation

The 2019 NBVC Port Hueneme INRMP addresses terrestrial plant communities and includes a detailed discussion of vegetation communities at the installation (NBVC Port Hueneme 2019). Per Griffith et al. (2016), NBVC Port Hueneme is within the Oxnard Plain and Valleys ecoregion, where typical plant species include coastal sage scrub, coast live oak (*Quercus agrifolia*), and brome (*Bromus* spp.) and

needlegrass (*Nassella* spp.) grasslands. However, most natural vegetation has been replaced by urban or agricultural land, and what remains is disturbed and highly fragmented yet valuable habitat to a variety of plants and wildlife (Griffith et al. 2016).

The upland portions of the Onshore Proposed Action Area would consist of the XLUUV and USV maintenance and administrative facility. These would be constructed on either Parcel 19 (per Option 1) or on adjacent Parcel 11 (per Option 2). Both are entirely contained within developed habitat and hold no naturally occurring vegetation.

3.4.2.2 Terrestrial Wildlife

As discussed above for terrestrial vegetation, the upland portion of the Onshore Proposed Action Area is entirely contained within developed habitat and there is little potential for wildlife to occur, except for bird and mammal species that may transit the area.

Terrestrial wildlife includes birds and mammals that may occur within the Onshore Proposed Action Area and are described below. It also includes seabirds and shorebirds which may also utilize the Nearshore and Onshore Proposed Action Areas.

Birds

Southern California is known for its avian biodiversity and sees a myriad of migratory bird species due to its location within the Pacific Flyway. Both vegetative and urbanized habitat found within and around the installation would support a variety of migratory and non-native birds (NBVC Port Hueneme 2019). Species such as Western bluebirds (*Sialia mexicana*) and American kestrels (*Falco sparverius*) may nest in introduced vegetation, such as planted stands of eucalyptus.

Cliff swallows (*Petrochelidon pyrrhonota*), mourning doves (*Zenaida macroura*), Cassin's kingbird (*Tyrannus vociferans*), house finches (*Haemorhous mexicanus*), and other common species may perch or nest on buildings and other structures. Seabirds such as Brandt's cormorants (*Phalacrocorax penicillatus*) and various gull species (*Larus* spp.) may also be found onshore or in the harbor due to the installation's proximity to the coast.

The beaches form quality habitat for classic Southern Californian shorebirds such as sanderlings (*Calidris alba*), marbled godwits (*Limosa fedoa*), whimbrels (*Numenius phaeopus*) and snowy egrets (*Egretta thula*). Just offshore, species such as terns (F. Laridae), Western grebes (*Aechmophorus occidentalis*) and surf scoters (*Melanitta perspicillata*) may be found foraging in or flying over the ocean. Even further out at sea, pelagic species such as albatross (F. Diomedidae), shearwaters and storm-petrels (F. Procellariiformes) may also be found.

Although potential exists for bald and golden eagles to transit NBVC Port Hueneme, there is no foraging or nesting habitat for either species within the upland portion of the Onshore Proposed Action Area. In addition, nearly all bird species occurring at NBVC Port Hueneme are protected under the MBTA, but there is little to no foraging or nesting habitat within the upland portion of the Onshore Proposed Action Area and, therefore, little to no likelihood of migratory bird occurrence except those that may transit the area.

Mammals

Recorded terrestrial mammals at NBVC Port Hueneme are those that typically occur within urbanized areas in Southern California. These species include coyote (*Canis latrans*), Botta's pocket gopher

(*Thomomys bottae*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*) and deer mice (*Peromyscus maniculatus*). Bat guano was observed on the installation in 2017 and is suspected to be from Mexican free-tail bats (*Tadarida brasiliensis*), which can inhabit artificial structures (NBVC Port Hueneme 2019).

3.4.2.3 Marine Vegetation and Invertebrates

Port of Hueneme Harbor

Kelp forest habitat is present within the shallow subtidal reefs inside the breakwater at NBVC Port Hueneme (NBVC Port Hueneme 2019). Surveys conducted in 2008 recorded the presence of kelp along both the west and east jetties and the west side of the mouth of the Port of Hueneme Harbor (Merkel and Associates 2008). Kelp forests represent some of the most diverse and productive habitats on earth and provide habitat for multiple species of invertebrates, fish, marine mammals, and birds (NOAA 2023; Smale 2020). Other aquatic vegetation recorded during the surveys included drift algae (*Ulva*, *Gracilaria*, *Mastocarpus papillatus*, and *Macrocystis*) along the bottom in patches and open coastal species such as *Cystoseira*. No species of eelgrass were recorded (Merkel and Associates 2008).

Marine invertebrates recorded within the harbor represent 21 families and include bat star (*Patiria miniata*), Dungeness crab (*Cancer magister*), acorn barnacle (*Balanus sp.*), black spotted shrimp (*Crangon nigromaculata*), giant Pacific octopus (*Enteroctopus dofleini*), and green sea urchin (*Strongylocentrotus droebachiensis*) (NBVC Port Hueneme 2019). A bed of sand dollars (*Dendraster excentricus*), composed of several hundred per square meter, is present from the -5 to -8 ft mean lower low water depth range and parallel to SWEF Beach (NBVC Port Hueneme 2019).

Nearshore and Offshore Proposed Action Areas

Aquatic vegetation only grows in sunlit portions of the open ocean and coastal waters, referred to as the “photic” or “euphotic” zone which extends to a maximum depth of approximately 660 feet (200 m). Because the depth in most open ocean environments exceeds the euphotic zone, benthic habitat for vegetation is limited to the Nearshore Proposed Action Area and is not expected within the Offshore Proposed Action Area. Marine vegetation likely to be present within the Nearshore Proposed Action Area includes a variety of seaweeds (red algae, brown algae including kelp, and green algae), seagrasses, and canopy-forming kelp species (Wylie-Echeverria & Ackerman 2003; Wilson 2002).

Marine invertebrate distribution is influenced by habitat, ocean currents, temperature, salinity, and nutrient content (Levinton 2009). Species richness and abundance are typically greater in coastal nearshore waters compared to the open ocean due to increased food availability and protection in coastal habitats (Levinton 2009). Rocky habitats that may occur within the Nearshore Proposed Action Area likely have sea anemones, barnacles, chitons, limpets, mussels, sea stars, sponges, tunicates, and various taxa of worms. Vegetated habitats within the Nearshore Proposed Action Area likely support sea anemones, sponges, arthropod crustaceans (crabs, spiny lobster), molluscs (abalone, keyhole limpet, octopus, nudibranchs), echinoderms (sea cucumbers, sea stars, sea urchins), and tunicates (Stewart & Myers 1980). The Offshore Proposed Action Area supports a variety of deep-sea corals such as anthozoans and hydrozoans (Etnoyer & Morgan 2005). Other invertebrate species include cephalopods, bivalves, sea snails, shrimp, and crab species (U.S. Department of the Navy 2018).

3.4.2.4 Marine Wildlife

Marine wildlife includes fishes and marine mammals that may occur within the Nearshore and Offshore Proposed Action Areas and are described below. ESA-listed fish, sea turtles, and marine mammals are discussed in Section 3.4.2.5.

Fishes

Multiple fish species occur within the Nearshore and Offshore Proposed Action Areas (U.S. Department of the Navy 2018, 2022a). Table 3.4-1 provides common taxonomic groups of fishes and occurrence relative to the open ocean and coastal waters of the Proposed Action Areas (U.S. Department of the Navy 2022a). Surveys conducted in 2008 within the subtidal areas of the Port Hueneme Harbor recorded up to 13 fish species from 11 families (Merkel and Associates 2008). Fish species recorded within the harbor included spotted kelpfish (*Gibbonsia elegans*), Pacific staghorn sculpin (*Leptocottus armatus*), queenfish (*Seriphus politus*), bay pipefish (*Syngnathus leptorhynchus*), and pile perch (*Rhacochilus vacca*) (Merkel and Associates 2008).

Table 3.4-1 Common Taxonomic Groups of Fishes that May Occur within the Proposed Action Areas

Group Names	Representative Species	Occurrence within the Proposed Action Areas	
		Open Ocean	Coastal Waters ⁽¹⁾
Ground Sharks, Mackerel Sharks, and Bull head (Orders Carcharhiniformes, Lamniformes, and Heterodontiformes)	Great white, Horn, Blue sharks	Water column, seafloor	Water column
Frilled and Cow Sharks, Sawsharks, Dogfish, and Angel Sharks (Orders Hexanchiformes, Squaliformes, and Squatiniformes)	Dogfish, Frill, Sevengill, Sixgill sharks	Water column, seafloor	Seafloor
Stingrays, Skates, Guitarfishes, Electric Rays and Rays (Orders Myliobatiformes, Pristiformes, Rajiformes, and Torpediniformes)	Electric Rays, Skates, Stingrays	Water column, seafloor	Water column, seafloor
Herrings and allies (Order Clupeiformes)	Anchovies, Herrings, Sardines	N/A	Surface, water column
Salmonids (Order Salmoniformes)	Steelhead	Water column	Surface, water column
Silversides (Order Atheriniformes)	Grunion, Jacksmelt, Topsmelt	N/A	Water column

Group Names	Representative Species	Occurrence within the Proposed Action Areas	
		Open Ocean	Coastal Waters ⁽¹⁾
Scorpionfishes (Order Scorpaeniformes)	Rockfishes, Sablefish, Sculpin, Greenlings	Water column, seafloor	N/A
Perch-like fishes (Order Perciformes)	Groupers, Jacks, Surfperches	Water column, seafloor	Water column, seafloor
Wrasses, Allies, Blennies, Gobies (Order Perciformes)	Wrasses, Damsel fishes, Cheekspot goby, mussel blenny	N/A	Seafloor
Tunas (Order Perciformes)	Barracudas, Billfishes, Swordfishes, Tunas	Surface, water column	Water column for juvenile barracudas only
Flatfishes (Order Pleuronectiformes)	Halibuts, Sanddabs, Soles, Tonguefishes	Seafloor	Seafloor

Source: U.S. Department of the Navy 2022a

Legend: N/A = Not applicable

(1) Note: Coastal waters include bays, estuaries, and harbors and <200 meter depth; Open Ocean is defined as >200 meter depth.

Marine Mammals

The most common marine mammals that occur within the harbor are harbor seals (*Phoca vitulina*) and California sea lions (*Zalophus californianus*). Elephant seals (*Mirounga angustirostris*) have been documented on SWEF Beach and sea otters (*Enhydra lutris*) have also been documented within the kelp beds of Port Hueneme (NBVC Port Hueneme 2019). Other marine mammals, such as dolphins, porpoises, and whales, may be present within the Nearshore and Offshore Proposed Action Areas (U.S. Department of the Navy 2018, 2022a). See Table 3.4-2 for a list of all non-ESA-listed marine mammals that may occur within the Proposed Action Areas.

Table 3.4-2 Non-Endangered Species Act-Listed Marine Mammals that May Occur within the Proposed Action Areas

Common Name	Scientific Name	Occurrence within the Nearshore and Offshore Proposed Action Areas ⁽¹⁾
Order Cetacea		
Baird's beaked whale	<i>Berardius bairdii</i>	Open Ocean
Bottlenose dolphin	<i>Tursiops truncatus</i>	Coastal and Open Ocean
Bryde's whale	<i>Balaenoptera edeni brydei</i>	Coastal and Open Ocean
Cuvier's beaked whale	<i>Ziphius cavirostris</i>	Open Ocean
Dall's porpoise	<i>Phocoenoides dalli</i>	Coastal and Open Ocean
Dwarf sperm whale	<i>Kogia sima</i>	Coastal and Open Ocean
Eastern North Pacific Gray Whale	<i>Eschrichtius robustus</i>	Coastal and Open Ocean
Killer whale	<i>Orcinus orca</i>	Coastal and Open Ocean
Long-beaked common dolphin	<i>Delphinus capensis</i>	Coastal and Open Ocean
Minke whale	<i>Balaenoptera acutorostrata</i>	Coastal and Open Ocean
Mesoplodont beaked whales ⁽²⁾	<i>Mesoplodon spp.</i>	Open Ocean

Common Name	Scientific Name	Occurrence within the Nearshore and Offshore Proposed Action Areas ⁽¹⁾
Northern right whale dolphin	<i>Lissodelphis borealis</i>	Coastal and Open Ocean
Pacific white-sided dolphin	<i>Lagenorhynchus obliquidens</i>	Coastal and Open Ocean
Pygmy killer whale	<i>Feresa attenuate</i>	Coastal and Open Ocean
Pygmy sperm whale	<i>Kogia breviceps</i>	Coastal and Open Ocean
Risso's dolphin	<i>Grampus griseus</i>	Coastal and Open Ocean
Rough-toothed dolphin	<i>Steno bredanensis</i>	Coastal and Open Ocean
Short-beaked common dolphin	<i>Delphinus delphis</i>	Coastal and Open Ocean
Short-finned pilot whale	<i>Globicephala macrohynchus</i>	Coastal and Open Ocean
Striped dolphin	<i>Stenella coeruleoalba</i>	Coastal and Open Ocean
Family Phocidae (true seals)		
Harbor seal	<i>Phoca vitulina</i>	Coastal and Open Ocean
Northern elephant seal	<i>Mirounga angustirostris</i>	Coastal and Open Ocean
Family Otariidae (eared seal)		
California sea lion	<i>Zalophus californianus</i>	Coastal and Open Ocean
Northern fur seal	<i>Callorhinus ursinus</i>	Coastal and Open Ocean

Source: U.S. Department of the Navy 2018

(1) Notes: Coastal waters include bays, estuaries, and harbors and <200 meter depth; Open Ocean is defined as >200 meter depth

(2) Notes: Six Mesoplodont beaked whale species in Southern California are *M. densirostris*, *M. carlhubbsi*, *M. ginkgodens*, *M. perrini*, *M. peruvianus*, *M. stejnegeri*

3.4.2.5 Endangered Species Act-Listed Species

ESA-listed species with the potential to occur within the Proposed Action Areas are based on an Information for Planning and Consultation search of NBVC Port Hueneme (USFWS 2023), a NMFS database search (NOAA Fisheries 2023a), the 2019 INRMP (NBVC Port Hueneme 2019), the Hawai'i-Southern California Training and Testing (HSTT) Range EIS/OEIS (U.S. Department of the Navy 2018) and Point Mugu Sea Range (PMSR) EIS/OEIS (U.S. Department of the Navy 2022a).

The Onshore Proposed Action Area upland footprint is already developed and consists entirely of impervious surfaces. No habitat (as identified in Section 3.4.2.1) for ESA-listed terrestrial species exists, and no critical habitat has been designated. Therefore, no ESA-listed terrestrial species would be expected to occur.

Three USFWS-regulated species (Southern sea otter [*Enhydra lutris nereis*], Guadalupe fur seal [*Arctocephalus townsendi*], and tidewater goby [*Eucyclogobius newberryi*] and four NMFS-regulated species (hawksbill turtle [*Eretmochelys imbricata*], Olive ridley turtle [*Lepidochelys olivacea*]), black abalone [*Haliotis cracherodii*], and white abalone [*Haliotis sorenseni*]) are not expected to occur within the Nearshore or Offshore Proposed Action Areas. In the rare chance that any of these seven species would occur within the Proposed Action Areas, impacts are not anticipated and therefore there would be no effect to these species under ESA. Critical habitat for black abalone is designated within a very small portion of the Nearshore Proposed Action Area (76 FR 66806) (see Figure 3.4-1), but training and testing of XLUVs and USVs, including shape deployment, would not occur within protected habitats, including designated critical habitat (see Appendix B). Further, training activities will not occur within 0.45 mile of the coastline except in transit to and from the channel of Port Hueneme where there is no designated critical habitat for black abalone. Therefore, there would be no effect to black abalone designated critical habitat from the Proposed Action. Table 3.4-3 provides a list of ESA-listed marine wildlife that may occur within the Proposed Action Areas. Areas of occurrence for ESA-listed marine

wildlife species are as follows: open ocean, coastal, North Pacific Gyre and California Current. The term “open ocean” is defined as greater than 200 meters in depth and “coastal” includes bays, estuaries, and harbors and is defined as less than 200 m in depth. The California Current flows south along the coasts of Washington, Oregon, and California, and Baja Peninsula, where it joins the North Pacific subtropical Gyre via the westward flowing North Equatorial Current (Bograd 2004 as cited in U.S. Department of the Navy 2018) (see Figure 3.4-1).

Table 3.4-3 Endangered Species Act-Listed Species Known or Potentially Occurring within the Proposed Action Areas

Common Name	Scientific Name	Federal Status	Habitat Type/Areas of Occurrence
Fish			
Giant manta ray	<i>Mobula birostris</i>	T	Open Ocean (North Pacific Gyre) and California Current
Ocean whitetip shark	<i>Carcharhinus longimanus</i>	T	Open Ocean (North Pacific Gyre)
Scalloped hammerhead, Eastern Pacific DPS	<i>Sphyrna lewini</i>	E	California Current
Steelhead, Southern California Coast DPS	<i>Oncorhynchus mykiss</i>	E	California Current
Marine Mammals (Order: Cetacea)			
Blue whale, Eastern North Pacific Stock	<i>Balaenoptera musculus</i>	E	Coastal and open ocean
Fin whale, California-Oregon-Washington Stock	<i>Balaenoptera physalus</i>	E	Coastal and open ocean
Gray whale, Western North Pacific DPS	<i>Eschrichtius robustus</i>	E	Coastal and open ocean
Humpback whale, Central America DPS	<i>Megaptera novaeangliae</i>	E	Coastal and open ocean
Humpback whale, Mexico DPS		T	
Sei whale, Eastern North Pacific stock	<i>Balaenoptera borealis</i>	E	Coastal and open ocean
Sperm whale, California-Oregon-Washington stock	<i>Physeter macrocephalus</i>	E	Coastal and open ocean
Sea Turtles			
Green sea turtle, East Pacific and Central North Pacific DPSs	<i>Chelonia mydas</i>	T	Open Ocean and California Current
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E	Open Ocean and California Current
Loggerhead sea turtle, North Pacific DPS	<i>Caretta caretta</i>	E	Open Ocean and California Current

Sources: NBVC Port Hueneme 2019; USFWS 2023; NOAA Fisheries 2023a; U.S. Department of the Navy 2018, 2022a

Legend: DPS = Distinct Population Segment; E = Endangered; T = Threatened

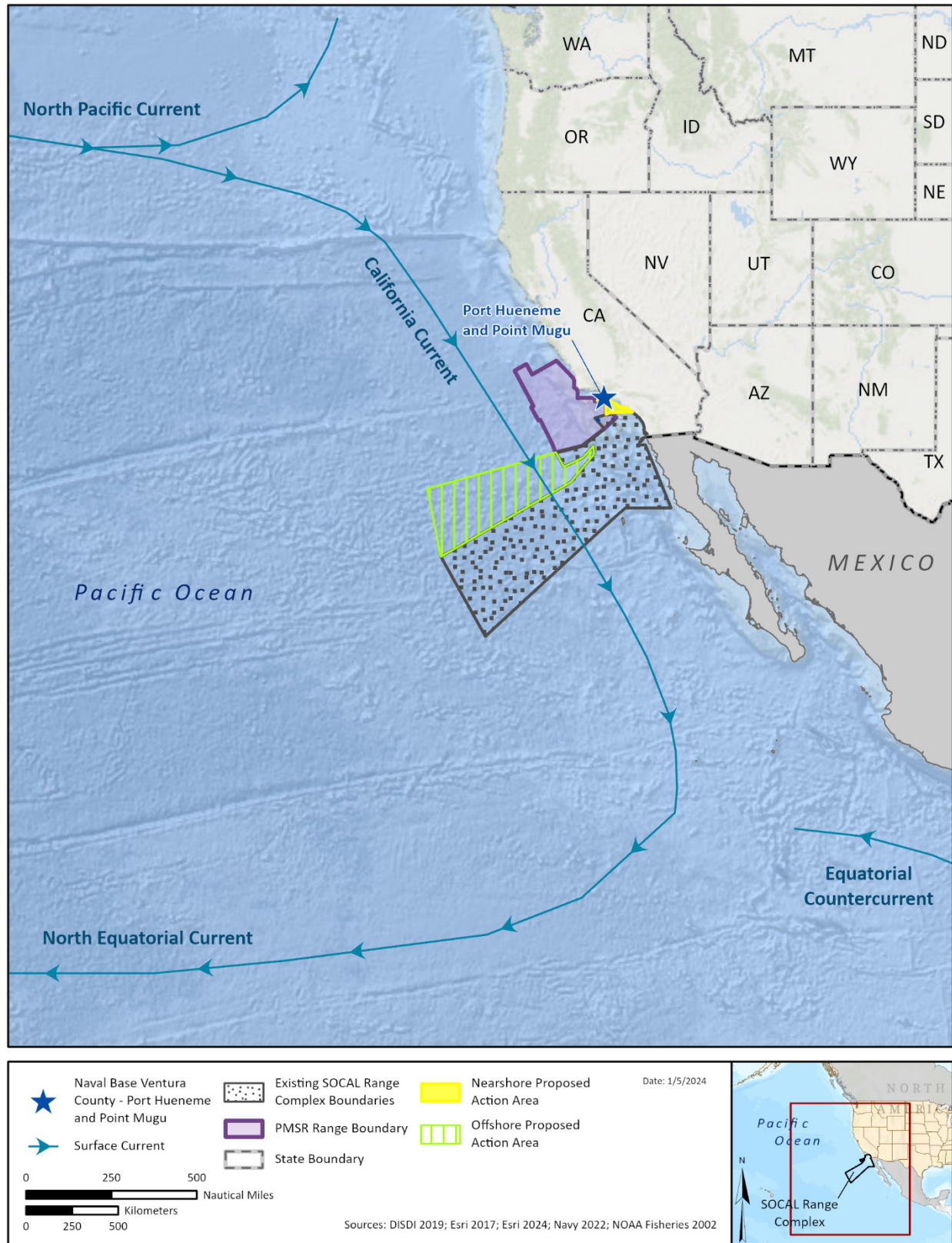


Figure 3.4-1 Surface Currents within the Offshore Proposed Action Area

ESA-listed sea turtles that may occur within the Proposed Action Areas include green (*Chelonia mydas*), leatherback (*Dermochelys coriacea*), and loggerhead turtles (*Caretta caretta*). A comprehensive inventory and analysis of amphibian and reptile species occurring on DoD installations has not recorded green, leatherback, or loggerhead turtles within the Port Hueneme Harbor (Petersen et al. 2018). Green turtles may occur within the Offshore Proposed Action Area but have not been documented within the Nearshore Proposed Action Area (NBVC Port Hueneme 2019; U.S. Department of the Navy 2018, 2022a). Stranding and tagging data have shown green sea turtles in San Diego Bay and Seal Beach, as well as recent observations by installation personnel at Point Mugu, but not within Port Hueneme Harbor (NBVC Port Hueneme 2019; U.S. Department of the Navy 2018). Leatherback turtles may occur within the Nearshore and Offshore Proposed Action Areas and loggerhead turtles may occasionally occur within the Offshore Proposed Action Area, but sightings of these species have been rare and were typically related to warming events off the Southern California coast (U.S. Department of the Navy 2022).

Critical habitat has been designated by NMFS for humpback whale (86 FR 21082) and proposed for green turtle (88 FR 46572), of which both overlap with portions of the Nearshore Proposed Action Area as shown in Figure 3.4-2. Designated critical habitat features for the Central America and Mexico DPS humpback whale and green turtle are described in Table 3.4-4. Critical habitat is not designated for marine wildlife within the Offshore Proposed Action Area.

The northern portion of the Nearshore Proposed Action Area overlaps the eastern-most portion of the Channel Islands National Marine Sanctuary, which consists of an area of 1,109 square nm around Anacapa Island, Santa Cruz Island, Santa Rosa Island, San Miguel Island, and Santa Barbara Island (see Figure 3.4-2). The sanctuary is an ecosystem-based managed sanctuary that includes key habitats such as kelp forest, surfgrass, and eelgrass. It is home to numerous species of marine mammals, seabirds, fishes, invertebrates, and algae (NOAA 2023).

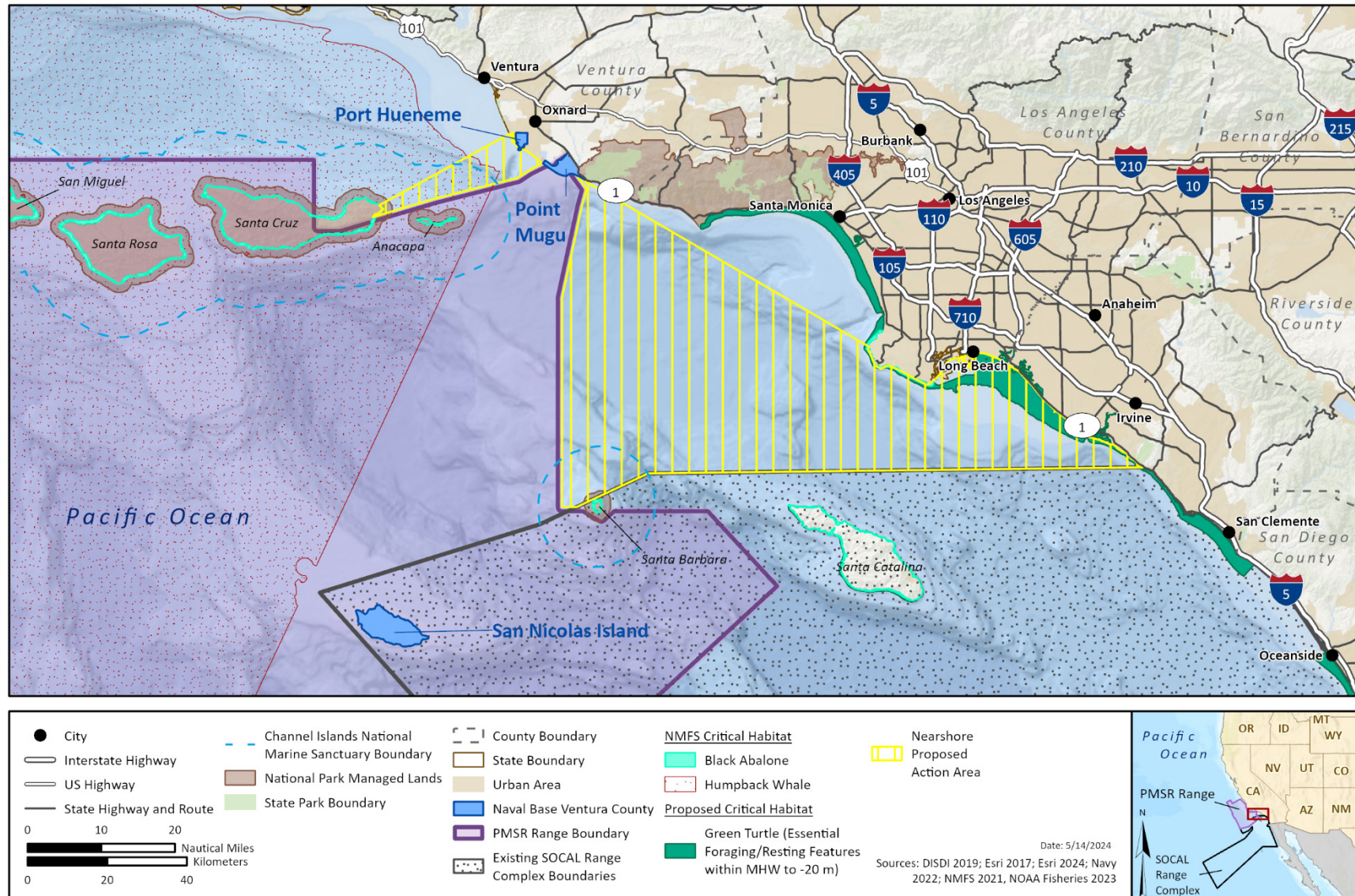


Figure 3.4-2 Designated Critical Habitat within the Proposed Action Areas

Table 3.4-4 Designated and Proposed Critical Habitat in the Nearshore Proposed Action Area

Common Name	Physical and Biological Features for Designated Critical Habitat
Humpback whale, Central America DPS	Prey species, primarily euphausiids (<i>Thysanoessa</i> , <i>Euphausia</i> , <i>Nyctiphanes</i>) and small pelagic schooling fishes such as Pacific sardine (<i>Sardinops sagax</i>), Northern anchovy (<i>Engraulis mordax</i>), and Pacific herring (<i>Clupea pallasii</i>), of sufficient quality, abundance, and accessibility within humpback whale feeding areas to support feeding and population growth.
Humpback whale, Mexico DPS	Prey species, primarily euphausiids (<i>Thysanoessa</i> , <i>Euphausia</i> , <i>Nyctiphanes</i>) and small pelagic schooling fishes such as Pacific sardine (<i>Sardinops sagax</i>), Northern anchovy (<i>Engraulis mordax</i>), and Pacific herring (<i>Clupea pallasii</i>), capelin (<i>Mallotus villosus</i>), juvenile walleye pollock (<i>Gadus chalcogrammus</i>), and Pacific sand lance (<i>Ammodytes personatus</i>) of sufficient quality, abundance, and accessibility within humpback whale feeding areas to support feeding and population growth.
Green turtle ¹	Foraging and/or resting features from the mean high water line to -20 m.

Legend: DPS = distinct population segment

(1) Note: Proposed critical habitat.

3.4.2.6 Essential Fish Habitat

Pursuant to the MSA, the Pacific Fisheries Management Council (PFMC) has designated EFH for federally managed species within the waters of Washington, Oregon, and California. The waters of Southern California are designated EFH for Pacific coast Groundfish, Coastal Pelagic Species, and Highly Migratory Species (PFMC 2022, 2023a;b).

Groundfish EFH

Pacific coast Groundfish EFH includes all waters and substrate from the high tide line (including estuaries) to 3,500 meters in depth (PFMC 2022). Examples of groundfish species include brown rockfish (*Sebastes auriculatus*), California skate (*Raja inornate*), Dover sole (*Microstomus pacificus*), and sablefish (*Anoplopoma fimbria*).

Coastal Pelagic Species EFH

Coastal Pelagic Species EFH includes all marine and estuary waters from the coasts of California, Oregon, and Washington to the limits of the U.S. Exclusive Economic Zone and above the thermocline where sea surface temperatures range between 10 degrees and 26 degrees centigrade (PFMC 2023a). Examples of coastal pelagic species include Northern anchovy (*Engraulis mordax*), Jack mackerel (*Trachurus symmetricus*), and market squid (*Doryteuthis opalescens*).

Highly Migratory Species EFH

EFH for Highly Migratory Species is a wide range in the ocean in terms of both area and depth. Habitat is defined by temperature ranges, salinity, oxygen levels, currents, shelf edges, and seamounts (PFMC 2023b). Examples of Highly Migratory Species include common thresher shark (*Alopias vulpinus*), shortfin Mako shark (*Isurus oxyrinchus*), blue shark (*Prionace glauca*), albacore tuna (*Thunnus alalunga*), and big-eye tuna (*Thunnus obesus*).

3.4.3 Environmental Consequences

This section presents an analysis of impacts to biological resources that could result from implementation of the Proposed Action.

Potential project impacts are described as temporary or permanent based on their anticipated longevity. Project impacts are evaluated based upon an understanding of project configuration and components, and methods and equipment that would be used.

3.4.3.1 No Action Alternative

Under the No Action Alternative, no additional impacts to biological resources as part of the Proposed Action would occur. Therefore, no changes to any existing impacts on biological resources would occur with implementation of the No Action Alternative.

3.4.3.2 Proposed Action

Terrestrial Vegetation

Under the Proposed Action, no vegetation would be removed or otherwise affected because the entirety of the upland portion of the Onshore Proposed Action Area consists of impervious surfaces and other existing urbanized areas. Therefore, implementation of the Proposed Action would have no impact on vegetation.

Terrestrial Wildlife

As described in Section 3.4.2.2, there is no naturally occurring habitat for wildlife within the Onshore Proposed Action Area and therefore very little potential for wildlife to occur, aside from bird and mammal species that may transit the area. Under the Proposed Action, there would be no loss of natural wildlife habitat.

Noise associated with construction activities can affect birds and other wildlife in multiple ways, including altered vocal behavior to mitigate masking, reduced abundance in noisy habitats, changes in vigilance and foraging behavior, and impacts on individual fitness (Shannon 2016). However, any bird and wildlife populations occurring at NBVC Port Hueneme would be habituated to the affected environment because they are already exposed to elevated noise associated with military industrial activities and adjacent commercial port operations (Bowles 1995). Additionally, nearly all the area surrounding the Onshore Proposed Action Area is developed and there is very little potential that the slight increase in noise as part of baseline conditions would impact any terrestrial wildlife. As a result, impacts from noise as part of construction and operations are expected to be minor because the ambient noise levels within the vicinity are elevated under existing conditions and would be unlikely to substantially increase from the relatively minor and temporary nature of the proposed construction activities.

Biological Resources Potential Impacts:

- No Action: The Proposed Action would not be implemented and there would be no additional effects to biological resources.
- Proposed Action: Implementation of BMPs, SOPs, and mitigation measures would minimize or avoid the potential of the following to occur: take of marine mammals protected under the MMPA, adverse effects to species listed under the ESA, adverse effects to EFH protected under the MSA, significant impacts or take to birds protected under the MBTA and BGEPA. Therefore, implementation of the Proposed Action would not result in significant impacts on biological resources. The Navy has initiated informal consultation with NMFS as required by section 7(a)(2) of the ESA, seeking concurrence of the Navy's determination that the Proposed Action "may affect, but is not likely to adversely affect" ESA-listed marine wildlife and designated critical habitat for humpback whale and no effect to proposed critical habitat for green turtle.

There is very little potential for any terrestrial wildlife, including bird species protected under the MBTA and the BGEPA, to occur or be impacted by the Proposed Action and no wildlife habitat would be removed. In addition, training and testing activities occurring at sea would not impact birds protected under the MBTA or eagles as noise produced from vessels would likely be consistent with other vessel (commercial and recreational) activity that occurs throughout the Proposed Action Areas and that birds have likely grown to tolerate over the years (Bowles 1995). Due to the wide distribution of activities within the Nearshore and Offshore Proposed Action Areas, the risk of disturbance or vessel strike of birds at sea would also be low. Under the MBTA regulations applicable to military readiness activities (50 CFR Part 21) and the BGEPA, training and testing stressors (airborne noise and increased human activity) associated with the Proposed Action would not result in take of birds protected under the MBTA or the BGEPA. Similarly, construction as part of the Proposed Action, considered a non-military readiness activity, would not result in take of birds protected under the MBTA or BGEPA and a migratory bird take permit would not be required. Therefore, the Proposed Action would not result in significant impacts to terrestrial wildlife.

Marine Vegetation and Invertebrates

The Proposed Action does not include any in-water or over-water construction. As discussed in Section 3.2, construction activities at either Parcel 19 (per Option 1) or Parcel 11 (per Option 2) are not expected to influence marine water quality with implementation of measures outlined in permitting and BMPs identified in NBVC Port Hueneme's SWPPP. As described in Table 2.1-1 and Table 2.1-2, maintenance and support activities such as vehicle cooling wash-down, cleaning, degreasing, oiling, etc. of mechanical components, and fueling transfer to XLUUV pierside would be done using proper wastewater containment and SOPs to mitigate impacts to water quality. Therefore, water quality for marine vegetation and invertebrates present within Port Hueneme Harbor would not be permanently degraded.

Launch, recovery, and transit of XLUUVs/USVs is not anticipated to be any different from existing training or testing at Port Hueneme (see Chapter 2) and is unlikely to impact marine vegetation and invertebrates within the harbor.

Up to 20 recoverable or non-recoverable training shapes would be released to the sea floor within the Nearshore and Offshore Proposed Action Areas during each training and testing sub-event. Shape deployment would avoid protected areas, such as areas containing reefs or nearshore aquatic vegetation and including the areas of the Channel Islands National Marine Sanctuary that overlaps with portions of the Nearshore Proposed Action Area. Shapes deployed would likely crush non-mobile species within the footprint of the deployed shape, but habitat for invertebrates would only be displaced until the shape is recovered (less than 5 days). For unrecovered shapes, the shapes themselves could create habitat for encrusting species and would result in localized impacts to invertebrates. In summary, impacts would be consistent with analysis to marine vegetation and invertebrates for the SOCAL Range Complex in the HSTT EIS/OEIS (U.S. Department of the Navy 2018). Therefore, implementation of the Proposed Action would not result in significant impacts to marine vegetation and invertebrates.

Marine Wildlife

Stressors to marine wildlife from the Proposed Action include underwater sound, physical disturbance or strike from shape deployment, and vessel strike.

Active sonar used under the Proposed Action would only be used by XLUUVs for safety of navigation and would not disturb marine wildlife. The in-water active acoustic sources used by XLUUVs create narrow beam widths, are downward directed transmissions with short pulse lengths, and generate frequencies above known hearing ranges of marine wildlife. The low source levels, or combinations of these factors, are not anticipated to result in disturbance of marine wildlife or takes of protected species. These sources are categorized as *de minimis* sources and are qualitatively analyzed to determine the appropriate determinations under NEPA, the MMPA, and the ESA. When used during routine training and testing activities, and in a typical environment, *de minimis* sources fall into one or more of the following categories:

- Transmit primarily above 200 kHz: Sources above 200 kHz are above the hearing range of the most sensitive marine mammals and far above the hearing range of any other marine species likely to occur within the Nearshore and Offshore Proposed Action Areas.
- Source levels of 160 dB re 1 μ Pa or less: Low-powered sources with source levels less than 160 dB re 1 μ Pa are typically handheld sonars, range pingers, transponders, and acoustic communication devices. Assuming spherical spreading for a 160 dB re 1 μ Pa source, the sound will attenuate to less than 140 dB within 10 m and less than 120 dB within 100 m of the source. Ranges would be even shorter for a source less than 160 dB re 1 μ Pa source level.

Use of active sonar for navigational safety was determined to be *de minimis* and would not result in acoustic impacts to marine species. Therefore, underwater noise from vessels is the only underwater noise evaluated as a stressor under the Proposed Action.

Vessel Noise

Vessel noise is a major contributor to noise in the ocean. Radiated noise from ships varies depending on the size, hull design, type of propulsion, and speed. Ship-radiated noise increases with speed and primarily includes propeller blade tip and sheet cavitation, and broadband noise from water flowing across the hull (Richardson et al. 1995). Based on these factors, vessel noise can contribute to ocean noise from 10 Hz (hertz) to 10 kHz (kilohertz) (Wenz 1962). Different classes of vessels have unique acoustic signatures characterized by variances in dominant frequencies. Bulk carrier noise is predominantly near 100 Hz while container ship and tanker noise are predominantly below 40 Hz (McKenna et al. 2012). In comparison, small craft emit higher-frequency noise between 1 kHz and 5 kHz (Hildebrand 2009). XLUUVs and USVs are anticipated to produce noise frequencies in the range of 40-100 HZ.

Fish

Vessel traffic contributes to the amount of noise in the ocean and has the potential to affect fishes. The primary response to vessel noise is behavioral in that fishes typically move away from the vessel noise exposure. Several studies have demonstrated and reviewed avoidance responses by fishes (e.g., herring and cod) to the low-frequency sounds of vessels (De Robertis & Handegard 2013; Engas et al. 1995; Handegard et al. 2003). Misund (1997) found fish ahead of a ship that showed avoidance reactions and did so at ranges of 50 to 150 m away. When the vessel passed over them, some species of fish responded with sudden escape responses that included lateral avoidance or downward compression of the school.

Behavioral reactions vary depending on a number of factors, such as (but not limited to): the type of fish, its life history stage, behavior, time of day, location, the sound source (e.g., type of vessel or motor vs. playback of broadband sounds), and the sound propagation characteristics of the water column (Popper et al. 2014). Reactions to playbacks of continuous noise or passing vessels generally include

basic startle and avoidance responses. Most fish species are anticipated to detect vessel noise due to its low-frequency content and their hearing capabilities. Popper et al. (2014) suggests that fishes have a high to moderate probability of reacting to nearby vessel noise (i.e., within tens of meters) with decreasing probability of reactions as distance from the source increases (hundreds or more meters). Impacts of vessel noise from XLUUVs and/or USVs are anticipated to be in the form of behavioral avoidance and therefore are not expected to result in significant impacts to fish.

Marine Mammals

Masking of marine mammal vocalizations is most likely to occur in the presence of broadband, relatively continuous noise sources such as vessels. This type of noise overlaps in frequency with many marine mammal sounds and can effectively reduce their communication space. Both signal detection and informational masking are likely to occur in the presence of vessel noise (Erbe et al. 2016).

Masking noise can result in vocal modifications or other acoustic signaling behaviors that might reduce or compensate for the overall effect of masking. Vocalization changes include increasing the source level (Lombard effect), modifying the frequency, increasing the repetition rate of vocalizations, or ceasing to vocalize in the presence of increased noise (Hotchkiss & Parks 2013). With increased natural background (ambient) noise levels, a switch from vocal communication to physical, surface-generated sounds such as pectoral fin slapping or breaching has been observed in mysticetes whales (Dunlop et al. 2010).

Vessel activity can expose marine species to underwater noise but exposure would be of short duration and at low source levels. In-water noise from surface vessels has been shown to create avoidance behavior in cetaceans such as increased swimming speeds and repeated surfacing and diving behaviors (Dyndo et al. 2015). Other common behavioral reactions include changes in vocalizations, feeding and social behaviors (Au & Green 2000; Dunlop 2019; Fournet et al. 2018; Machernis et al. 2018; Richter et al. 2003; Williams et al. 2002). Baleen whales demonstrate a variety of responses to vessel traffic and noise, including not responding at all to approaching vessels, as well as both horizontal (swimming away) and vertical (increased diving) avoidance (Fiori et al. 2019; Gende et al. 2011; Watkins 1981).

A comparison of commercial vessel traffic with Navy vessel traffic over a 1-year period showed that Navy surface ships accounted for 11 percent of all combined commercial and Navy vessel hours that would be contributing to underwater noise and 4 percent of the total vessel hours in the waters off Southern California (U.S. Department of the Navy 2018, 2022a). Navy vessels used for conducting training and testing activities are expected to be a low contributor to the overall vessel noise in the Proposed Action Areas. Therefore, vessel noise would not result in significant impacts to marine wildlife.

Physical Disturbance or Strike from Shape Deployment

Training and testing activities involve deployment of shapes, nets, or other target obstacles. Shapes would be deployed by vessels and no cabling would occur. Smaller or less mobile bottom fish are at risk of injury if they do not move away from the object before it reaches the seafloor. More mobile, water column dwelling fishes would likely avoid a sinking shape with little disruption to their overall behavior. Benthic foraging species may be at risk of a strike by a shape but impacts are expected to be behavioral through avoidance or startle response. There is a potential for a sinking object to make contact with a marine mammal but the marine mammal is anticipated to behaviorally react by increasing swimming speed or simply going around it. The speed at which a training shape is sinking is not likely to injure a marine mammal. Physical disturbance or strike associated with shape deployment is not anticipated to result in significant impacts to marine wildlife.

Vessel Strikes

Vessel strikes are defined as an impact between any part of a watercraft (most commonly bow, hull, or propeller) and a live marine animal (Peel et al. 2018). Large marine mammals are particularly at risk from vessel strikes as these species may occur offshore and encounter a vessel when they surface to breathe or rest. The type and severity of injury depends upon the size of the vessel, the speed and direction of the vessel (if in motion), the part of the vessel that strikes the animal (i.e., hull vs. propeller), and the part of the body impacted. Depending on these factors, strike by even a small vessel has the potential to cause serious injury or death (Schoeman et al. 2020). A full analysis of vessel strikes is discussed under Marine ESA-Listed Species as marine mammals, sea turtles, and fish, may all occur within the Nearshore and Offshore Proposed Action Areas; analysis of these sensitive species will also account for non-ESA-listed marine wildlife.

Marine Endangered Species Act-Listed Species

Vessel Noise

As discussed above under Marine Wildlife, fish and marine mammals (also to include ESA-listed species) react to the low frequencies generated from vessels noise through various changes in behavior (e.g., increased swimming speeds, lateral avoidance, communication). Sea turtle hearing is limited to lower frequencies and is less sensitive than what is typically seen in marine mammals and some species of fish (Popper et al. 2014; Southall et al. 2019). Because sea turtles are suspected to use their hearing to detect broadband low-frequency sounds in their environment, the potential for masking would be limited to certain exposures such as continuous anthropogenic sounds that have a significant low-frequency component, are not of brief duration, and are of a sufficient received level that could create a meaningful masking situation (e.g., long-duration vibratory pile driving/extraction or vessel noise affecting natural background and ambient sounds). However, sea turtles may rely more on other senses, such as vision and magnetic orientation, to interact with their environment (Lohman & Lohmann 2019; Narazaki et al. 2013; Putman et al. 2015). Impacts to sea turtles from vessel noise are anticipated to be in the form of behavioral avoidance.

ESA-listed marine wildlife would not be exposed to an observable increase in vessel noise within the Nearshore and Offshore Proposed Action Areas as these are primarily driven by commercial vessels and noise produced by Navy activities proposed for XLUUV and USV training and testing activities would have no significant impacts to ESA-listed marine species and designated critical habitat for humpback whale and proposed critical habitat for green turtle. The Navy has determined that vessel noise from the Proposed Action “may affect but is not likely to adversely affect” ESA-listed species and designated critical habitat for humpback whale and would have no effect on proposed critical habitat for green turtle. As required by section 7(a)(2) of the ESA, the Navy has initiated informal consultation with NMFS and is seeking concurrence with this determination.

Physical Disturbance or Strike from Shape Deployment

As discussed under Marine Wildlife, fish and marine mammals (also to include ESA-listed species) may be at risk of encountering a sinking shape landing on the sea floor. Benthic foraging or sleeping sea turtles may also be at risk of a strike by a training shape but like fish and marine mammals, sea turtles would be expected to behaviorally react through startle response or direct avoidance. Therefore, impacts to ESA-listed fish, sea turtles, and marine mammals, are anticipated to be through behavioral disturbance and chances of injury are anticipated to be rare. Shape deployment would also avoid protected habitats as described in Appendix B. Therefore, physical disturbance or strike from shape

deployment is not anticipated to result in significant impacts to ESA-listed species and designated critical habitat for humpback whale or proposed critical habitat for green turtle.

The Navy has determined that physical disturbance or strike from training shape deployment during the Proposed Action “may affect but is not likely to adversely affect” ESA-listed species and designated critical habitat for humpback whale but would have no effect on proposed critical habitat for green turtle. As required by section 7(a)(2) of the ESA, the Navy has initiated informal consultation with NMFS and is seeking concurrence with this determination.

Vessel Strikes

Reports of vessel strikes to species such as smaller marine mammals (dolphins, pinnipeds), sea turtles, or fish are likely underreported due to unawareness by crew that a strike occurred (Schoeman et al. 2020). Fatal collisions can result in sinking carcasses, or initial injury to a species that did not result in an immediate fatality, but can take hours, days, or weeks before a strike may become lethal (Dwyer et al. 2014). High risk areas such as areas where high numbers of vessels transit (shipping lanes, ferry routes, or recreational boating) can expose species occurring within these areas to increased risk of strike. Although vessel strikes have been observed on fish species such as the giant manta ray and sturgeon, most fishes would detect and avoid vessels with lateral or downward avoidance (NOAA Fisheries 2022).

Green turtles are particularly vulnerable to a strike as they tend to stay within the top 3 m of the water column (Hazel et al. 2007). Hazel et al. (2007) found that individual turtles are more likely to flee an approaching vessel when speeds are reduced to 2 knots. Sea turtles present within the nearshore adjacent to nesting beaches or occurring within aquatic vegetation are at an increased risk of strike (Neilson et al. 2012; Schoeman et al. 2020). Green and loggerhead sea turtles are more likely to forage in coastal and inshore waters, and although they may feed along the seafloor, they surface periodically to breathe while feeding and moving between near shore habitats. Roberts et al. (2022) found that green and loggerhead turtles only spent on average approximately 16-18 percent of the time at the surface, while the rest of the time was scattered throughout the top 25-30 m layer of the water column (Roberts et al. 2022). Ship strike analysis conducted in the HSTT EIS/OEIS (2018) focused on San Diego Bay as Navy vessel activity is concentrated in that location. Available survey data, stranding data, and fishery bycatch data indicate that sea turtles are rarely observed (alive or stranded) off the Southern California coast (Welch et al. 2019). Loggerhead turtles were observed during a marine heatwave from 2014-2015 but sightings in the Southern California Bight are usually extremely rare. Leatherback turtles have also been observed on rare occurrence, but again was related to warming events. Because available scientific and commercial data indicate such low sea turtle densities in Southern California, outside of San Diego Bay, except during heatwave events, the HSTT EIS/OEIS did not anticipate a ship strike of sea turtles to occur in the area under normal environmental conditions (U.S. Department of the Navy 2018). Implementation of SOPs and mitigation measures (Appendix B) would minimize impacts as Navy vessels would avoid areas of aquatic vegetation as well as utilize Lookouts. Although there is the potential for a vessel strike, sea turtles would likely be able to avoid a strike from an XLUUV or USV with little impact to behavior. It is possible for smaller marine wildlife (including ESA-listed species) to be struck, but the likelihood of a strike by XLUUVs and USVs in the Nearshore and Offshore Proposed Action Areas during training and testing activities would be considered rare. The main focus for analysis of the Proposed Action is with respect to larger marine mammals discussed below.

Ship strikes are a growing issue for most large marine mammals, although mortality may be a more significant concern for species that occupy areas with high levels of vessel traffic, because the likelihood

of encounter would be greater (Currie et al. 2017; Rockwood et al. 2018; Van der Hoop et al. 2013, 2014). Unlike small, fast-moving cetaceans, larger, slower whales such as sperm whales that spend extended time at the surface to restore oxygen levels following deep dives and baleen whales, and which do not typically react to vessel noise, are especially vulnerable to a strike (Nowacek et al. 2004).

Within the HSTT Study Area, there have been five recorded U.S. Navy vessel strikes of large whales: two between 2009 and April 2021, one in June 2021, one in July 2021, and one in May 2023. The recent strikes in 2021 and 2023 were in the waters off Southern California. Vessel strike to marine mammals is not associated with any specific training or testing activity but is rather a limited and sporadic, but possible, accidental result of Navy surface vessel movement within the HSTT Study Area or while in transit (88 FR 68290). Potential ship strikes were calculated for XLUUV and USV proposed training and testing activities by adapting the methodology and historic ship strike data from the HSTT EIS/OEIS. For purposes of the XLUUV and USV analysis, the at-sea days for training and testing were calculated for two USVs, each accompanied by one large support vessel (over 65 feet in length), and the one large support vessel that would support each of the six XLUUVs. The XLUUV units themselves are not included in the total at-sea days calculated, as submarines were not included in the HSTT ship strike analysis (see Appendix E for calculation methodology). The historic rate of 0.0001110 strike per day (based on strikes that occurred in the HSTT Study Area, as described above) was multiplied by the predicted at-sea days for surface vessels (USVs or large support vessels accompanying USVs or XLUUVs during training and testing) from 2024 to 2026 (991). This resulting value was used to derive the statistical likelihood of a ship strike from XLUUV and USV training and testing using a Poisson distribution (the same methodology used for the HSTT EIS/OEIS and the PMSR EIS/OEIS). This resulted in a less than 10 percent probability of one strike of a large whale over the period from 2024 to 2026 for XLUUV and USV, with an 89.6 percent probability of no strikes of a large whale occurring over that time period.

As discussed in the HSTT EIS/OEIS (U.S. Department of the Navy 2018), Navy vessels (greater than 18 m in length) operate differently within SOCAL Range Complex than do commercial vessels. Navy vessels tend to operate at reduced vessel speeds (averaging 10 to 15 knots) and, while in transit, have Lookouts assigned to monitor their assigned sectors for any hazards to the ship, which may include marine mammals. Due to their increased maneuverability and reduced speeds over commercial vessels, Navy vessels can more easily change direction to avoid a strike. The XLUUV, USV, and accompanying manned support vessels would be assumed to operate in a similar manner in the Nearshore and Offshore Proposed Action Areas during training and testing.

Although the potential for a strike in the Proposed Action Areas would be very low, mitigation measures described in Appendix B, Section B.5.3 would be used to further minimize the potential for strikes. Before commencing an XLUUV or USV training or testing event, operators will utilize Protective Measures Assessment Protocol (PMAP) as described in Appendix B, Section B.5.3.1 to identify any required mitigations. PMAP provides operators with notification of the required mitigations applicable to a particular training or testing event, as well as a visual display of the planned training or testing activity location.

In the HSTT EIS/OEIS and the PMSR EIS/OEIS, the Navy assessed Biologically Important Areas (BIAs) that were identified by NOAA's Cetacean Density and Distribution Mapping Working Group in 2015 (Calambokidis et al., 2015). Revised BIAs were delineated in 2023 (Harrison et al., 2023; Calambokidis et al., 2024). Specifically, areas were delineated for blue, fin, and humpback whale feeding areas and for gray whale migratory, feeding, and reproductive Areas. The BIAs include region-specific, species-specific, and time-specific defined areas that are biologically important if they meet the following criteria:

- Reproductive Areas – Areas and times within which a particular species selectively mates, gives birth, or is found with neonates or calves.
- Feeding Areas – Areas and times within which aggregations of a particular species preferentially feed. These either may be persistent in space and time or associated with ephemeral features that are less predictable but are located within a larger area than can be delineated.
- Migratory Routes – Areas and times within which a substantial portion of a species is known to migrate; the route is spatially restricted.
- Small and Resident Population – Areas and times within which small and resident populations occupy a limited geographic extent.

BIAs are not exclusionary zones (closure areas) and are not analogous to marine protected areas or critical habitat under the ESA, but rather were identified as resource management tools to “aid NOAA and other federal agencies in analyses and planning as required under multiple U.S. statutes,” such as NEPA, MMPA, and ESA, “to characterize and minimize the impacts of anthropogenic activities on cetaceans and to achieve conservation and protection goals.” To mitigate strike potential for ESA-listed species within the Proposed Action Area (see Figures 3.4-3 through 3.4-6), BIAs include the following:

- Blue Whale
 - Feeding: June – November
- Fin Whale
 - Feeding: June – November
- Humpback Whale
 - Feeding: March - November
- Gray Whale
 - Pacific Feeding Group (Parent and Core): June - November
 - Migratory (Parent) West Coast to Gulf of Alaska: November – June
 - Migratory (Child) West Coast (Southbound): November - February
 - Migratory (Child) (Northbound Phase A): January – May
 - Migratory (Child) (Northbound Phase B): March – May
 - Reproductive West Coast (Northbound Phase B): March - May

Transit of XLUUV and USVs would employ all mitigation measures listed in Appendix B, including real-time seasonal sighting notifications to avoid or minimize disturbance.

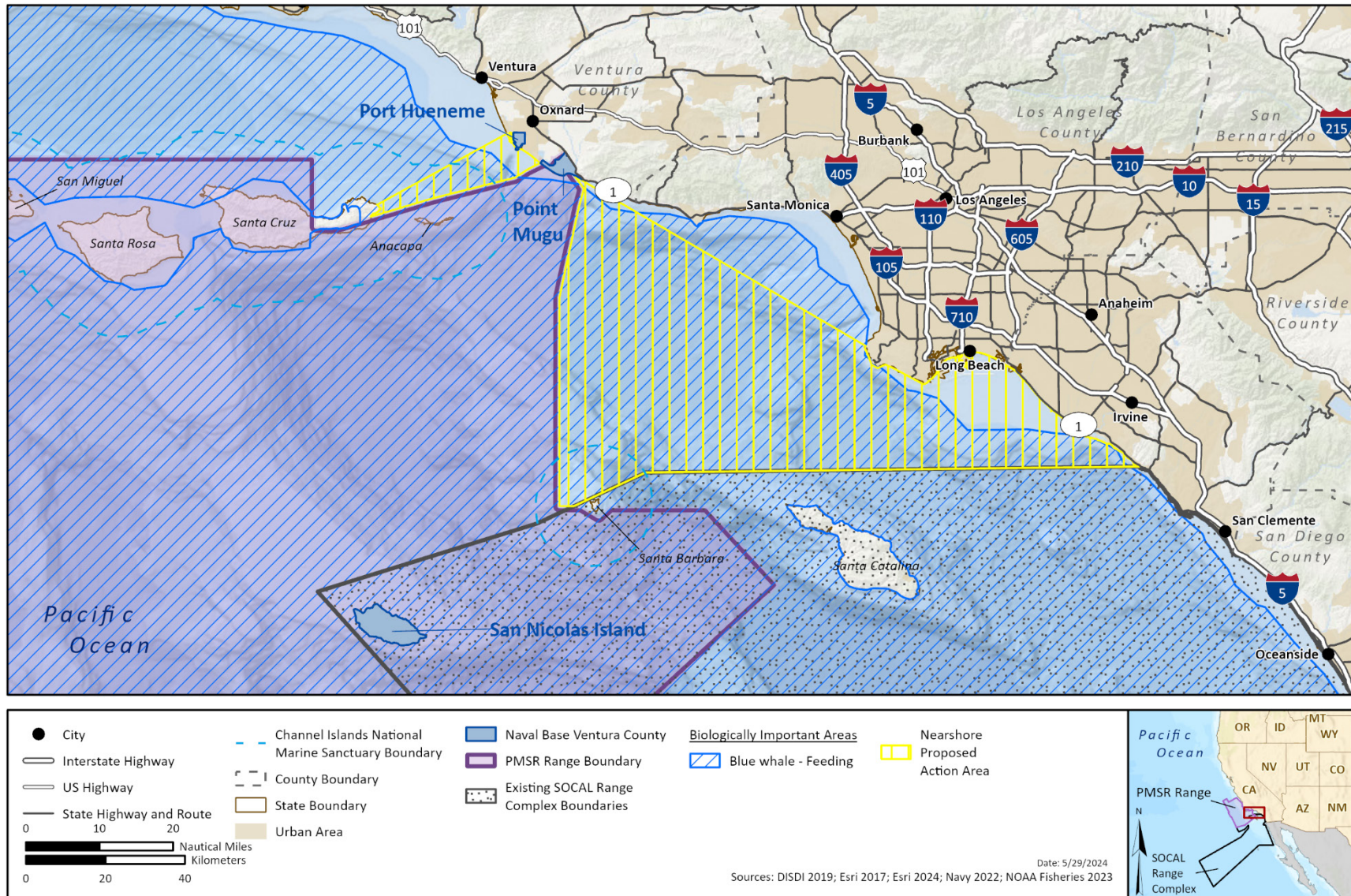


Figure 3.4-3 Biologically Important Areas for Blue Whale

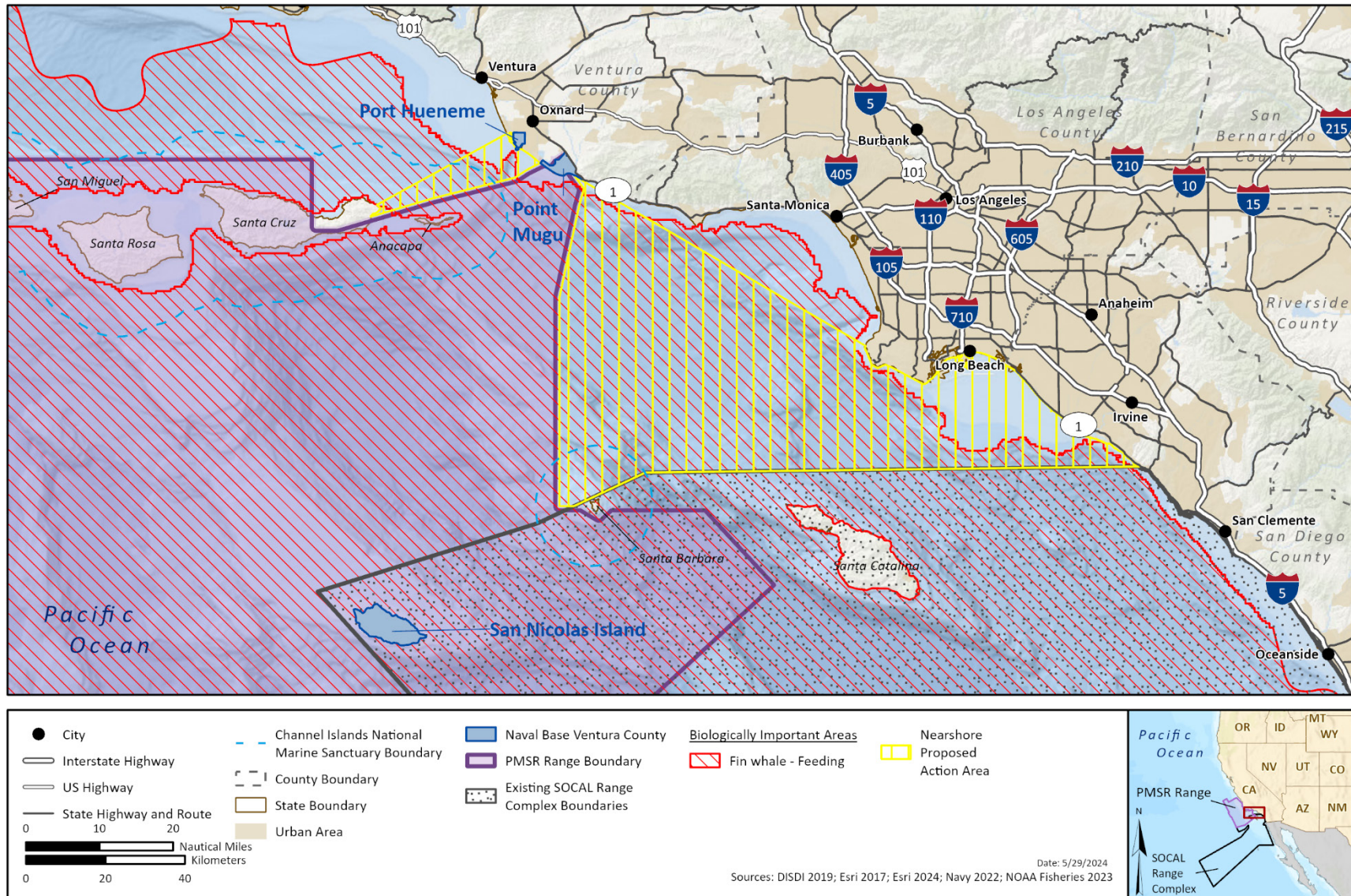


Figure 3.4-4 Biologically Important Areas for Fin Whale

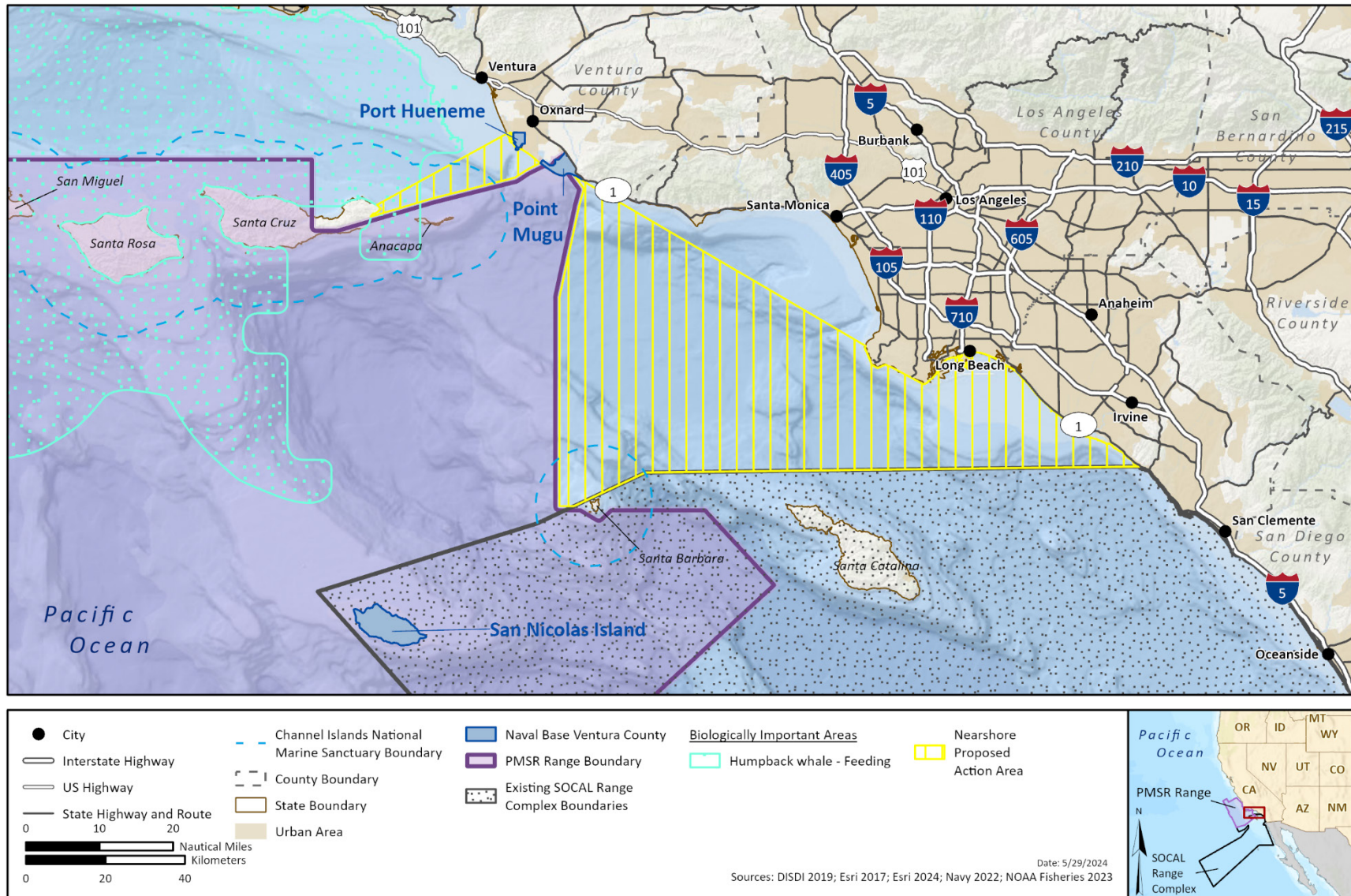


Figure 3.4-5 Biologically Important Areas for Humpback Whale

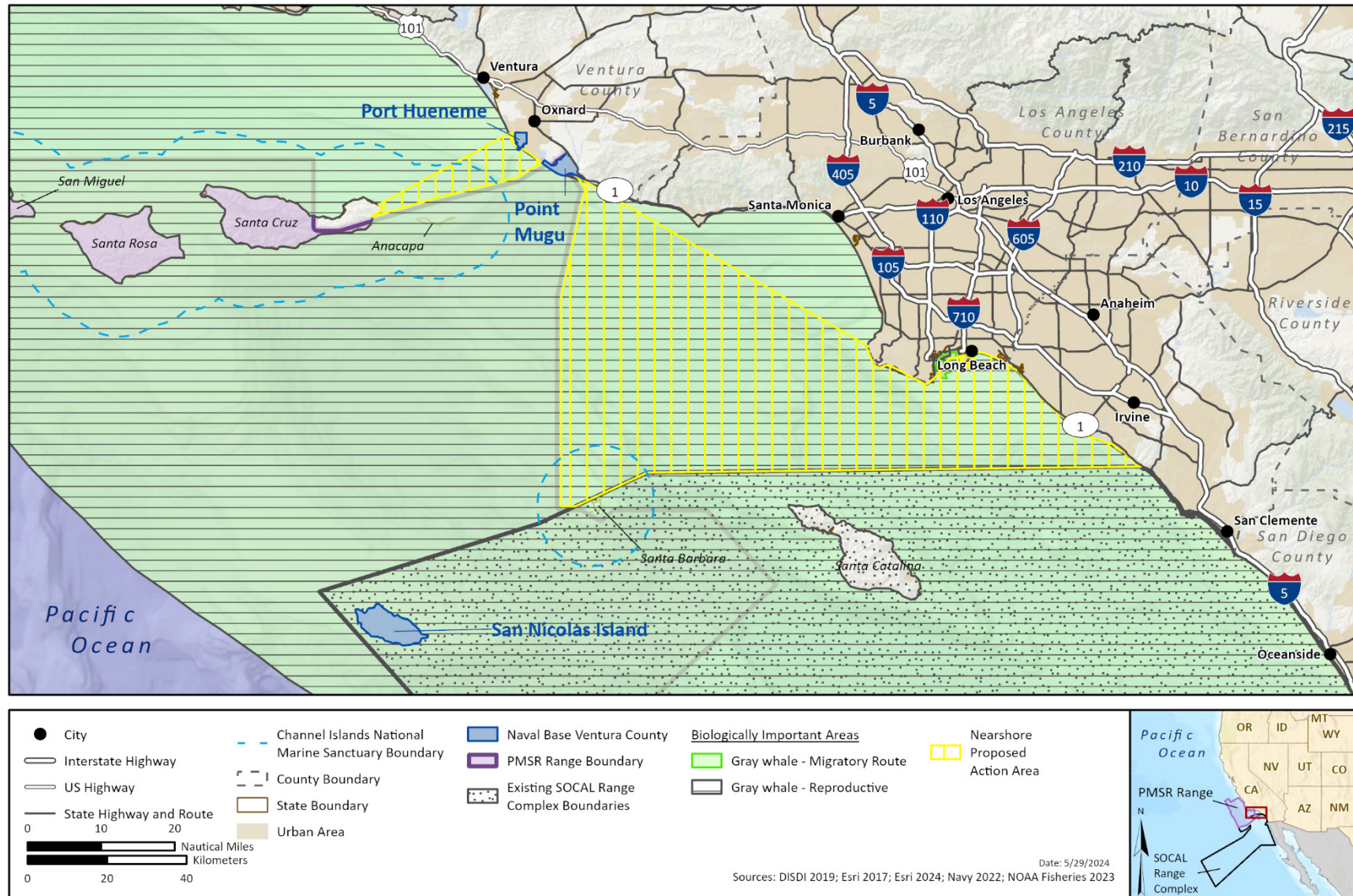


Figure 3.4-6 Biologically Important Areas for Gray Whale

ESA-listed species would be at risk of potential vessel strikes during training and testing of the XLUUVs and USVs for up to 100 days in a year (10 daytime sub-events lasting up to 10 days at a time and 2 nighttime events lasting up to 5 - 10 days at a time). As discussed in the HSTT EIS/OEIS (U.S. Department of the Navy 2018), XLUUVs that move slowly through the water are highly unlikely to strike a sea turtle or fish as these species would be expected to easily avoid the vehicle, although strikes are possible if sea turtles are at or near the surface. However, there is a very low likelihood of encountering a sea turtle within the Proposed Action Areas. Larger species, such as whales, have a higher potential for strikes than sea turtles, but it is anticipated that most marine mammals would be able to avoid the XLUUV due to its slow speed and maneuverability during training and testing activities. Implementation of BMPs, SOPs, and mitigation measures would minimize potential impact to ESA-listed species. Therefore, the Proposed Action would not result in significant impacts to ESA-listed species, (see Table 3.4-3).

Designated physical and biological features for the Central America and Mexico distinct population segments of humpback whale (see Table 3.4-4) would be disturbed along the nearshore areas during vessel deployment with the potential of prey avoiding the Nearshore Proposed Action Areas during training and testing exercises. However, impacts to habitat features (including those affecting prey availability) would be short-term and discountable. Therefore, there would be no significant impacts on designated critical habitat for the Central America and Mexico distinct population segments of humpback whale. Green turtles are anticipated to be rare within the Nearshore Proposed Action Area and vessel movement that happens to coincide within the small areas of proposed critical habitat that overlap with the Nearshore Proposed Action Area would be limited due to implementation of SOPs and Mitigations as described in Appendix B. Therefore, impacts to habitat features (foraging and resting) would not result in significant impacts to proposed critical habitat for green turtle.

The Navy has determined that vessel strike during the Proposed Action may affect but is not likely to adversely affect ESA-listed species, designated critical habitat for humpback whale, and proposed critical habitat for green turtle. As required by section 7(a)(2) of the ESA, the Navy is initiating informal consultation with NMFS and is seeking concurrence with this determination.

Impacts to marine wildlife (both ESA-listed and non-ESA-listed) and associated habitats that occur within the Channel Islands National Marine Sanctuary would be discountable as the Nearshore Proposed Action Area overlaps with a small portion of the sanctuary, training and testing activities (including shape deployments) would not occur within protected habitats, and all SOPs and Mitigations that include Lookouts and Real-Time Seasonal Awareness notifications would be implemented to avoid disturbance. Therefore, the Proposed Action would not result in significant impacts to species and habitats occurring within the Channel Islands National Marine Sanctuary.

Essential Fish Habitat

The MSA requires federal agencies to consult with NMFS on proposed actions authorized, funded, or undertaken by the agency that may adversely affect EFH pursuant to section 305(b)(2). NMFS is required to provide conservation recommendations for any federal activity that would adversely affect EFH pursuant to section 305(b)(4)(A). "Adverse effects" may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH and may include

site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 Code of Federal Regulations (CFR) 600.810).

Under the MSA, training and testing stressors (vessel movement through the water column, shape deployment to the ocean bottom, and pierside activities) would not result in adverse effects to EFH. Vessel movement would be limited to one 100-day event for XLUUVs and two 120-day events for USVs divided into 10 daytime sub-events lasting 5-10 days in duration and 2 nighttime events lasting 5-10 days in duration. Each XLUUV and USV training and testing activity is anticipated to be spread out and not congregate together in the same vicinity and thus impacts to EFH within the water column used by coastal pelagic and highly migratory species would be discountable. Deployment of shapes on the ocean bottom would also be spread out with most shapes deployed to the bottom for less than 5 days and then recovered and would also avoid deployment on hard bottom substrates. Further, shapes that are not recovered would account for a small surface area compared to available Pacific coast groundfish EFH along the Southern California coast in general. Therefore, impacts to substrate EFH utilized by Pacific coast groundfish species would be discountable. Activities conducted pierside, including fueling and various maintenance activities, would implement BMPs (see Appendix B) that would reduce the potential for impacts to EFH. Therefore, there would be no significant impacts to EFH from training and testing activities within the Proposed Action Areas and no adverse effects to EFH under the MSA. Therefore, consultation with NMFS is not required.

3.5 Infrastructure

This section discusses infrastructure such as utilities (including potable water, wastewater, stormwater, solid waste management, energy, and communications).

3.5.1 Regulatory Setting

The DoD and the Navy, in conjunction with the National Institute of Building Sciences, developed the Whole Building Design Guide (WBDG) to advance high performing facilities. Within the WBDG, the Unified Facilities Criteria (UFC) Program unifies all technical criteria and guide specifications pertaining to planning, design, construction, and operation and maintenance of real property facilities, including utilities. Antiterrorism/Force Protection Standards have also been adopted by the DoD and are currently incorporated in DoD Instruction O-2000.16 Vol. 1 (U.S. Department of Defense 2017). The standards require all DoD components to adopt and adhere to common criteria and minimum construction standards to mitigate antiterrorism vulnerabilities and terrorist threats.

3.5.2 Affected Environment

The following discussion provides a description of the existing conditions for each of the categories under infrastructure at NBVC Port Hueneme.

The Onshore Proposed Action Area includes Parcels 10, 11, and 19. The maintenance and administrative facility would be built on Parcel 19 (Option 1) or 11 (Option 2). Both parcels are located near several utility lines, including water, electric, wastewater and stormwater. If the facility is built on Parcel 11, the current storage/laydown function on the parcel would be moved to Parcel 10. The site-specific plan and utilities points of connection are further described in the following sections.

3.5.2.1 Potable Water

The point of connection for fire protection water and potable water is immediately south to the existing water main, which is within Pleasant Valley Canal Road. Both industrial and domestic water supplies are provided by the City of Oxnard (NAVFAC 2016a). NBVC Port Hueneme receives potable water from the Port Hueneme Water Agency. The water distribution system within the base is owned and maintained by the Navy. Permitting is not required for domestic water connections (NAVFAC 2020).

3.5.2.2 Wastewater

Currently, no wastewater management plan exists for NBVC Port Hueneme because all wastewater generated on the base is discharged to the City of Oxnard sanitary sewer system where it is conveyed to the Oxnard Regional Wastewater Treatment Plant for treatment and discharge (NAVFAC 2016a). The Navy constitutes a small portion, approximately 5 to 6 percent, of the overall Oxnard Wastewater Treatment Plant capacity and discharges approximately 500,000 gallons or less per day (Cooper 2020). The Oxnard Regional Wastewater Treatment Plant has a nominal average day dry weather flow of 20 million gallons per day (gpd) with a design capacity of 31.7 million gpd (City of Oxnard 2017). Small-scale pretreatment units, such as oil/water separators and wash racks are managed in accordance with the requirements of the Regional Water Quality Control Board and the City of Oxnard. Industrial wastewater management is a critical management tool for preventing degradation of water quality. The City of Oxnard is required to meet certain standards for the discharge of wastewater according to its NPDES permit.

3.5.2.3 Stormwater

Impermeable structures and pavement surfaces cover most of the base, resulting in a high amount of surface runoff during storms.

3.5.2.4 Solid Waste Management

Solid waste from NBVC Port Hueneme is conveyed by a private contractor to an approved landfill in Oxnard, California (NAVFAC 2016a). In addition, NBVC Port Hueneme has an established Qualified Recycling Program. NBVC's Qualified Recycling Program promotes pollution prevention and elimination of waste with the goal of diverting from landfill disposal at least 50 percent of non-hazardous solid waste and at least 50 percent of construction and demolition materials and debris. The following items are recycled at NBVC Port Hueneme and diverted from landfills: lead acid batteries (automotive), scrap metals (ferrous and nonferrous), plastics bottles types 1 and 2, cardboard, paper (color and mixed), paper shredded (white), office paper, aluminum cans, appliances, refrigerators, air conditioning units, stoves, water heaters, microwave ovens, toner cartridges, electrical wires, wood/plastic pallets, newspapers, small arms expended brass (.50 caliber or under), glass bottles, empty metals cans, office furniture or office furnishings. At NBVC Port Hueneme, waste diversion from landfills totaled 4,023 tons in 2012 and 5,773 tons in 2013 (NBVC No Date).

Toland Landfill in Santa Paula and Simi Valley Landfill in Simi Valley are the two active landfills in Ventura County. Toland Landfill accepts municipal solid waste and has a remaining capacity of over 16 million cubic yards. Simi Valley Landfill accepts construction/demolition, industrial, mixed municipal, sludge (also known as biosolids) wastes and has a remaining capacity of over 82 million cubic yards (CalRecycle 2019).

3.5.2.5 Energy

The electrical power for the facility is supported from the Lehman Substation located near the Pleasant Valley Canal Road and Stethem Road intersection. This substation receives an underground 66 kilovolt (kV) service feed from Southern California Edison supporting the electrical services at the waterfront facilities.

The 4.16kV distribution system is fed from a 12.47kV to 4.16kV 7500/9375 Kilo-volt-amperes step down transformer feeding Circuit #18, which is routed on an overhead line adjacent to the P-487 site. The facility natural gas connection is provided west of the building, at the existing natural gas main in Track No. 13 Road. Natural gas service would include a pressure reducing valve and natural gas meter prior to entering the building.

The electrical distribution system is operated and maintained by the base and served by Lehman Substation. The on-site distribution system of natural gas is operated and maintained by the base.

3.5.2.6 Communications

There is an existing communication duct bank containing communication cabling running east to west through the facility site containing Communication Maintenance Holes (CMH) MH1314 on the west side and MH1315 on the east side. There is a communication duct bank that exits MH1315 and runs south to Building 430.

3.5.3 Environmental Consequences

This section analyzes the magnitude of anticipated increases or decreases in public works infrastructure demands considering historic levels, existing management practices, and storage capacity, and evaluates potential impacts to public works infrastructure associated with implementation of the alternatives. Impacts are evaluated by whether they would result in the use of a substantial proportion of the remaining system capacity, reach or exceed the current capacity of the system, or require development of facilities and sources beyond those existing or currently planned.

3.5.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to the existing infrastructure of NBVC Port Hueneme. Therefore, no significant impacts to infrastructure would occur with implementation of the No Action Alternative.

Infrastructure Potential Impacts:

- No Action: The Proposed Action would not be implemented and there would be no significant impacts to infrastructure.
- Proposed Action: No significant impacts to potable water, wastewater, stormwater, solid waste management, energy, or communications.

3.5.3.2 Proposed Action

The Study Area is NBVC Port Hueneme and the municipal systems that serve the base. The facility's design would include WBDG principles and UFC/United Facilities Guide Specifications requirements in accordance with federal laws and EOs (NAVFAC SW 2023). Low impact development would be included in the design and construction of this project as appropriate.

Potable Water

The facility would require a minimum 6-inch diameter water pipe connection for fire protection water and domestic water. The domestic and fire protection water services would segregate into independent laterals at the point of service.

The Port Hueneme Water Agency maintains adequate water supply to meet the needs of its users, including NBVC Port Hueneme, and conducts routine preservation and water distribution operations. The base would plan for and assess infrastructure and utilities to ensure that the current system can adequately accommodate the specific water supply needs of each facility to be constructed under the Proposed Action. NBVC Port Hueneme would continue to provide the Port Hueneme Water Agency estimates of future water consumption requirements.

Water usage has not been calculated at this time. However, there is excess capacity of infrastructure and all utilities at the base because the existing infrastructure and utilities were originally designed to support a larger population (U.S. Department of the Navy 2013b). Based on anticipated water supply usage and projections identified in Port Hueneme Water Agency's Urban Water Management Plan (Port Hueneme Water Agency 2016), there is adequate water supply. Therefore, the existing potable water systems have sufficient capacities to support the Proposed Action, and the Proposed Action would not have significant impacts on potable water.

Wastewater

A condition assessment of the existing wastewater would be incorporated into the Proposed Action design development phase to determine the extent of needed improvements to the sanitary sewer system as a result of the newly constructed facility.

The point of connection for the domestic sanitary sewer is located to the south of the maintenance facility, within Pleasant Valley Canal Road. The new lateral would be a minimum 6-inch diameter from the existing sewer main to the maintenance facility. A lateral service connected to an oil/water separator would also be provided to serve the high bays. The depth and invert elevations of the existing sewer lines are unknown but assumed to be relatively shallow, and a duplex lift station would be required due to anticipated high ground water levels in this area.

There are currently no industrial wastewater systems in the Proposed Action Area. The initial project design does not account for discharge from the wash rack; however, if industrial wastewater systems become necessary to include in the facility design, potential solutions must consider stormwater intrusion, hydrocarbon loading, and potential salt loading. The preliminary solution would consist of an industrial wastewater drain connected to an oil/water separator. Stormwater runoff would be diverted away from the industrial waste drain by the enclosed canopy and properly mitigated. The Oxnard Wastewater Treatment Plant has a reserve capacity of approximately 1.2 million gpd. Therefore, the Proposed Action would not have significant impacts to wastewater/sanitary sewer because the existing infrastructure and treatment plants have sufficient capacity to accept the increased volumes anticipated from the Proposed Action.

Stormwater

The newly constructed XLUUV/USV facility would comply with UFC 3-210-10 Low Impact Development by providing shallow open basins with landscape treatments along the Parcel 11 or 19 boundaries. Existing stormwater lines and catch basins would be removed/demolished from the site to allow for the new development. Infrastructure would be sized to accommodate the 10-year storm flow in accordance

with UFC 3-201-01 (U.S. Department of Defense 2022). With the implementation of stormwater management controls, the Proposed Action would not have significant impacts on stormwater.

Solid Waste Management

Short-term minor increases in solid waste generation would be expected from construction activities. The primary solid waste generated during construction would consist mainly of scrap building materials such as concrete, metals (conduit, piping, and wiring), and lumber, as well as excess soil. Contractors would be required to recycle demolition debris to the greatest extent possible, thereby diverting it from landfills. All clean, excess soil generated would be reused to the greatest extent possible for grading and contouring.

Solid waste generation during training and testing would be increased over existing conditions because of the increase in facilities and personnel at NBVC Port Hueneme. Disposing of solid waste at area landfills would not create a significant impact because the landfills have sufficient capacity to accept wastes generated during training and testing and because the waste flow resulting from the Proposed Action would be minimized through mandatory recycling practices.

Therefore, the Proposed Action would not have significant impacts to solid waste management.

Energy

The electrical basis for this design is a fused cut-out type switch provided on an existing power pole to feed a 5-inch concrete encased PVC conduit with 3-#4/0 5kV copper tape-shielded feeder. This feeder would interconnect with a pad-mounted 5kV 4-way switch within the Parcel 19 site. Based on the calculated load for the combined facility, a 3000 Kilo-volt-amperes service is required and would also be fed from the 4-way switch.

At this time, the electrical load information for the proposed facility is unavailable and a temporary load monitor would need to be provided prior to full design for a 30-day period to determine the available spare capacity. The final electrical service point of connection to the existing 4.16kV distribution system would be confirmed when the results of the temporary load monitoring are available.

The facility includes a 5,100 SF battery shop for charging, maintenance and storage of XLUV and USV batteries. The current battery storage requirement is 10 battery pressure vessels and could increase to approximately 20 battery pressure vessels. Thermal runaway and explosion control is a design requirement per National Fire Protection Association 855 (Standard for the Installation of Stationary Energy Storage Systems). A location offset of at least 50 ft from other assets is required due to the potential volatile nature of damaged/degraded batteries.

The existing electric and natural gas systems have sufficient capacity to support the Proposed Action. Therefore, the Proposed Action would not have significant impacts to energy.

Communications

New duct banks and cabling would need to be installed to replace the existing duct banks and the cabling within them.

For communications connectivity, a new duct bank would be provided between MH1316 and the P-487 Telecommunication Entrance Facility. CMHs would be provided at distances not to exceed 300 ft between CMH per NBVC guidelines. Coordination efforts, including timeline, would need to be submitted with the approval of Naval Sea Systems Command (NAVSEA), Naval Facilities Engineering

Systems Command (NAVFAC), Naval Construction Group One, and Commander, Navy Installations Command Activity Contract Technical Representative Office for any network outages.

An Ultra-High Frequency- Satellite Communication (UHF-Satcom) communication system would be installed in the facility and would include antennae mounted on the facility roof. The system would include 1-Intellian ACR-M4 B1, 1-Tallysman 32-3372-14-01 (GPS) and 4-UHF-SATCOM Helical Taco antennae. The equipment installation would require compliance with referenced specifications and guidelines provided in the equipment installation drawings for the antennae. Safe communication equipment operation signage and standoff distances, if required, would be included at installation. The antennae would be connected to communications equipment racks in the facility.

The Proposed Action would not have a significant impact on the communication network.

3.6 Public Health and Safety

This discussion of public health and safety includes consideration for any activities, occurrences, or training and testing that have the potential to affect the safety, well-being, or health of members of the public. A safe environment is one in which there is no, or optimally reduced, potential for death, serious bodily injury or illness, or property damage. The primary goal is to identify and prevent potential accidents or impacts on the general public. The public health and safety section within this EA/OEA discusses information pertaining to construction activities, training and testing, and environmental health and safety risks to children.

Public health and safety during construction, demolition, and renovation activities is generally associated with construction traffic, as well as the safety of personnel within or adjacent to the construction zones.

Operational safety may refer to the actual use of the facility or built-out proposed project, or training or testing activities and potential risks to inhabitants or users of adjacent or nearby land and water parcels. Safety measures are often implemented through designated safety zones, warning areas, or other types of designations.

Environmental health and safety risks to children are defined as those that are attributable to products or substances a child is likely to come into contact with or ingest, such as air, food, water, soil, and products that children use or to which they are exposed. Children are also more sensitive receptors than adults because they are still growing and sensory damage could interfere with the development of that sensor (e.g., vision or hearing). Children also may not have the same understanding or ability as an adult would to remove themselves from a potentially damaging situation. Therefore, health and safety risk factors can sometimes have a disproportionate impact on children.

3.6.1 Regulatory Setting

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, requires federal agencies to “make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children and shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.”

Office of the Chief of Naval Operations Instruction 5100.23H establishes Navy safety and occupational health program elements and provides guidance on implementing high level regulatory policy and applying core health and safety concepts to uniquely military equipment, systems, and operations. This

instruction also adopts all applicable U.S. Occupational Safety and Health Administration (OSHA) laws and regulations, including emergency temporary standards OSHA issues under the provision of the Occupational Safety and Health Act, as well as national consensus standards.

3.6.2 Affected Environment

3.6.2.1 Geologic

NBVC Port Hueneme is located within a seismically active region with active or potentially active local and regional (i.e., more distant) earthquake faults capable of producing large magnitude earthquakes (Table 3.6-1).

Table 3.6-1 Active or Potentially Active Faults Near NBVC Port Hueneme

Fault Name	Active or Potentially Active Fault/Zone ¹	Approximate Distance and Direction Between NBVC Port Hueneme and Fault (miles – direction)	Estimated Maximum Earthquake Magnitude (Mw)
Malibu Coast	Active	10 – Southeast	6.5
Oak Ridge	Potentially Active	7 – North	7.5
San Andreas	Active	48 – Northeast	8.0
San Cayetano	Active	20 – Northeast	7.3
Santa Susana	Potentially Active	28 – Northeast	7.3
Simi	Active	8 – Northeast	6.8

Sources: County of Ventura 2017; Los Angeles Times 1990; L.A. Times 1997; Southern California Earthquake Data Center 2013a – 2013f; USGS and CGS 2018

Legend: Mw = Moment magnitude; NBVC = Naval Base Ventura County

(1) Note: Faults are considered active if they have had a surface rupture within the last 11,000 years. Faults are considered potentially active if they have moved between 11,000 and three million years ago.

The Onshore Proposed Action Area, including the maintenance and administrative facility and the waterfront area (Wharves C and 5), is located in an area designated with a liquefaction zone designation of “3A” (CGS 2022). A zone of 3A signifies that it is potentially susceptible to liquefaction due to loose sediments, a shallow water table, and regional seismicity (CGS 2002, 2003, 2022) (Figure 3.6-1).

3.6.2.2 Tsunami, Flood, and Inundation

Due to its proximity to the Pacific Ocean, the Onshore Proposed Action Area is located in an area designated as a tsunami hazard area (City of Port Hueneme 2021b).

As described in Section 3.2, the Onshore Proposed Action Area is located in a 500-year floodplain (FEMA 2010).

According to the City of Port Hueneme Master Plan, Port Hueneme is located in a potential dam inundation area. Failure of any of four dams near the mouth of the Santa Clara River could potentially cause inundation in Port Hueneme. These dams include Pyramid Reservoir, Bouquet Canyon Reservoir, Castaic Reservoir, and Santa Felicia Dam (City of Port Hueneme 2021b).

3.6.2.3 Infrastructure

There are numerous natural gas lines beneath NBVC Port Hueneme (Figure 3.6-1). The natural gas lines themselves are not necessarily a hazard. However, natural gas lines located within or adjacent to the Onshore Proposed Action Area's planned maintenance and administrative facility, which would be located on either Parcel 19 or Parcel 11, have the potential to present a hazard during the project's construction phase. According to NBVC Port Hueneme, no natural gas lines are known to be located beneath these parcels (U.S. Department of the Navy 2023) (Figure 3.6-1). However, natural gas lines do pass beneath Track No. 13 Road and an access road on the north side of the NBVC Port Hueneme Fire Station. Both of these locations are immediately adjacent to Parcel 19 and Parcel 11.

3.6.2.4 Cleanup Sites

There are multiple environmental cleanup sites at NBVC Port Hueneme (Figure 3.6-1). Open sites and emerging contaminant areas (i.e., polyfluoroalkyl substances [PFAS]) are described in Section 3.7. There are no open cleanup cases within the proposed maintenance and administrative facility; however, there are multiple open cleanup sites adjacent to Parcel 19 and Parcel 11 within the Onshore Proposed Action Area.

3.6.2.5 Maritime Training and Testing

The Navy places an extremely high priority on safety during maritime training and testing. The Navy values the safety of its personnel and vessels and those of the maritime communities. Protection of the sea space and maritime traffic is a major consideration when evaluating project safety.

Collision Avoidance

Collision avoidance is defined as the measures taken and the methods used to prevent vessel-to-vessel or vessel-to-object incursions. Collision avoidance constitutes a safety concern because of the potential for damage to vessels, injury to crews, or those of the surrounding maritime community if a vessel collision should occur.

3.6.2.6 Protection of Children

The Onshore Proposed Action Area is located entirely within the boundaries of NBVC Port Hueneme and is not readily accessible to children. No schools or day care centers are located near the proposed project areas – the closest school to the Onshore Proposed Action Area is Hueneme Elementary School, which is more than 0.75-mile away. Children may be present on vessels (e.g., fishing or other recreational vessels) that pass through the Nearshore Proposed Action Area.

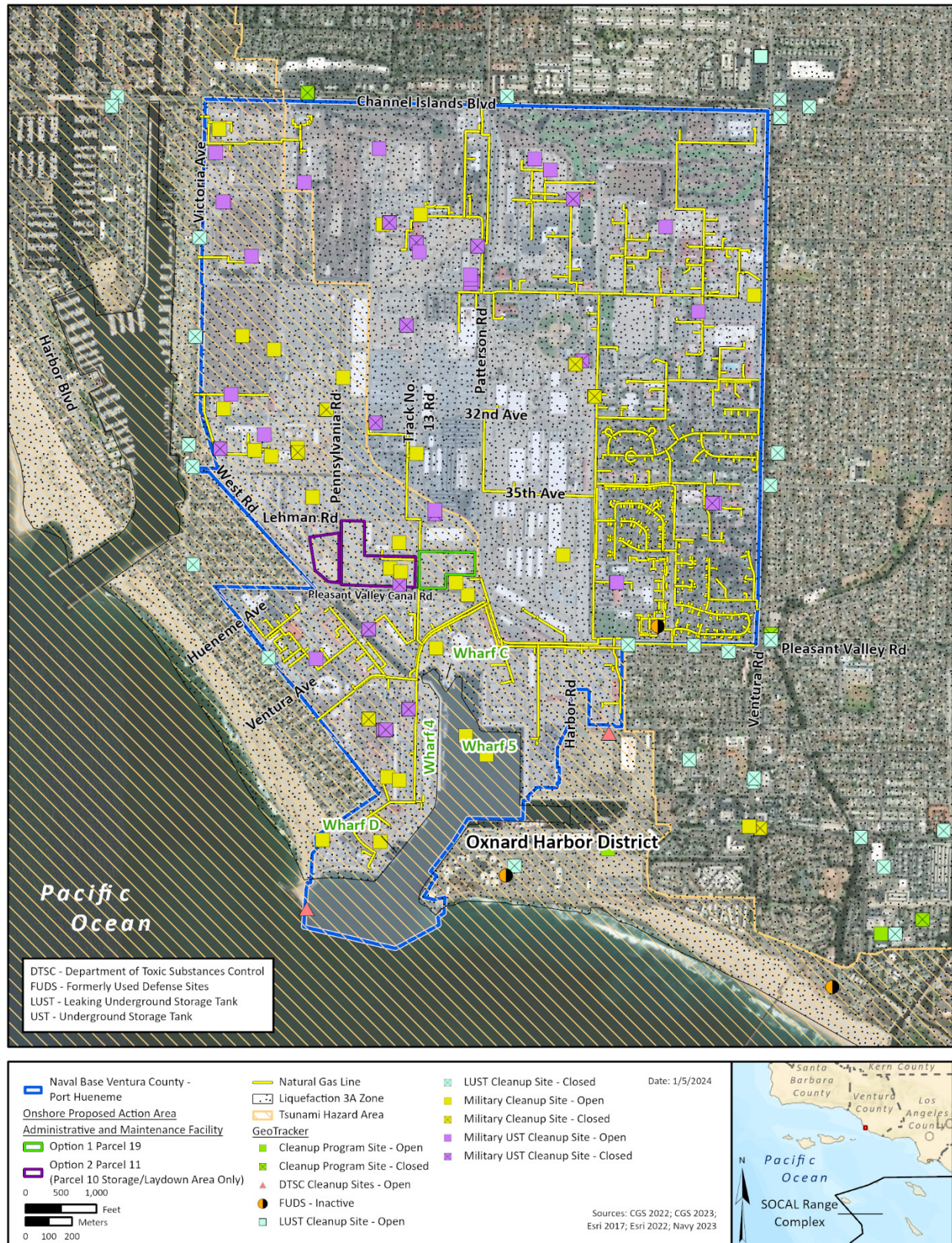


Figure 3.6-1 Public Health and Safety Considerations at NBVC Port Hueneme

3.6.3 Environmental Consequences

The safety and environmental health analysis contained in the respective sections addresses issues related to the health and well-being of and civilians living on or in the vicinity of NBVC Port Hueneme. Specifically, this section provides information on hazards associated with construction within the Onshore Proposed Action Area. Additionally, this section addresses the environmental health and safety risks to children as well as hazards associated with training and testing activities in the Nearshore and Offshore Proposed Action Areas.

3.6.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to public health and safety. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

3.6.3.2 Proposed Action

The Study Area for Public Health and Safety includes the limits of the Onshore Proposed Action Area (Figure 1.2-2), Nearshore Proposed Action Area (Figure 1.2-3), and Offshore Proposed Action Area (Figure 1.2-4).

Existing Environmental Hazards

There would be no change to existing public health and safety conditions from existing environmental hazards under the Proposed Action. The Proposed Action would not impact existing regional and local geologic, tsunami, flooding, or inundation hazards to the general public as described in the affected environment. Potential hazards from existing infrastructure (i.e., natural gas lines) and cleanup sites would be avoided during the construction phase, and the potential for impacts during training and testing would be avoided through ongoing cleanup efforts, and appropriate designs (e.g., location-specific building codes and engineering controls) for the facility. Therefore, there would be no impacts to health and safety from existing environmental hazards as a result of the Proposed Action.

Construction Activity

There would be negligible impacts on public health and safety associated with the Proposed Action. Construction activities would be conducted in accordance with established Navy policies for ensuring the health and safety of the general public. Construction would take place entirely within the secured perimeter of NBVC Port Hueneme, and construction areas would not be accessible by non-construction personnel or the public.

A well-defined work area and exclusion zone around the project area would be implemented during project construction. A project-specific Health and Safety Plan would be prepared prior to the start of construction. The plan would identify the chain of command, assign roles and responsibilities, describe potential hazards and measures to minimize or avoid them, prescribe the appropriate level of personal protective equipment for each hazard, and identify emergency response procedures and hospital locations. The designated Site Safety and Health Officer would conduct daily safety briefings, monitor site health and safety, and determine whether site conditions require any changes to the Health and Safety Plan.

Public Health and Safety Potential Impacts:

- No Action Alternative: The Proposed Action would not be implemented and there would be no impacts to public health and safety.
- Proposed Action: No significant impacts to public health and safety would occur.

Maritime Training and Testing Activities

There is no generally recognized threshold of maritime safety that defines acceptable or unacceptable conditions. However, the focus of maritime operation planners and managers as well as vessel operators is to reduce safety risks through a number of measures as appropriate. BMPs and SOPs are included in the Proposed Action and would be implemented as described in Appendix B. These address sea space deconfliction, vessel safety, and USVs and unmanned undersea vehicle safety, to prevent vessel-to-vessel or vessel-to-object incursions. As described in Section 1.2, the Onshore, Nearshore, and Offshore Proposed Action Areas are adjacent to PMSR and SOCAL Range Complexes. There are restricted use or danger zones in portions of these ranges, as well as other restricted areas associated with missile ranges, marine sanctuaries, shipping lanes, safety fairways, and other USACE designated safety zones or restricted areas as demarcated on NOAA nautical charts (e.g., Chart 18724 *Port Hueneme and Approach* [NOAA 2017]). The identification of these areas on NOAA nautical charts and special restrictions via Notice to Mariners as necessary, provides mariners with advance notice of potential safety hazards. When the XLUUV/USVs transit PMSR, or train and test in the SOCAL Range Complex, they would also adhere to these and other applicable BMPs and SOPs. Therefore, no significant impact on maritime safety from XLUUV/USV training and testing activities would be expected.

Protection of Children

Construction noise associated with implementation of the Proposed Action would be temporary and intermittent and, to the extent practical, would be performed during daytime hours. No construction would occur near any schools, daycare centers, or other areas where children congregate. Therefore, noise levels from proposed construction would not be expected to cause significant changes to the existing noise conditions. Children may be present on vessels (e.g., fishing or other recreational vessels) that pass through the Offshore Proposed Action Areas; however, standard maritime safety rules would apply and no disproportionate risk to children would be anticipated from the presence of children on vessels at sea.

The use of fencing and barricades would prevent unauthorized persons from entering the base and the proposed project area during construction and training and testing. Construction activities, training and testing events, and support or maintenance activities that would occur within the on and Offshore Proposed Action Areas would be managed to ensure all hazardous materials and equipment are stored safely at all times.

Therefore, the Navy has determined that there are no environmental health and safety risks associated with the Proposed Action that would disproportionately affect children.

Overall, the implementation of the Proposed Action would not result in significant impacts to public health and safety.

3.7 Hazardous Materials and Wastes

This section discusses hazardous materials, hazardous waste, toxic substances, and contaminated sites.

3.7.1 Regulatory Setting

Hazardous materials are defined by 49 CFR section 171.8 as “hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table, and materials that meet the defining criteria for hazard classes and divisions in 49 CFR

section 173.” Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations.

Hazardous wastes are defined by the Resource Conservation and Recovery Act, as amended by the Hazardous and Solid Waste Amendments, as: “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.” Certain types of hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes, and their associated regulatory requirements are specified in 40 CFR section 273. Four types of waste are currently covered under the universal waste regulations: hazardous waste batteries, hazardous waste pesticides that are either recalled or collected in waste pesticide collection programs, hazardous waste thermostats, and hazardous waste lamps, such as fluorescent light bulbs.

“Special hazards” are those substances that might pose a risk to human health and are addressed separately from other hazardous substances. Special hazards include asbestos-containing material (ACM), PCBs, and lead-based paint. The Toxic Substances Control Act gives the USEPA authority to regulate special hazard substances. Asbestos is also regulated by USEPA under the CAA, and the Comprehensive Environmental Response, Compensation, and Liability Act.

The DoD established the Defense Environmental Restoration Program (DERP) to facilitate thorough investigation and cleanup of contaminated sites on military installations (active installations, installations subject to Base Realignment and Closure, and formerly used defense sites). The Installation Restoration Program (IRP) and the Military Munitions Response Program (MMRP) are components of the DERP. The IRP requires each DoD installation to identify, investigate, and clean up hazardous waste disposal or release sites. The MMRP, on the other hand, addresses nonoperational rangelands that are suspected or known to contain unexploded ordnance, discarded military munitions, or munitions constituent contamination. The Environmental Restoration Program (ERP) is the Navy’s initiative to identify, investigate and clean up former waste disposal sites on military property in accordance with DERP, and includes its own IRP and MMRP.

3.7.2 Affected Environment

3.7.2.1 Hazardous Materials

Hazardous materials are used at NBVC Port Hueneme for many functions, including fueling, vehicle maintenance, and training activities. Types of hazardous materials used at NBVC Port Hueneme include petroleum, oils, and lubricants; coolants (e.g., antifreeze); paints; greases; and solvents (NAVFAC SW 2020). Hazardous materials can be stored in Mission Package Support Facility hazmat storage lockers within buildings located at NBVC Port Hueneme. Aboveground storage tanks and other containers are used for bulk fluid storage on the installation, such as for gasoline, diesel, oils, and hydraulic fluids. There are also a number of identified IRP sites located throughout NBVC Port Hueneme (See Section 3.7.2.4).

The Navy has implemented a Hazardous Material Control and Management Program and Hazardous Waste Minimization Program for all its facilities, including NBVC Port Hueneme. These programs are governed by Chief of Naval Operations Manual 5090.1, Environmental Readiness Program Manual (OPNAV M-5090.1). NBVC Port Hueneme conducts pest management activities in accordance with protocols detailed in the NBVC Integrated Pest Management Plan (NAVFAC SW 2011). DoD Instruction 4150.07, DoD Pest Management Program, provides guidance for the control of weeds, rodents, ants, and other organisms that could negatively affect ecosystems.

3.7.2.2 Hazardous Waste

NBVC Port Hueneme is classified as a large-quantity generator of hazardous waste (USEPA ID CA6170023323). Under the Resource Conservation and Recovery Act, a large-quantity generator generates more than 2,200 pounds of hazardous waste, or more than 2.2 pounds of acutely hazardous waste, per month (USEPA 2023a). Activities at NBVC Port Hueneme that generate hazardous waste include painting, solvent cleaning and degreasing, mechanical and chemical paint and rust removal, fluids change-out, electroplating, metal casting, machining, battery disposal, and welding or soldering.

The Hazardous Waste Management Plan for NBVC Port Hueneme outlines procedures for the accumulation, collection, transportation, and disposal of hazardous wastes. Under the Hazardous Waste Management Plan, hazardous waste is collected, transported, and disposed of by hazardous waste service contractors (NAVFAC SW 2020).

3.7.2.3 Special Waste

A special waste is any hazardous waste listed in 22 California Code of Regulations (CCR) 66740, any waste classified as a special waste pursuant to 22 CCR 66744, or any waste granted a variance for the purpose of storage, transportation, treatment, or disposal by the California Department of Health Services pursuant to 22 CCR 66310.

Special waste also includes any solid waste that, because of its source of generation, physical, chemical, or biological characteristics, or unique disposal practices, has special requirements in the solid waste facilities permit for handling and/or disposal. Common special wastes generated at NBVC Port Hueneme include ACM, lead-based paint, contaminated soils, and industrial waste (NAVFAC SW 2020).

3.7.2.4 Defense Environmental Restoration Program

Environmental contamination sites at NBVC Port Hueneme are investigated under the ERP. IRP sites located within or near Parcel 19 are identified in Figure 3.7-1 and the IRP sites located within or near Parcels 10 and 11 are identified on Figure 3.7-2.



Figure 3.7-1 Hazardous Materials Sites Near Parcel 19



Figure 3.7-2 Hazardous Materials Sites Near Parcel 10 and 11

Figure 3.7-1 and 3.7-2 also show the location of various potential hazardous material and hazardous waste locations such as underground storage tanks (USTs), Areas of Concern (AOCs), and solid waste management units (SWMUs) within and near Parcel 19 (Option 1) and Parcels 10 and 11 (Option 2). The closest sites are listed below. These sites are described in detail in the Final Basewide Preliminary Assessment/Site Inspection Report for Per- and Polyfluoroalkyl Substances which was completed in March of 2022 (NAVFAC SW 2022).

- SWMU 53 (Abandoned Dump Area)
- IRP Site 19A (Drainage Ditches), SWMU 56, and SWMU 57
- AOC 15 (Fire Training Waste Fuel Storage Tanks)
- AOC 16 (Fire Department Waste Oil Spills)
- UST 433-1 Site (former 125-gallon steel gasoline UST)
- Building PH430 (federal Fire Station 73)
- IRP Site 8, MRP Site UXO 2, AOC 9, and SWMU 43
- AOC 18 (former garbage grinder for organic waste)
- AOC 12 (former Diesel-fueled generators)

3.7.2.5 Emerging Contaminants

The USEPA has classified PFAS as unregulated or “emerging” contaminants, which are not yet subject to Safe Drinking Water Act regulatory standards or routine water quality testing requirements. The USEPA is currently studying PFAS to determine whether regulation is needed (USEPA 2023b).

PFAS is a suite of chemicals of emerging public health concern, primarily in drinking water systems. In some cases, Navy activities have resulted in the release of PFAS, which have contaminated drinking water sources. The primary Navy release of PFAS was through the use of Aqueous Film-Forming Foam (AFFF) for fire and emergency responses and during training and testing activities (U.S. Department of the Navy 2016a).

As required by the 2021 National Defense Authorization Act, the Navy is identifying all PFAS-containing AFFF for removal and destruction. The Navy has amended the AFFF military specification setting the lowest quantifiable limits for perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). The Navy is also replacing legacy AFFF in facilities (Assistant Secretary of the Navy 2023). The Navy intends to remove, dispose, and replace legacy AFFF that contains PFAS once environmentally suitable substitutes are identified and certified to meet military specifications (U.S. Department of the Navy 2016b).

AOC 16

Although there were no documented releases of AFFF at AOC 16, the site is considered a potential PFAS source because of the firefighter training activities that occurred. A 2016 field investigation detected PFOS and PFOA at concentrations above screening criteria in groundwater from monitoring wells. Perfluorobutanesulfonic acid was also detected in groundwater but at concentrations below the current screening criterion. However, all three chemicals were detected at concentrations below the current project screening criteria in soil between 0 and 6 ft below ground surface (NAVFAC SW 2022).

SWMU 53

Although there were no documented releases of AFFF at SWMU 53, it is considered a potential PFAS source because of the firefighter training activities that occurred on-site. Additionally, PFOS and PFOA

were detected at concentrations above screening criteria in groundwater samples collected at the adjacent site AOC 16 in 2016 (NAVFAC SW 2022).

3.7.3 Environmental Consequences

The hazardous materials and wastes analysis addresses issues related to the use and management of hazardous materials and wastes as well as the presence and management of specific cleanup sites at NBVC Port Hueneme.

3.7.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change associated with hazardous materials and wastes. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

3.7.3.2 Proposed Action

The Study Area for hazardous materials and wastes is NBVC Port Hueneme.

Hazardous Materials

Construction activities associated with the Proposed Action require the use of hazardous materials that would cease when construction is complete. These materials largely would be used during construction activities, resulting in little waste generation. Hazardous materials used during construction would be handled and managed in accordance with applicable regulations as well as the Navy's Consolidated Hazardous Material Reutilization and Inventory Management Program.

The support and maintenance of XLUUVs and USVs would require the use of hazardous materials in quantities and types typical of those already in use at NBVC Port Hueneme. Furthermore, a total of six fuel storage containers would be added throughout the Proposed Action, each with a capacity of 1,000 gallons. However, only two fuel storage tanks would be used to support training activities for defueling and fueling of the XLUUVs as they arrive to NBVC Port Hueneme. The other four fuel storage containers would be stored and as each XLUUV is tested and shipped to permanent homebase, its fuel storage container would go with it as part of its equipment package. Therefore, the number of gallons stored at NBVC Port Hueneme would total 2,000 gallons of diesel fuel. As part of the design, the storage containers would include secondary containment. Fueling of the USVs would be accomplished from an off-base fueling tank.

Human health, welfare, and the environment would be protected through the use of proven and effective BMPs and SOPs to prevent, contain, and/or clean spills and leaks; by providing personnel training on protocol and procedures to use during training and testing activities; and ensuring NBVC Port Hueneme's ability to properly arrange for and coordinate the disposal of anticipated hazardous materials.

Hazardous Materials and Wastes Potential Impacts:

- No Action: The Proposed Action would not be implemented and there would be no change to hazardous materials and wastes.
- Proposed Action: No significant impacts related to hazardous materials and waste would occur. Minor short- and long-term increases in hazardous material use and hazardous waste generation from construction and operations would not exceed current management and disposal capacities.

Compliance with federal regulations and Navy instructions would minimize the use of hazardous materials during construction or training and testing events, ensure appropriate risk minimization measures are implemented, staff are properly trained, and recordkeeping requirements are met. Therefore, no significant impacts from hazardous materials would be expected from the Proposed Action.

Hazardous Wastes

The quantity of hazardous waste generated from construction and maintenance activities would be minor and would not be expected to exceed the capacities of existing hazardous waste disposal facilities. All hazardous wastes would be managed in accordance with federal regulations and the base's Hazardous Waste Management Plan (HWMP). The Proposed Action would adhere to relevant procedures in the HWMP, the Consolidated Hazardous Material Reutilization and Inventory Management Program, and other regulations and procedures applicable to hazmat, special waste, universal waste (e.g., batteries), and any regulatory requirements related to IRP site disturbance, PFAS use, disposal, or release. Therefore, increases in hazardous waste generation resulting from the Proposed Action would have no significant impacts.

Special Waste

Although demolition of structures is not planned in the Proposed Action, if any special wastes are disturbed during foundation excavation, such as ACM that need removal, this would be done by properly trained and licensed contractors to ensure compliance with applicable hazardous waste testing, handling, and disposal procedures and requirements. The NBVC HWMP outlines procedures for the management of special waste such as treated wood waste, ACMs, and industrial waste. Adherence to the applicable regulations would ensure that the material is disposed of properly to protect human health and the environment.

Defense Environmental Restoration Program

Construction of permanent facilities and training and testing of the XLUUVs and USVs could have an impact on IRP sites and other identified hazardous material and hazardous waste locations. Parcels 10 and 11 are located adjacent to IRP Site 19A, a drainage ditch which runs between the two parcels. Parcel 11 also includes IRP Site 08 within the center of the site, which previously accommodated various uses such as a skeet shooting range, the location of a 250-gallon diesel UST, and storage for hazardous wastes (NAVFAC SW 2019). Parcel 19 is located near IRP Site 19A, which is located to the south. Other identified hazardous sites within and near Parcels 10, 11, and 19 include AOCs, SWMUs, MRP and former UST sites.

The IRP program manager would review the Proposed Action, including construction activities, for compliance with existing land use controls related to IRP sites which could be potentially impacted by the Proposed Action. Prior to construction, construction managers would coordinate with the IRP program manager to ensure consistency with relevant land use controls. Therefore, construction activities would avoid disturbing these sites to the extent practicable and in accordance with applicable regulations and relevant land use controls.

Support and maintenance activities would include use of hazardous materials including degreasers, general cleaners, antifreeze, oils, corrosives, abrasives, and paints. Activities include vehicle wash-down, general maintenance, system dry checks which would utilize diesel generators, and vehicle cooling wash-down. Proper wastewater containment and discharge measures would be taken. Adherence to the

applicable regulations would ensure that both construction and operation activities would not significantly impact IRP sites or other identified hazardous sites within NBVC Port Hueneme, therefore the Proposed Action would have no significant impact.

Emerging Contaminants

As described in Section 3.7.2.4., AOC 16 and SWMU 53 are considered potential PFAS sources because of firefighting training activities that occurred there. Furthermore, PFOS and PFOA were detected at concentrations above screening criteria in groundwater samples collected at AOC 16 (NAVFAC SW 2022). The Navy completed draft work plans regarding AOC 16 and SWMU 53 in April 2020 which are currently being revised to address regulatory agency comments (NAVFAC SW 2022).

The Proposed Action would adhere to relevant procedures in the HWMP, the Consolidated Hazardous Material Reutilization and Inventory Management Program, and other regulations and procedures applicable to hazmat, special waste, and any regulatory requirements related to IRP site disturbance, PFAS use, disposal, or release. Therefore, implementation of the Proposed Action would not result in significant impacts from hazardous materials and wastes.

3.8 Land Use and Recreation

This discussion of land use includes current and planned uses and the regulations, policies, or zoning that may control the proposed land use. The term land use refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. However, there is no nationally recognized convention or uniform terminology for describing land use categories. As a result, the meanings of various land use descriptions, labels, and definitions vary among jurisdictions. Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic area. There is a wide variety of land use categories resulting from human activity. Descriptive terms often used include residential, commercial, industrial, agricultural, institutional, and recreational.

3.8.1 Regulatory Setting

In many cases, land use descriptions are codified in installation master planning and local zoning laws. Office of the Chief of Naval Operations Instruction 11010.40 establishes an encroachment management program to ensure operational sustainment has direct bearing on land use planning on installations.

3.8.2 Affected Environment

The following discussion provides a description of the existing conditions at NBVC Port Hueneme and the surrounding communities.

3.8.2.1 Land Use

NBVC Port Hueneme land uses include support logistics, testing, port operations, training, housing, community support, administration, natural resource management areas, ordnance storage areas, and public works. The installation shares Port Hueneme Harbor with the Oxnard Harbor District (OHD), the commercial operator of the Port. The Navy controls the northern and western portions of the harbor, while OHD has authority over the eastern channel.

NBVC Port Hueneme is bordered to the north by the cities of Port Hueneme and Oxnard. The areas immediately around the installation include several low-density residential neighborhoods which are already built out.

The land east of NBVC Port Hueneme includes the City of Port Hueneme and the City of Oxnard. Additional areas east of NBVC Port Hueneme include largely open space and agricultural land. The City of Oxnard has taken steps toward protecting open space with the adoption of the Save Open Space and Agricultural Resources initiative to protect agricultural lands on the outskirts of the city, including areas to the east of NBVC Port Hueneme.

NBVC Port Hueneme is bordered to the south by the City of Port Hueneme, OHD facilities and the Pacific Ocean.

The area west of NBVC Port Hueneme contains the unincorporated community Silver Strand, which includes many vacation homes and residences of Navy personnel. The community is largely built out. The current Ventura County Coastal Zoning Ordinance exempts the neighborhood from its zoning regulations. Additional lands include the Channel Islands Harbor, which the Ventura County Harbor Department has land use jurisdiction over (Ventura County Transportation Commission 2015).

3.8.2.2 Recreation

The City of Oxnard, City of Port Hueneme, and Ventura County all include publicly accessible beaches in the vicinity of NBVC Port Hueneme. Recreational activities include swimming, biking, running, fishing, surfing, volleyball, boating, diving, whale watching tours, and other outdoor activities and watersports. Outdoor activities have a tendency to fluctuate with the seasons, with increased activity in the summertime when the days are longer and the weather is warmer.

Nearby beaches include Silver Strand State Beach, Hollywood Beach, and Port Hueneme Beach Park. La Jenelle Park is located toward the south of NBVC Port Hueneme, and west of the harbor. The Channel Islands Harbor is located west of NBVC Port Hueneme, and includes a boat launch facility, the Channel Islands Maritime Museum, public parks, and yacht clubs.

Within NBVC Port Hueneme, there are recreational activities such as the Seabee Golf Course, parks, basketball courts, gyms, swimming pools, and a bowling alley. As regulated by 33 CFR section 334.1127, no personal watercraft are allowed within the Port of Hueneme, the shared harbor in use by NBVC Port Hueneme and the OHD. Commercial and personal use recreational vessels may be present in the Nearshore and Offshore Proposed Action Areas outside of the OHD.

3.8.3 Environmental Consequences

The location and extent of a Proposed Action needs to be evaluated for its potential effects on a project site and adjacent land uses. Factors affecting a Proposed Action in terms of land use include its compatibility with on-site and adjacent land uses, restrictions on public access to land, or change in an existing land use that is valued by the community. Other considerations are given to proximity to a Proposed Action, the duration of a proposed activity, and its permanence.

3.8.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to land use. Therefore, no significant impacts to land use would occur with implementation of the No Action Alternative.

3.8.3.2 Proposed Action

The Study Area is NBVC Port Hueneme and the surrounding adjacent communities.

Land Use

Under the Proposed Action, all construction activities would occur within NBVC Port Hueneme and would be concentrated within the Onshore Proposed Action Area. Furthermore, construction activities would be intermittent and temporary. During training and testing events, support and maintenance activities associated with the Proposed Action would not interfere with surrounding land uses in the communities adjacent to NBVC Port Hueneme. Residences of the City of Port Hueneme are located over 2,400 ft southeast of Parcel 19 and over 3,000 ft from Parcel 11. The unincorporated Silver Strand Beach community is located over 1,500 ft west of Parcel 19 and approximately 200 ft from Parcel 10. The support and maintenance activities which would occur within the Onshore Proposed Action Area and pierside include general maintenance, vehicle wash-down, and XLUUV transportation. These activities would not interfere with land uses in the surrounding communities.

NBVC Port Hueneme also shares the harbor with the OHD. Some support and maintenance activities would occur pierside within the northern and western portions of the harbor. Pierside support and maintenance activities include fueling and ballasting activities, vehicle cooling wash-down, and some general maintenance activities. Some training and testing activities would also occur pierside and within the harbor. These include vehicle launch and recovery, system wet checks, and battery recharge. After pierside checks, XLUUVs would be connected to a support vessel and towed or would transit under their own power from NBVC Port Hueneme to a pre-determined location to perform training and testing. A small support craft may perform traffic management in the ocean and situation assessment during towing and carry personnel who connect/disconnect the tow as required. These activities would not

Land Use Potential Impacts:

- No Action: The Proposed Action would not be implemented and there would be no impact to land use.
- Proposed Action: No significant impact to land use or recreation. Under the Proposed Action, a portion of the activities occur on land owned by NBVC Port Hueneme in an area already used for similar purposes so there would be no change to the existing land use. With regard to recreation, activities from the Proposed Action would occur within the Navy-owned harbor where recreational activity is not allowed. As such, training and testing events associated with the Proposed Action would not interfere with any potential recreational activities within the Nearshore Proposed Action Area.

interfere with the commercial activities which would occur within the eastern channel of the harbor. The Proposed Action would not alter any agreements between the Navy and OHD regarding the shared use of some lands and facilities. Therefore, implementation of the Proposed Action would not result in significant impacts to land use.

Recreation

Recreation activities on-base would remain the same, as the Proposed Action would not alter any recreational facilities. Training and testing activities associated with the Proposed Action would occur within the Onshore Proposed Action Area. In-water pierside checks and XLUUV launch and recovery activities would occur within the harbor and the Nearshore and Offshore Proposed Action Areas. The Proposed Action would not interfere with the public's access to the shoreline, nearby public parks, or the Channel Island Harbor. Furthermore, the training and testing events associated with the Proposed Action would not interfere with any potential recreational activities within the Nearshore Proposed Action Area, such as fishing, boating, diving, whale watching tours, or other watersports. The Navy would implement BMPs (see Table 2.5-1) that would continue to ensure planned training and testing events maintain a safe distance and avoid interactions with or disruptions to recreational users that may be present within the Nearshore and Offshore Proposed Action Areas. Therefore, implementation of the Proposed Action would not result in significant impacts related to recreation.

3.9 Environmental Justice

The USEPA defines environmental justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (USEPA 2022a).

3.9.1 Regulatory Setting and Methodology

Consistent with EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994), the Navy's policy is to identify and address any disproportionately high and adverse human health or environmental effects of its actions on minority and low-income populations.

The Navy followed the steps outlined in USEPA's 2016 Report, *Promising Practices for Environmental Justice Methodologies in NEPA Reviews* (USEPA 2016), in order to determine whether there would be disproportionately high and adverse effects on minority and low-income populations. These steps are summarized as follows:

1. **Define the Affected Environment.** The environment of the areas(s) to be affected or created by the alternatives under consideration was described.
2. **Identify the Presence or Absence of Minority and Low-Income Populations.** The presence of minority and low-income populations under baseline conditions initially was determined using *EJScreen*, the USEPA's Environmental Justice Screening and Mapping Tool, and verified with additional census data. The *EJScreen* tool identifies USEPA Inflation Reduction Act Disadvantaged Communities to "determine whether a community is disadvantaged for the purposes of implementing programs under the IRA." It does this by analyzing whether any block group is at or above the 90th percentile for any of the *EJScreen*'s Supplemental Indexes when compared to the nation or state, among other factors.

3. **Perform Impact Analysis.** Potential direct, indirect, and cumulative impacts on minority populations and low-income populations in the affected environment, including both human health and environmental impacts from the Navy's programs, policies, or activities, were identified and compared to the impacts to the non-minority and non-low-income populations in the affected environment.
4. **Determine if there would be Disproportionately High and Adverse Effects on Minority and Low-Income Populations.** Impacts to resource areas from the Proposed Action were analyzed to determine whether there would be any disproportionately high and adverse effects to minority and/or low-income populations. A comparison group different from the reference community was also selected to compare results.
5. **Evaluate Mitigation and Monitoring.** If a potential adverse impact was identified, the Navy evaluated practicable mitigating measures.

EO 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All* (April 21, 2023), supplements EO 12898 to address environmental justice. EO 14096 establishes a policy to pursue a whole-of-government approach to environmental justice. With respect to environmental reviews under NEPA, EO 14096 directs federal agencies to: (1) analyze direct, indirect, and cumulative effects of federal actions on communities with environmental justice concerns; (2) consider best available science and information on any disparate health effects (including risks) arising from exposure to pollution and other environmental hazards, such as information related to the race, national origin, socioeconomic status, age, disability, and sex of the individuals exposed; and (3) provide opportunities for early and meaningful involvement in the environmental review process by communities with environmental justice concerns potentially affected by the Proposed Action.

3.9.2 Affected Environment

3.9.2.1 Environmental Justice Communities

An Environmental Justice Region of Influence (ROI) was created to evaluate disproportionate effects on minority and low-income populations from air quality, water resources, noise, infrastructure, public health and safety, hazardous materials and wastes, and land use. This ROI looked at the communities immediately bordering NBVC Port Hueneme because the ROI for the resources listed above were limited to on-base or immediately adjacent communities with the exception of air quality – the impacts of which are minimal or *de minimis* for the broader VCAPCD. Using census data and *EJScreen* at the Block Group tract level, disadvantaged communities were defined as higher percentage minority or low-income populations than the comparison, Ventura County. Using this criteria, twelve disadvantaged communities were identified within the Environmental Justice ROI. These Block Groups are listed in Table 3.9-1 and shown in Figure 3.9-1.

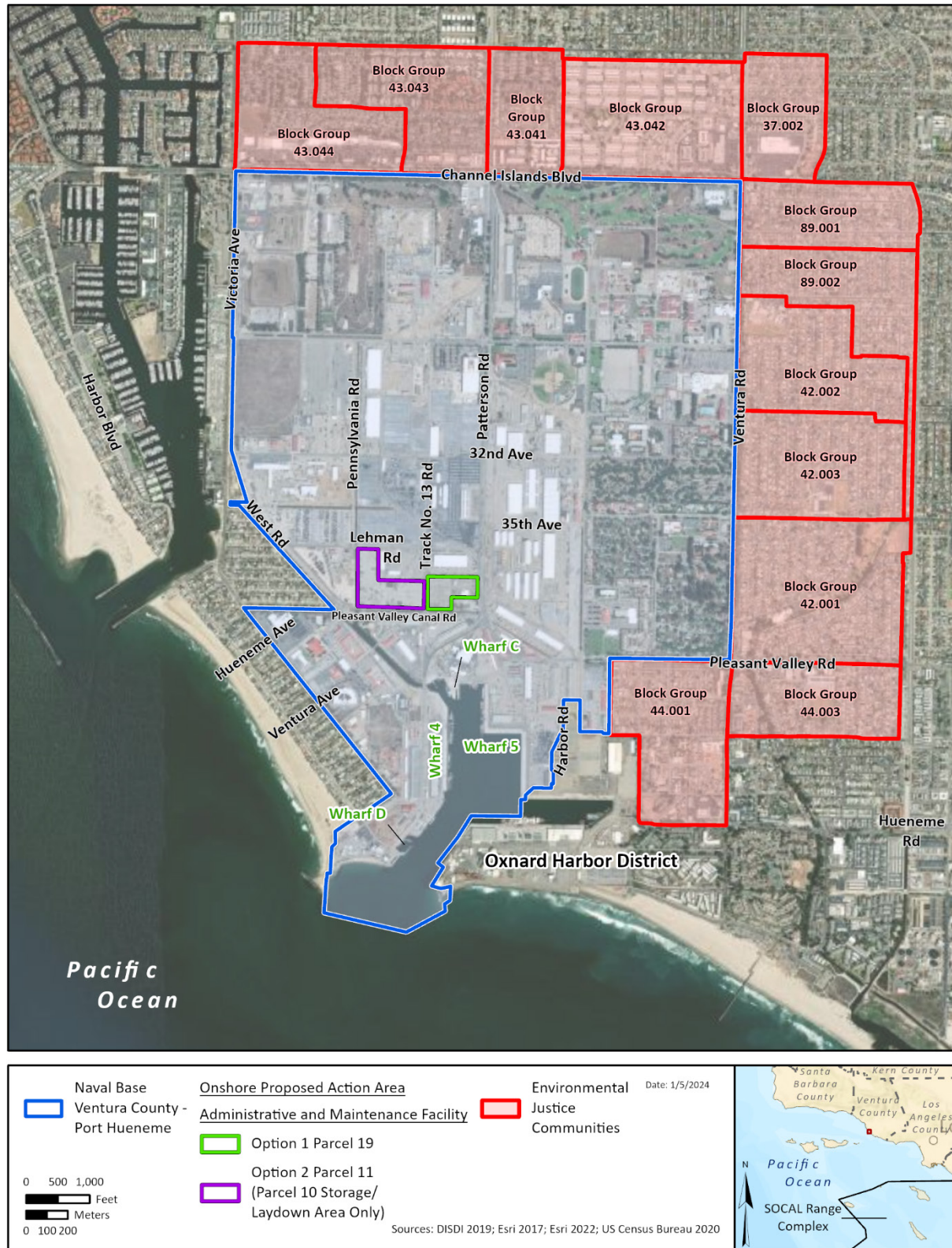


Figure 3.9-1 Environmental Justice ROI

Table 3.9-1 Environmental Justice Communities Adjacent to NBVC Port Hueneme

Area	Total Population	Minority ¹		Low-Income ²	
		Number	Percent	Number	Percent
Block Group 37.002	1,767	1,732	98%	919	52%
Block Group 42.001	2,373	1,970	83%	570	24%
Block Group 42.002 ³	883	671	76%	150	17%
Block Group 42.003	1,948	1,636	84%	682	33%
Block Group 43.041 ³	1,395	1,144	82%	112	8%
Block Group 43.042 ³	949	446	47%	351	37%
Block Group 43.043	2,187	1,203	55%	590	27%
Block Group 43.044 ³	2,027	1,703	84%	1,115	55%
Block Group 44.001 ³	2,257	1,918	85%	1,151	51%
Block Group 44.003	1,329	1,183	89%	346	26%
Block Group 89.001	1,450	1,363	94%	421	29%
Block Group 89.002 ³	2,324	2,161	93%	535	23%
Ventura County	845,255	473,343	56%	194,409	23%
California	39,538,223	24,118,316	61%	11,070,702	28%
United States	329,725,481	128,592,938	39%	102,214,899	31%

Source: USEPA EJScreen; U.S. Census Bureau, American Community Survey 2017-2021

(1) Note: The term “Minority” here is defined as individuals who “list their racial status as a race other than white-alone and/or list their ethnicity as Hispanic or Latino. That is, all people other than non-Hispanic white-alone individuals. The word ‘alone’ in this case indicates that the person is of a single race, not multiracial.”

(2) Note: The term “Low-Income” here is defined as “individuals whose ratio of household income to poverty level in the past 12 months was less than 2 (as a fraction of individuals for whom ratio was determined).”

(3) Note: Block Groups 43.042 and 43.044 do not exceed the county percentage for minority population but do exceed the county percentage for low-income population. Similarly, Block Groups 42.002, 43.041, 44.001, and 89.002 do not exceed the county percentage for low-income populations but do exceed the county percentage for minority populations.

3.9.3 Environmental Consequences

This analysis focuses on whether there are disproportionately high and adverse impacts from the Proposed Action to off-installation minority and low-income populations within the Environmental Justice ROI.

3.9.3.1 No Action Alternative

Under the No Action Alternative, there would be no change to current conditions for minority and low-income populations. Therefore, there would be no disproportionately high and adverse impacts to minority and low-income populations with the implementation of the No Action Alternative.

3.9.3.2 Proposed Action

Impacts associated with the Proposed Action to the previously discussed resource areas were examined for the identified environmental justice communities.

For Air Quality within the VCAPCD, the Proposed Action would not result in significant impacts as described in Section 3.1.

Anticipated air quality impacts from construction and training and testing activities are not expected to

Environmental Justice Potential Impacts:

- No Action: The Proposed Action would not be implemented and there would be no disproportionately high and adverse impacts to minority and low-income populations.
- Proposed Action: The Proposed Action would not result in disproportionately high and adverse impacts to minority and/or low-income populations in the Environmental Justice ROI.

change the attainment of NAAQS. Estimated GHG emission increases over the construction period and during training and testing would not be large enough to interfere with DoD, federal, and state GHG goals. Moreover, regarding downwind emissions for nearby Environmental Justice communities, as discussed in Section 3.1.3.2, both estimated construction and operational emissions (Tables 3.1-2 and 3.1-3), particularly for on shore emissions, are either temporary or minimal, and well below the *de minimis* threshold defined in the General Conformity Rule. Therefore, the concentrations dispersed downwind from these pollutant emissions in the environmental justice communities that are several thousand feet away are anticipated to be minimal resulting in no localized air quality concerns. As such, overall impacts from the Proposed Action's air quality would not result in changes to the current condition for minority and low-income in the Environmental Justice ROI or the broader VCAPCD.

As discussed in Section 3.2, there would be no significant impacts to groundwater and surface water resources. Construction activities will follow BMPs for stormwater to reduce runoff and spill risk. Accordingly, impacts to water resources would not have a disproportionately high and adverse effect to minority or low-income populations.

Noise impacts were discussed in Section 3.3 and include impacts associated with XLUUV and USV facility construction as well as training and testing in the Nearshore Action Area in Port Hueneme Harbor. The noise contours associated with short-term construction equipment noise levels in relation to the identified environmental justice communities identified above are depicted in Figure 3.9-2. As is the case with training and testing activities, both construction options focus off-base noise contours to the west of NBVC Port Hueneme, away from environmental justice communities and schools. In fact, the closest environmental justice community, Block Group 44.001 is approximately 450 ft outside the Parcel 19 55 dBA contour and approximately 1,200 ft outside the Parcel 11 55 dBA contour. Thus, noise impacts from the Proposed Action would not result in disproportionately high and adverse impacts to minority and low-income populations in the Environmental Justice ROI.

The new facilities associated with the Proposed Action would utilize the existing infrastructure network serving NBVC Port Hueneme, as described in Section 3.5. Any utility upgrades would be conducted on-base and would not impact off-installation communities and would not result in changes to the current condition for minority and low-income populations in the Environmental Justice ROI.

Concerns to public health and safety as described in Section 3.6 focus on environmental consequences from existing environmental hazards, construction activity, maritime training and testing activities, and protection of children. With the Proposed Action facilities occurring on-base, more than 2,500 ft (Parcel 19) from the closest identified environmental justice community, there are no impacts from existing environmental hazards such as geologic, tsunami, flood, inundation, or infrastructure hazards. Additionally, the closest school is located more than 4,000 ft (in Block Group 44.001) from the closest Proposed Action facility (Parcel 19) and more than 2,800 ft from the wharves in Port Hueneme Harbor. Accordingly, there would be no impacts to children and no disproportionately high and adverse impacts to minority and low-income populations in the Environmental Justice ROI.

Regarding hazardous materials and wastes described in Section 3.7, several sites have been identified in proximity to the Proposed Action facility parcels, but these sites and any associated plumes are highly localized to the areas in and immediately adjacent to Parcels 11 and 19, respectively. Therefore, there are no disproportionately high and adverse impacts to minority and low-income populations from hazardous materials and wastes in the Environmental Justice ROI.

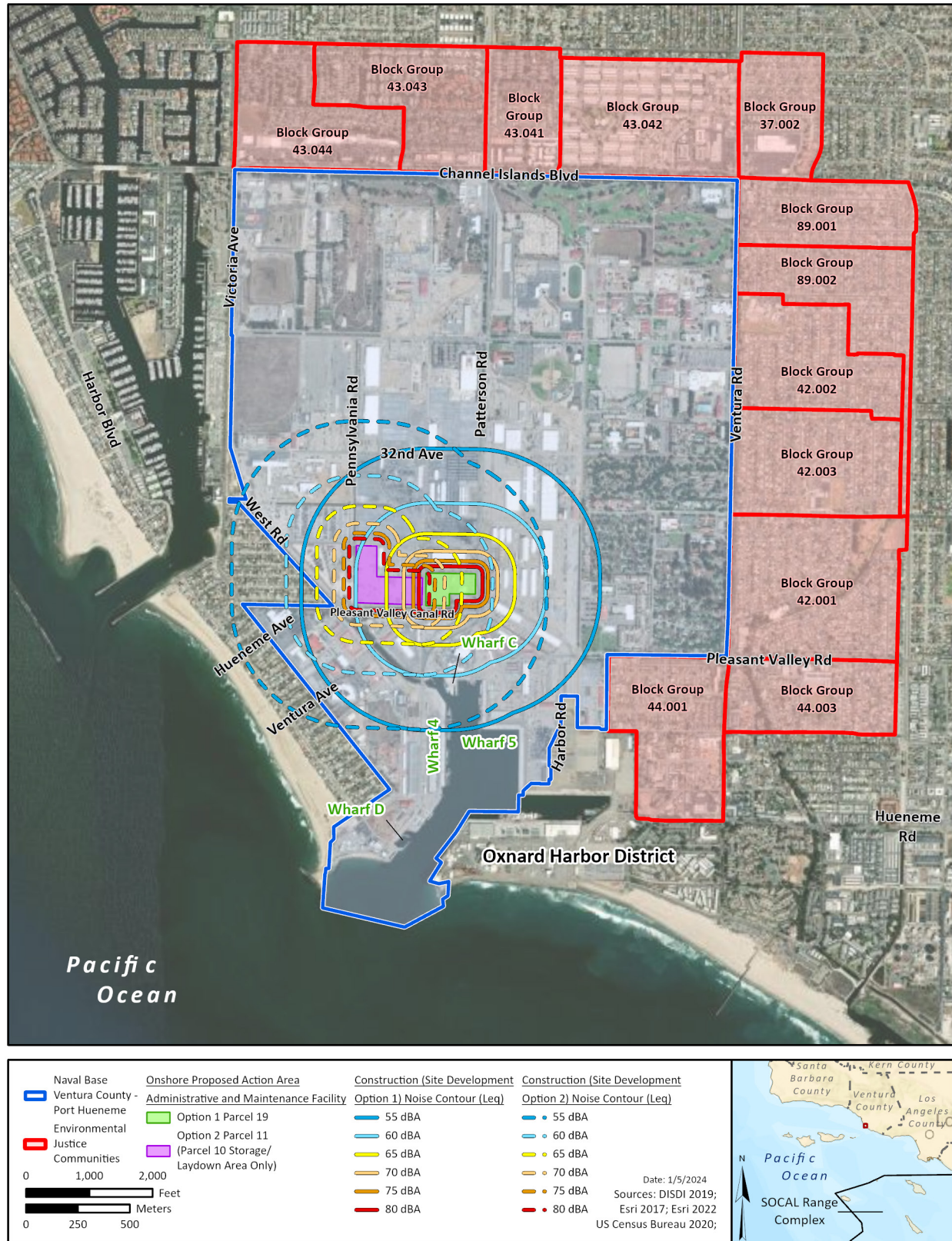


Figure 3.9-2 Proposed Noise Contours with Block Groups at Port Hueneme

Land use, as described in Section 3.8, focuses on zoning, use consistency, and recreation. The publicly visible aspects of the Proposed Action would occur during construction from construction equipment on base without impacts in general and specifically without changing the current condition for minority and low-income populations in the Environmental Justice ROI.

The Proposed Action will not have disproportionately high and adverse impacts to minority or low-income populations within the Environmental Justice ROI. Accordingly, there would be no significant impacts to environmental justice communities.

3.10 Summary of Potential Impacts to Resources and Impact Avoidance and Minimization

A summary of the potential impacts associated with each of the Proposed Action and the No Action Alternatives is presented in Table 3.10-1. Table 3.10-2 provides a comprehensive list of impact avoidance and minimization measures (e.g., BMPs or SOPs that would be used during the implementation of construction or training and testing activities) and proposed mitigation associated with the Proposed Action.

Table 3.10-1 Summary of Potential Impacts to Resource Areas

Resource Area	No Action Alternative	Proposed Action Alternative
Air Quality	The Proposed Action would not be implemented and there would be no impact to air quality.	No significant impacts to air quality. Anticipated air quality impacts from construction and training and testing activities are not expected to impact the attainment of NAAQS. Estimated GHG emission increases over the construction period and during training and testing would not be large enough to impact the attainment of DoD and federal GHG goals. A Record of Non-Applicability is provided in Appendix C.
Water Resources	The Proposed Action would not be implemented and there would be no impact to water resources.	Impacts to groundwater, surface water, marine waters, wetlands, and floodplains associated with implementation of the Proposed Action would not be significant, and all impacts and potential impacts to wetlands and WOTUS would be further minimized through use of BMPs. Therefore, implementation of the Proposed Action would not result in significant impacts to water resources.
Noise	The Proposed Action would not be implemented and there would be no impact from noise.	Noise levels from short-term construction of facilities and from XLUUV and USV operations would not significantly impact the environment.
Biological Resources	The Proposed Action would not be implemented and there would be no impacts to biological resources.	No significant impacts to biological resources with implementation of BMPs, SOPs, and mitigation measures. • No impacts to terrestrial vegetation. • No significant impacts to, and no take of birds protected under the MBTA and the BGEPA. • No significant impacts to marine vegetation. • No significant impacts to marine invertebrates. • No significant impacts to marine fishes. • No significant impacts to, and no take of marine mammals protected under the MMPA. • The Navy has initiated informal consultation as required by section 7(a) (2) of the ESA, seeking concurrence of the Navy's determination of "may affect, but is not likely to adversely affect" ESA-listed marine species, designated critical habitat for the Central America and Mexico DPSs of humpback whale, and proposed critical habitat for green turtle from the Proposed Action. • No adverse effects to Essential Fish Habitat protected under the MSA.
Infrastructure	The Proposed Action would not be implemented and there would be no impact to infrastructure.	The Proposed Action would fit within the installation's existing infrastructure capacity and therefore would not result in significant impacts to potable water, wastewater, stormwater, solid waste management, energy, or communication.
Public Health and Safety	The Proposed Action would not be implemented and there would be no impacts to public health and safety.	The Proposed Action would not result in significant impacts to public health and safety. • The Proposed Action would not impact existing regional and local geologic, tsunami, flooding, or inundation hazards to the general public. Potential hazards from existing infrastructure (i.e., natural gas lines) and cleanup sites would be avoided during the construction phase, and the potential for impacts during training and testing would be

Resource Area	No Action Alternative	Proposed Action Alternative
		avoided through ongoing cleanup efforts, and appropriate designs (e.g., location-specific building codes and engineering controls) for the facility. - No significant impact on safety from maritime training and testing activities would be expected; SOPs would be implemented to prevent vessel-to-vessel or vessel-to-object incursions. - There are no environmental health and safety risks associated with the Proposed Action that would disproportionately affect children.
Hazardous Materials and Wastes	The Proposed Action would not be implemented and there would be no impacts associated with hazardous materials and wastes.	No significant impacts related to hazardous materials, hazardous waste, toxic substances, and contaminated sites associated with implementation of the Proposed Action. Minor short- and long-term increases in hazardous material use and hazardous waste generation from construction and testing activities would not exceed current management and disposal capacities.
Land Use and Recreation	The Proposed Action would not be implemented and there would be no impacts to land use and recreation.	No significant impact to land use or recreation. Under the Proposed Action, a portion of the activities occur on land owned by the Navy (NBVC Port Hueneme) in an area already used for similar purposes so there would be no change to the existing land use. With regard to recreation, activities from the Proposed Action would occur within the Navy-owned harbor where recreational activity is not allowed. As such, training and testing events associated with the Proposed Action would not interfere with any potential recreational activities within the Nearshore Proposed Action Area.
Environmental Justice	The Proposed Action would not be implemented and there would be no impact to environmental justice.	The Proposed Action would not result in disproportionately high and adverse effects to minority and/or low-income populations.

Legend: BGEPA = Bald and Golden Eagle Protection Act; BMP = Best Management Practices; DoD = Department of Defense; DPS = distinct population segment; ESA = Endangered Species Act; GHG = greenhouse gases; MBTA = Migratory Bird Treaty Act; MMPA = Marine Mammal Protection Act; MSA = Magnuson Stevens Fishery Conservation and Management Act; NAAQS = National Ambient Air Quality Standards; Navy = U.S. Department of the Navy; NBVC = Naval Base Ventura County; ROI = Region of Influence; SOP = Standard Operating Procedures; USV = Unmanned Surface Vessel; XLUUV = Extra Large Unmanned Undersea Vehicle; WOTUS = waters of the United States

Table 3.10-2 Impact Avoidance, Minimization, and Mitigation Measures for the Proposed Action

Type	Measure	<i>Anticipated Benefit / Evaluating Effectiveness</i>	<i>Implementing and Monitoring</i>	<i>Responsibility</i>	<i>Estimated Completion Date</i>
Impact Avoidance or Minimization Measure	Stormwater management, landscaping zones, and low impact development methodologies, such as pervious pavements, would be implemented.	Reduce the final impervious cover of the Proposed Action.	Presence would be determined during design.	Project Proponent or Design contractor with compliance verification by NBVC Public Works.	Prior to the start of construction.
Impact Avoidance or Minimization Measure	Stormwater management system would include pervious pavement for parking and walkways and subsurface detention chambers to prevent ponding. Effective erosion and sediment control measures as outlined by the Construction General Permit would be selected, installed, and maintained. Implementation of SWPPP practices to reduce pollutants in stormwater discharge associated with the proposed construction and pierside activities to support testing and training.	Reduction in local surface water turbidity as well as prevention of sedimentation and the introduction of pollutants to Port Hueneme Harbor and the Pacific Ocean also affecting marine vegetation and invertebrates.	Presence would be determined during design.	Project Proponent or Design contractor with compliance verification by NBVC Public Works.	Prior to the start of construction.
Impact Avoidance or Minimization Measure	Implementation of in-water fueling SOPs.	Minimization of potential in-water fuel spills from prepping the XLUUV/USV prior to or at the conclusion of training and testing events.	Pre-event briefing and EMS auditing.	Project Proponent with compliance verification by NBVC Environmental.	Prior to fueling.
Impact Avoidance or Minimization Measure	Infrastructure will be sized to accommodate the 10-year storm flow in accordance with UFC 3-201-01.	Minimization to stormwater impacts.	Presence would be determined during design.	Project Proponent or Design contractor with compliance verification by NBVC Public Works.	Prior to the start of construction.

Type	Measure	Anticipated Benefit / Evaluating Effectiveness	Implementing and Monitoring	Responsibility	Estimated Completion Date
Impact Avoidance or Minimization Measure	Solid waste generated during construction (scrap building materials such as concrete, metals, and lumber), as well as excess soil would be recycled to the greatest extent possible. Similarly, municipal solid waste would be minimized through Navy required recycling efforts.	Minimized solid waste through mandatory recycling practices.	Presence would be determined during design.	Project Proponent or Design contractor with compliance verification by NBVC Public Works.	Prior to the start of construction.
Impact Avoidance or Minimization Measure	Implementation of a project-specific Health and Safety Plan and well-defined work area and exclusion zone around the project during construction. The work area will be defined as the immediate area where work is occurring and where equipment and materials are staged, with the exclusion zone extending beyond the work area to prevent outside traffic from interfering with construction and any material from exiting the area, and to protect outside personnel not affiliated with the project.	Protection of public health and safety.	Presence would be determined during design.	Project Proponent or Design contractor with compliance verification by NBVC Public Works.	Prior to the start of construction.
Impact Avoidance or Minimization Measure	BMPs will be implemented as described in Sections 2.5.	Protection of public health and safety during maritime training and testing.	Pre- and post-event briefings and after-action reports.	XLUUV/USV Program.	Prior to training and testing events.
Impact Avoidance or Minimization Measure	Implementation of proven and effective BMPs to meet federal regulations and Navy directives for the management of hazardous waste, including SOPs to prevent, contain, and/or clean spills and leaks; by providing personnel training and operational protocol and procedures; and ensuring NBVC Port Hueneme's ability to properly arrange for and coordinate the disposal of anticipated hazardous materials.	Protect human health, welfare, and the environment from hazardous waste spills and/or leaks.	Pre-operational briefing and EMS auditing.	Project Proponent with compliance verification by NBVC Environmental.	Prior to training and testing events.

Type	Measure	Anticipated Benefit / Evaluating Effectiveness	Implementing and Monitoring	Responsibility	Estimated Completion Date
Impact Avoidance or Minimization Measure	For handling fuels at the ISP, the following spill prevention measures will be implemented: • Training in proper handling of petroleum, oils, and lubricants during fueling, including the inspection of fueling equipment, knowledge of spill response equipment and procedures, and good housekeeping practices, prior to initiating work. • Refueling of equipment shall only be permitted at approved fueling facilities and at least 50 ft (15 meters) from the water. A contingency plan to control petroleum products accidentally spilled during the project shall be developed. Absorbent pads and containment booms shall be stored on-site, if appropriate, to facilitate clean-up of accidental petroleum releases. • Fueling of vessels shall be done at approved fueling facilities. With respect to equipment that cannot be fueled out of the water (e.g., barge crane), spill prevention booms shall be employed.	Protect human health, welfare, and the environment from hazardous waste spills and/or leaks.	Pre-operational briefing and EMS auditing.	Project Proponent with compliance verification by NBVC Environmental.	Prior to training and testing events.
Impact Avoidance or Minimization Measure	Adherence to the installation HWMP for the management of special waste, such as generated ACMs, avoidance of known IRP sites, and sites of emerging contaminants.	Avoidance of known hazardous sites.	Presence would be determined during design.	XLUUV/USV Program with compliance verification by NBVC Environmental.	Prior to the start of construction.

Type	Measure	Anticipated Benefit / Evaluating Effectiveness	Implementing and Monitoring	Responsibility	Estimated Completion Date
Mitigation Measures	Implementation of pre-existing mitigation measures (delineated in Appendix B) developed for the SOCAL Range Complex included in the HSTT EIS/OEIS (2018) and supporting documentation for activities occurring in the Nearshore and Offshore Proposed Action Areas. Measures include safe support vessel speeds and watch personnel on USVs and support vessels for USV and XLUUV training and testing to monitor for marine mammals.	Minimize the potential for marine mammal, sea turtle and invertebrate strikes.	Pre- and post-training and testing activity briefings and after-action reports.	XLUUV/USV Program	During training and testing events.

Legend: ACMs = asbestos-containing materials; BMP = best management practices; EIS = Environmental Impact Statement; EMS = Environmental Management System; ft = feet; HSTT = Hawai'i-Southern California Training and Testing; HWMP = Hazardous Waste Management Plan; IRP = Installation Restoration Program; ISP = in-water support platform; NBVC = Naval Base Ventura County; OEIS = Overseas Environmental Impact Statement; SOCAL = Southern California; SOP = standard operating procedures; SWPPP = Stormwater Pollution Prevention Plan; UFC = United Facilities Criteria Program; USV = Unmanned Surface Vessel; XLUUV = Extra Large Unmanned Undersea Vehicle

4 Cumulative Impacts

This section (1) defines cumulative impacts, (2) describes past, present, and reasonably foreseeable future actions relevant to cumulative impacts, (3) analyzes the incremental interaction the Proposed Action may have with other actions, and (4) evaluates cumulative impacts potentially resulting from these interactions.

4.1 Definition of Cumulative Impacts

Cumulative impacts are defined in 40 Code of Federal Regulations (CFR) section 1508.1(g)(3) as “Cumulative effects, which are effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.”

Cumulative impacts arise when a relationship exists between a Proposed Action and other actions expected to occur in a similar location and/or during a similar time period. To identify cumulative effects, the analysis addresses the following three fundamental questions.

- Does a relationship exist such that affected resource areas of the Proposed Action might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
- If one or more of the affected resource areas of the Proposed Action and another action could be expected to interact, would the Proposed Action affect or be affected by impacts of the other action?
- If such a relationship exists, then does an assessment reveal any potentially significant impacts not identified when the Proposed Action is considered alone?

4.2 Past, Present, and Reasonably Foreseeable Actions

This section focuses on past, present, and reasonably foreseeable future projects at and near the Proposed Action locale. If it was determined that a relationship exists such that the affected resource areas of the Proposed Action (included in this Environmental Assessment/Overseas Environmental Assessment [EA/OEA]) might interact with the affected resource area of a past, present, or reasonably foreseeable action it was included in the analysis. If no such potential relationship exists, the project was not carried forward into the cumulative impacts analysis (Council on Environmental Quality 2005). Actions included in this cumulative impact analysis are listed in Table 4.2-1 and Figure 4.2-1.

Table 4.2-1 Cumulative Action Evaluation

ID ¹	Action	Brief Description
Past Actions		
1	Expansion of Unmanned Systems Operations in PMSR	This action expanded unmanned systems training and testing for unmanned aerial systems operations at NBVC Point Mugu including R-2519 restricted airspace and NBVC San Nicolas Island including the R-2535 restricted airspace, and special use airspace over PMSR. A Finding of No Significant Impact/Finding of No Significant Harm was signed in February 2015.
2	Countermeasures Testing in PMSR	This action allowed for additional types of countermeasures testing activities to be conducted within PMSR at NBVC Point Mugu and San Nicolas Island. A Finding of No Significant Impact was signed in July 2014.
3	Port of Hueneme Deepening Project	This action included dredging to increase the Port's berth area depths from 35 to 40 ft, to accommodate larger, deep-draft vessels; increase cargo efficiency of product delivery; and reduce congestion and overall transit costs. The project was completed in 2021.
4	Renovations at Building PH-1392, and Laydown near Building PH-542 and at Parcel 19, NBVC Port Hueneme	This action renovated building PH-1392 at NBVC Port Hueneme, with laydown areas near building PH-542 and at Parcel 19.
5	Facility Support for PMS-406 XLUV & USV at NBVC Port Hueneme	This action established temporary waterfront, shore storage, and administrative facilities at Parcel 19, Wharfs C, E, 4, and 5 at NBVC Port Hueneme.
6	Port Hueneme Division Naval Surface Warfare Center SWEF Virtual Test Capability	This action installed new equipment to support the Virtual Test Capability at SWEF to electronically connect Navy Facility assets with Navy Fleet assets and included increased tests, exercises, and training.
Present and Reasonably Foreseeable Future Actions		
7	Ongoing Military Readiness, Training, and Testing Activities in PMSR	An EIS/OEIS was prepared for this action, which evaluated two alternatives related to conducting military readiness activities with the PMSR both at sea and in designated airspace. This includes emergent mission areas and new technologies, systems, and platforms, along with ongoing range activities as analyzed in the 2002 PMSR EIS/OEIS and other prior environmental analysis. The Record of Decision was signed on July 8, 2022 and current MMPA permits will expire in July 2029 for the PMSR EIS/OEIS.
8	Future Ventura County Community Growth	Continued growth in the community surrounding NBVC Port Hueneme, as generally discussed in the NBVC Joint Land Use Study.
9	City of Oxnard Local Coastal Plan Update	The City of Oxnard's Local Coastal Plan Update is a collaborative planning and outreach process to bring the Plan into conformance with Coastal Commission policy directives and address climate change adaptation strategies, such as those for sea level rise. As of 2023, the draft of the Local Coastal Plan is under preparation.
10	Port Hueneme Project 34: Temporary Outdoor Vehicle Storage Lot	The action would construct a 27.5-acre outdoor gravel lot for temporary storage of up to 4,944 vehicles on a vacant 34-acre lot located east of NBVC Port Hueneme at the intersection of Hueneme Road and Perkins Road. The project includes the placement of temporary guard trailer and portable restroom, and installation perimeter lighting, security fence, landscaping, drainage, and infrastructure improvements (e.g., curb cuts). Upon expiration of a Special Use Permit, the vehicle parking area, the guard

ID ¹	Action	Brief Description
		house, portable restroom, perimeter site lighting, and gravel surface would be removed, but the security fence, landscaping, drainage and associated infrastructure improvements would remain on-site and be maintained by the property owner. The vehicle storage facility would be used by a Port of Hueneme customer as an off-site storage lot where vehicles would remain for a limited period of time. Operations would not exceed 30 cars per hour for 8 hours daily, or 240 vehicle trips (one way) per day, between the hours of 7:30 am and 4:00 pm. An Environmental Impact Report pursuant to CEQA was prepared and the City of Oxnard approved a Special Use Permit for the project in 2022.
11	Bubbling Springs Natural Channel Vegetation Removal Project	This action would restore the designed drainage capacity of the existing Bubbling Springs Natural Channel by removing vegetation that has overgrown the channel and thereby limited its conveyance capacity. The channel is located east of NBVC Port Hueneme, between Bard Road and the Surfside Drive. Vegetation removal would be conducted with mechanized or hand equipment, and no excavation of channel materials or use of herbicides is proposed. Work would occur for a total of approximately 40 work days per year on a periodic basis (quarterly, semiannually, or as needed to prevent reestablishment of the in-channel vegetation). An Initial Study-Negative Declaration pursuant to CEQA was adopted for the project in 2022.
12	Former Navy Property Restoration Project	This action is within the Port of Hueneme OHD involves the demolition of seven buildings and the re-grading and paving of approximately 2 acres for use as backlands for port operations. Construction would last approximately 120 days. Once construction is complete, no new uses or increased capacity of use is proposed but the location would improve the efficiency for existing backlands operations such as temporary storage of goods for unloading and loading, and temporary storage of vehicles. An Initial Study/Final Mitigated Negative Declaration pursuant to CEQA was published in 2023.
13	Port Modernization Projects	The Port of Hueneme OHD 10-year strategic plan provides a list of 21 projects planned to occur through 2030. Projects are focused on increasing cargo throughput and velocity through land use efficiency that will optimize freight mobility and improve traffic flow. Project scopes range from the development of a 250-acre Port Enterprise Zone to support the Port's future off-site real estate needs; construction of parking structures to support port capacity; additional deepening at Berth 2 and Wharf 1 to support increased vessel capacity and beach nourishment; infrastructure projects to increase energy efficiency, reduce vehicle emissions, and protect ocean habitats; and demolition of obsolete facilities. The draft Plan was slated for adoption by the Port Commission in April 2023.

ID ¹	Action	Brief Description
14	Ongoing and Future Military Readiness, Training, and Testing Activities in Pacific Ocean – HSTT (Phase III) and HCTT Study Area (Phase IV)	The HSTT EIS/OEIS (“Phase III”) evaluated the potential environmental impacts of conducting training and testing activities in the HSTT Study Area, which includes the at-sea areas of three existing range complexes (the Hawai’i Range Complex, the SOCAL Range Complex, and the Silver Strand Training Complex), and overlaps a portion of the PMSR. XLUUVs and USVs may perform training and testing activities in the HSTT Study Area. The Record of Decision was signed on December 18, 2018. NMFS, NOAA, and the Department of Commerce have granted a request from the Navy to provide a two-year extension for MMPA regulations authorizing the take of marine mammals incidental to Navy training and testing activities conducted in the HSTT Study Area. These regulations, issued under the authority of the MMPA (16 U.S.C. section 1361 et seq.), extend the framework for authorizing the take of marine mammals incidental to the Navy’s training and testing activities (which qualify as military readiness activities) from the use of sonar and other transducers, in-water detonations, air guns, impact pile driving/vibratory extraction, and the movement of vessels throughout the HSTT Study Area until December 2025. A Notice of Intent to prepare an EIS/OEIS for the HCTT Study Area (“Phase IV”) was published on December 15, 2023 with a Public Scoping period from December 15, 2023 to January 29, 2024. The HCTT Study Area (“Phase IV”) differs from the HSTT Study Area by including: an extended SOCAL Range Complex; special use airspace corresponding to the new extensions in California (the proposed W-293 and W-294); two existing training and testing at-sea ranges (the PMSR and the NOCAL Range Complex); areas along the Southern California coastline from approximately Dana Point to Port Hueneme; and four amphibious approach lanes providing land access from the NOCAL Range Complex and PMSR. The draft EIS/OEIS is anticipated to be published in Fall 2024.
15 ²	P535 and Associated Pile Driving Training Exercises at NBVC Port Hueneme	This action includes three proposed in-water pile driving training activities at NBVC a Hueneme for Naval Construction Group ONE battalion personnel prior to deployment. Training events would include vibratory and impact pile driving, temporary pier construction, and subsequent removal of all installed materials. Training would occur at either Wharf 4 or Wharf D at NBVC Port Hueneme. In-water pile driving could occur for up to 48 days, spread over four annual training exercises.
15 ²	Manta Ray Sea Trials Unmanned Undersea Vehicle	This action includes placement of a temporary dock near NBVC Port Hueneme Wharf 5 that would be removed in 2024.
16	NOAA Southern California Aquaculture Opportunity Area	NMFS West Coast Region is preparing a Programmatic EIS for the proposed identification of one or more Aquaculture Opportunity Areas to be located in Federal waters off the coast of Southern California. An Aquaculture Opportunity Area is considered to be a defined geographic area that has been evaluated to determine its potential suitability for commercial aquaculture. The Proposed Action is a planning initiative only and does not propose any aquaculture facilities or permits. A Notice of Intent to prepare a Programmatic EIS was published on May 23, 2022 and the public comment period ended on July 22, 2022. The Draft Programmatic EIS is under preparation and has not been released for public comment

ID ¹	Action	Brief Description
17	Extraction Barrier and Brackish Water Treatment Plant	To protect groundwater supplies, United Water Conservation District is planning a project in collaboration with the Navy that will provide a barrier to seawater using extraction wells for hydraulic control and reverse osmosis to treat the brackish groundwater. The project will create as much as 20,000 acre-feet per year of advanced treated “new” water. The project will reduce groundwater pumping, prevent seawater intrusion into groundwater basins, create an additional irrigation and emergency supply, and is estimated to conserve enough drinking water to supply about 40,000 families for a year.

Sources: City of Oxnard 2022, 2023a, 2023b; Naval Sea Systems Command 2021; NOAA Fisheries 2023b; The Port of Hueneme 2021, 2023; U.S. Department of the Navy 2000, 2014a, 2014b, 2022a, 2024; United Water Conservation District 2023; Ventura County Transportation Commission 2015

Legend: CEQA = California Environmental Quality Act; ft = foot/feet; HCTT = Hawai’i-California Training and Testing; LCP = Local Coastal Plan; MLLW = mean low low water; MMPA = Marine Mammal Protection Act; NBVC = Naval Base Ventura County; NEPA = National Environmental Policy Act; NMFS = National Marine Fisheries Service; NOAA = National Oceanic and Atmospheric Administration; PMSR = Point Mugu Sea Range; SWEF = Surface Warfare Engineering Facility; NOCAL = Northern California Range Complex; SOCAL = Southern California Range Complex; U.S. = United States; U.S.C. = U.S. Code; USV = Unmanned Surface Vessel; XLUUV = Extra Large Unmanned Undersea Vehicle

(1) Note: ID used to identify location of projects on Figure 4.2-1.

(2) Note: P535 and Manta Ray Sea Trials Unmanned Undersea Vehicle actions would occur in the same general location.

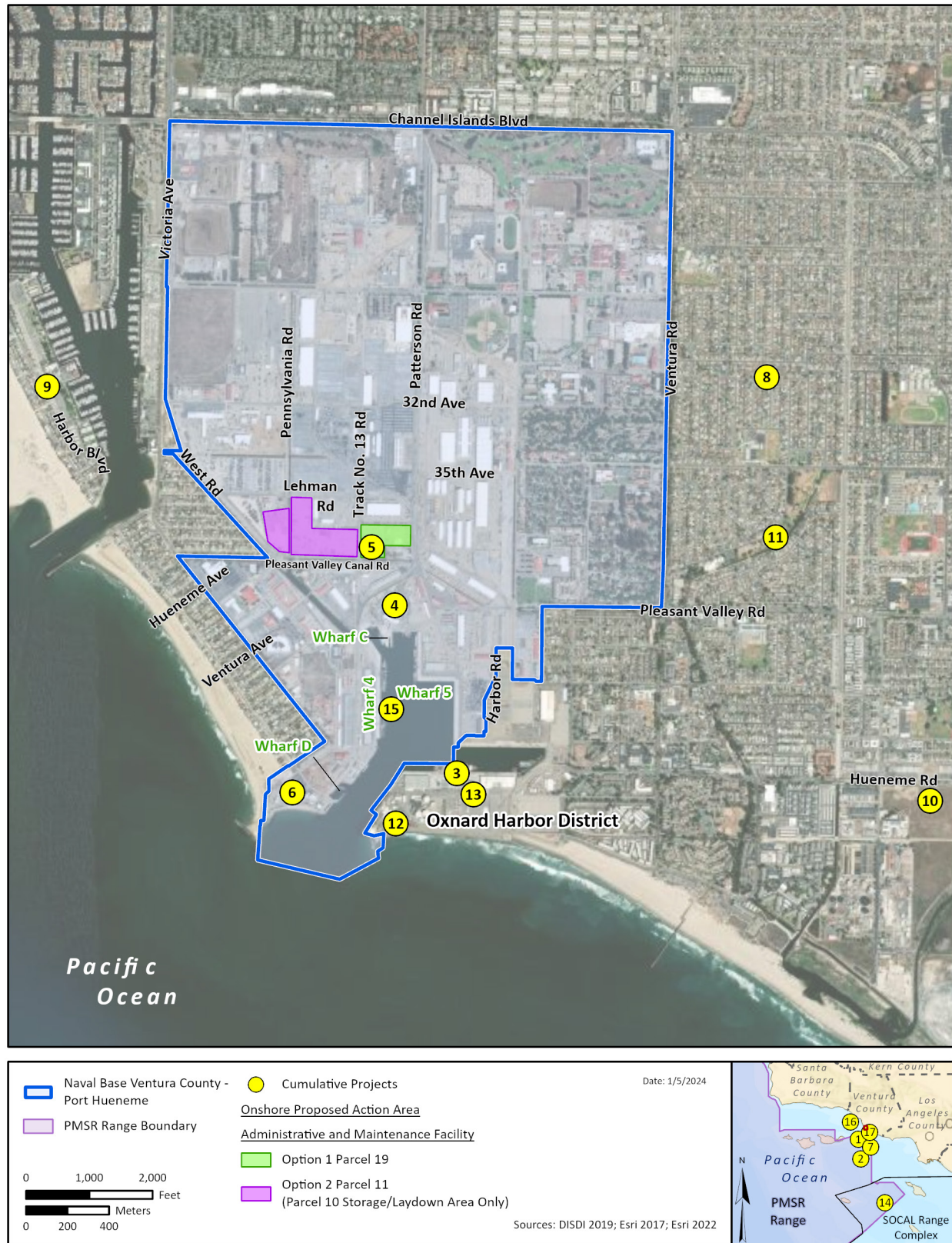


Figure 4.2-1 Past, Present, and Reasonably Foreseeable Cumulative Actions

4.3 Cumulative Impact Analysis

Where feasible, the cumulative impacts were assessed using quantifiable data; however, for many of the resources included for analysis, quantifiable data is not available, and a qualitative analysis was undertaken. In addition, where an analysis of potential environmental effects for future actions has not been completed, assumptions were made regarding cumulative impacts related to this EA/OEA where possible. The analytical methodology presented in Chapter 3, which was used to determine potential impacts to the various resources analyzed in this document, was also used to determine cumulative impacts.

4.3.1 Resources Dismissed from Cumulative Analysis

The following resources were dismissed from the cumulative analysis as they are not anticipated to have cumulative effects or are already addressed in a cumulative context: Public Health and Safety; Environmental Justice; Air Quality. These are briefly discussed below.

The Proposed Action would not require changes to the base's safety plans, or existing offshore training areas. Therefore, implementation of the Proposed Action combined with the past, present, and reasonably foreseeable future projects, would not result in significant cumulative impacts regarding public health and safety.

There are no cumulative impacts identified in the resource analysis in Sections 4.3.1 through 4.3.7, and many of the resource changes would be temporary in nature. As a result, there are no disproportionately high and adverse cumulative impacts to environmental justice communities from the Proposed Action combined with past, present, and reasonably foreseeable future projects.

Air Quality is already analyzed in a cumulative context in Section 3.1. The results of the air quality and general conformity rule analysis in Section 3.1 demonstrate the pollutant emissions resulting from the Proposed Action would be minimal and thus are unlikely to cause a violation of National Ambient Air Quality Standards/California Ambient Air Quality Standards (NAAQS/CAAQS). The projects identified in Table 4.2-1 would all have similarly compliant air quality demonstrations via qualitative or quantitative analysis. The Proposed Action's impacts during training and testing would be unlikely to occur concurrently in time and space with the other future projects on most occasions. As such, in the absence of new operational emission sources during most training events from other future projects, implementation of the Proposed Action would not result in significant cumulative air quality impacts within the Region of Influence (ROI).

4.3.2 Water Resources

The ROI is the Port Hueneme watershed. Naval Base Ventura County (NBVC) Port Hueneme has not historically undergone rapid urbanization, significant development, or modifications to water courses, etc., which would have led to an increase in stormwater runoff and decline in water quality at Port Hueneme. Cumulative water resources impacts from past, present, and future actions within the ROI would be less than significant because cumulative impacts on groundwater, surface water, marine waters, wetlands, and floodplains would be minimized through Best Management Practices (BMPs). However, the Bubbling Springs and the Extraction Barrier and Brackish Water Treatment Plant could improve water resources. Therefore, implementation of the Proposed Action combined with the past, present, and reasonably foreseeable future projects, would not result in cumulatively significant impacts to water resources.

Cumulative actions could result in an increase in impervious surfaces such as Port of Hueneme Temporary Vehicle Storage and Former Navy Property Restoration projects. Additionally, implementation of the Proposed Action at Parcel 11 would result in an increase in turbidity associated with an increase in impervious surface area. However, potential impacts in turbidity and runoff from the Proposed Action along with any past, present, and reasonably foreseeable future projects would be minimized by implementation of BMPs (e.g., wetting of soils, silt fencing, and detention basins) and adherence to erosion and sedimentation controls and stormwater management practices to contain soil and runoff on the project areas. In addition, no significant net reduction of infiltration and recharge capacity is likely to occur.

Construction associated with the Proposed Action and any past, present, and reasonably foreseeable future projects is not likely to degrade the water quality or have a detrimental effect on the uses of surface water, marine waters, or groundwater resources. All construction would be done in accordance with applicable Stormwater Pollution Prevention Plans (SWPPPs) as required by the National Pollutant Discharge Elimination System (NPDES) General Permit Waste Discharge Requirements for Discharges of Storm Water. Therefore, no significant cumulative impacts on surface water, marine water, or groundwater would be expected.

The Proposed Action and any past, present, and reasonably foreseeable future projects are not expected to be located near jurisdictional wetlands, therefore no significant cumulative impacts on wetlands would be expected. The Proposed Action and some of the present and reasonably foreseeable future actions would be located within a 500-year floodplain. However, potential impacts on the floodplain would be reduced with implementation of BMPs and the adherence to any regulatory or planning requirements. Therefore, the Proposed Action would not contribute a cumulatively significant impact to wetlands and floodplains.

4.3.3 Noise

The ROI for noise is the area immediately adjacent to the southern portion of NBVC Port Hueneme in the City of Port Hueneme and the City of Oxnard where the Proposed Action will take place. The possibility exists that present and reasonably foreseeable projects within the Port of Hueneme and the surrounding cities of Port Hueneme and Oxnard would include the use of construction equipment that would result in increased intermittent noise levels within the immediate area and could coincide with development of the Proposed Action. Although unlikely, if construction occurred simultaneously, noise level increases would be temporary and typical of standard construction activities. Considered cumulatively, construction activities at and within the vicinity of NBVC Port Hueneme would collectively increase noise levels in the area temporarily, but the probability of simultaneous construction, variations in the timing of noise-generating construction activities, and the relatively short duration of noise effects, would result in negligible noise level increases in space and time. Therefore, the Proposed Action would not contribute a cumulatively significant impact to noise.

Long-term port operations would continue to be the dominant sources of noise at the base, including tug and barge operations, off-loading equipment, and railway and semi-tractor trailer deliveries. Proposed Extra Large Unmanned Undersea Vehicle (XLUUV) and Unmanned Surface Vessel (USV) training and testing are each estimated to result in a negligible increase in the existing noise environment and would not be discernible from existing conditions. This incremental increase is not expected to significantly change noise levels within the areas currently exposed to noise from port operations. The introduction of the XLUUV and USV program, when considered in conjunction with

noise levels from reasonably foreseeable projects would not significantly change the existing noise environment within the areas currently exposed to noise from port operations at NBVC Port Hueneme.

The Proposed Action adds a negligible level of noise that is temporary, short-term, and consistent with existing ambient noise levels. Therefore, the Proposed Action would not contribute a cumulatively significant impact to noise.

4.3.4 Biological Resources

The ROI for biological resources consists of the Proposed Action Areas. Cumulative biological resources impacts from past, present, and future actions within Port Hueneme and the Nearshore and Offshore Proposed Action areas would be less than significant because all actions undertaken by NBVC Point Hueneme are required to adhere to the requirements of the Endangered Species Act (ESA), MMPA, the Migratory Bird Treaty Act (MBTA), Magnuson Stevens Fishery Conservation and Management Act (MSA), Integrated Natural Resources Management Plan (INRMP), Bird/Animal Aircraft Strike Hazard Management Plan, the Ventura County General Plan, and other federal regulations where applicable. The projects listed in Table 4.2-1 have the potential to incrementally increase habitat loss, fragmentation, and visual and aural disturbance to biological resources. While any project may have the potential to impact individual species and habitats, there would be no cumulatively significant effects to the overall distribution or abundance of populations, and habitats and ecosystem functions and values would not be significantly affected. The Proposed Action activities would occur intermittently (one 100-day training/testing event per year for a single XLUUV and one 120-day event per year for each of two USVs) between 2024-2026. Further, the Nearshore and Offshore Proposed Action Areas cover 64,671 square miles, with 50 percent of the training and testing occurring within the Southern California (SOCAL) Range Complex. In short, cumulative projects (see Table 4.2-1) in conjunction with the physical presence imposed by XLUUVs/USVs would not be significant due to the sheer vastness of the range utilized as part of these small shape deployments. Additionally, these training and testing events and related construction would be dispersed over multiple years, thereby further minimizing the overall disturbance footprint created by the Proposed Action.

Climate change will have an overall impact to biological resources through rising global temperatures (air/ocean), change in precipitation patterns, increased frequency and/or intensity of extreme weather events, rising sea levels and associated storm surge, ocean acidification, and ocean upwelling. Rising global temperatures could result in earlier snowmelt, lower summer flows, and result in warmer freshwater and saltwater temperatures. Alterations in precipitation patterns and increased extreme weather events could impact sensitive watersheds, damaging spawning areas and/or washing away incubating eggs (Fitzgerald and Martin 2022). Migration timing for salmonids, for example, would be impacted by high water flows, flushing juveniles into estuaries before they are physically mature and potentially impacting survival (Fitzgerald and Martin 2022). These impacts to fish would also impact marine mammals as it could impact food availability. Sea level rise is anticipated to rise 44 to 74 centimeters by 2100 and can cause losses of coastal ecosystems and impact shorebird and sea turtle nesting habitat through erosion (Veelenturf et al. 2020; Intergovernmental Panel on Climate Change 2023). The ocean surface layer absorbs approximately one-third of human released carbon dioxide from activities such as fossil fuel combustion, deforestation, agricultural, and land use (U.S. Environmental Protection Agency [USEPA] 2023c). As marine organisms, such as shellfish and corals, require carbon and oxygen (calcium carbonate) to create their shells and skeletal structures, carbon dioxide causes acid-forming compounds in the water and creates acidic conditions. Therefore, there is less carbonate

available in the ocean that ultimately impacts the survival of these marine organisms. Changes in wind and water circulation in the ocean environment may change vertical movement of the ocean waters through “upwelling,” impacting essential nutrients and oxygen needed by marine organisms. One benefit of upwelling is the movement of cold, nutrient-rich waters to the surface, producing phytoplankton blooms essential for the food chain. The U.S. West Coast has one of the most productive ecosystems in the world (Gaines 2017). However, upwelling can also cause organisms in their larval stage that rely on shallow nearshore waters to be pushed offshore and drift away from their natural habitat, impacting survival (Gaines 2017).

Training and testing events for the XLUUVs/USVs and their accompanying manned support vessels would increase within the Nearshore and Offshore Proposed Action Areas. In addition to those discussed for climate change, potential stressors to biological resources include noise (airborne and in-water), human activity, physical disturbance, strike from shape deployment, and vessel strike as part of the Proposed Action. Training and testing within the SOCAL Range Complex is accounted for under the Hawai’i-Southern California Training and Testing (HSTT) Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) (U.S. Department of the Navy 2018). Mitigation outlined in the 2018 HSTT EIS/OEIS and updated in the 2022 Extension of Time for Letters of Authorization (U.S. Department of the Navy 2022c) activities conducted in the HSTT Study Area would continue to be implemented to reduce the potential of strikes. Aggregate impacts of stressors from cumulative project activity in the nearshore and ocean environment, in combination with the elements of climate change, can cause impacts at varying levels to terrestrial and marine wildlife depending on habitat, life stage, and life history (e.g., times of the year when a species is present or not present within the ROI due to migration, calving, and/or foraging patterns). However, as impacts would be isolated, localized (to the Onshore, Nearshore, and Offshore Proposed Action Areas), and not likely to overlap with other relevant stressors, it is anticipated that the incremental contribution of the Proposed Action, when added to the cumulative impacts of all other past, present and reasonably foreseeable future actions, would not result in a cumulatively significant impact to biological resources within the ROI.

4.3.5 Infrastructure

As NBVC Port Hueneme depends on infrastructure support from the surrounding communities, the infrastructure ROI is the City of Port Hueneme and the City of Oxnard. When past, present, and reasonably foreseeable projects are analyzed together with the Proposed Action, there would be an overall increase in the demand for utilities that service NBVC Port Hueneme and the surrounding communities. Cumulative infrastructure impacts that would occur with implementation of the Proposed Action would include potential increases in energy use, water consumption, and wastewater generation from the added population. The demands on facilities and utilities (potable water, wastewater, stormwater, solid waste management/disposal, energy, and communications) of the other cumulative projects on NBVC Port Hueneme, in combination with the demands from the Proposed Action, would be accommodated by existing supplies and capacities (U.S. Department of the Navy 2013b). In addition, the projects that consist of various improvements throughout the ROI, including the updating and addition of facilities and infrastructure, would generally improve the condition, efficacy, and lifespan of the infrastructure and would comply with the Energy Independence and Security Act of 2007, Navy Low Impact Development standards, and Chief of Naval Operations Instruction 4100.5E – Shore Energy Management, all of which set standards and goals for energy and water efficiency for federal construction and renovation projects. Therefore, cumulative impacts would not be significant.

When considered cumulatively, construction activities and training and testing events would increase the amount of solid waste generated. The waste flow would be minimized through mandatory recycling practices, and the existing landfill capacity is sufficient to accommodate the waste. Therefore, solid waste cumulative impacts would not be significant.

The cumulative construction projects would decrease impervious surface areas at NBVC Port Hueneme and surrounding communities. Cumulative impacts to stormwater would be mitigated through the use of engineered controls (i.e., detention chambers, biofiltration swales, oil/water separators, etc.) that would manage stormwater to ensure site hydrology is maintained. Therefore, the Proposed Action would not contribute a cumulatively significant impact on infrastructure.

4.3.6 Hazardous Materials and Wastes

The ROI for potential cumulative hazardous waste impacts is NBVC Port Hueneme and the immediate vicinity surrounding the base. When considered cumulatively, the projects listed above would result in an overall increase in the amount of hazardous materials handled and amounts of hazardous wastes generated from the construction, renovation, and demolition of facilities; the training, testing, and maintenance activities associated with the XLUUVs and USVs or support vessels; and the handling and storage of hazardous materials. The projects listed in Table 4.2-1 would not result in a significant impact to the hazardous materials and wastes management programs at NBVC Port Hueneme and would not introduce new waste streams or require new Emergency Planning and Community Right-to-Know Act reporting requirements. Hazardous materials and wastes associated with the cumulative projects would continue to be collected and managed on-site in accordance with the base Hazardous Materials Management Plan and Hazardous Waste Management Plan, respectively. In addition, existing procedures for the safe handling, use, and disposal of special hazards and universal wastes (e.g., fluorescent light bulbs, batteries, etc.) would be followed. The overall cumulative increase in hazardous waste generation would not be expected to exceed the capacities of existing hazardous waste disposal facilities. Therefore, there would be no significant cumulative impact to hazardous wastes and materials.

Construction/demolition activities for all projects, including those listed in Table 4.2-1, would avoid Environmental Restoration Program (ERP) sites to the extent practicable. If the disturbance of ERP sites cannot be avoided, activities would be coordinated with the NBVC Environmental Department, USEPA, the Ventura County Resource Management Agency, and the California Regional Water Quality Control Board to ensure all work is performed in accordance with applicable federal regulations and Navy instructions and the specific requirements of the land use controls for the ERP site. These regulations and requirements would apply to construction and demolitions activities for all past, present, and reasonably foreseeable future projects such as those listed in Table 4.2-1. Therefore, the Proposed Action would not contribute a cumulatively significant impact to ERP sites.

4.3.7 Land Use and Recreation

The past, present, and reasonably foreseeable future projects identified in Table 4.2-1 include construction activity within and near NBVC Port Hueneme. Under the Proposed Action, all construction activities would occur within NBVC Port Hueneme and would be concentrated within the Onshore Proposed Action Area. All of the projects listed above would be required to comply with applicable land use and zoning requirements in their respective jurisdictions. With respect to recreation, the past, present, and reasonably foreseeable future projects would not be anticipated to significantly impact these resources, such as parks, beaches, and other public recreational activities. As described in Section

3.8.3, the Navy would implement BMP PUBLIC HEALTH AND SAFETY-1 (see Table 2.5-1) to ensure planned training and testing events maintain a safe distance and avoid interactions with or disruptions to recreational users that may be present within the Nearshore and Offshore Proposed Action Areas. Therefore, the projects identified in Table 4.2-1 would not overlap in a manner which would alter or be incompatible with the land uses in the surrounding communities or significantly impact on-land or in-water recreational resources, including coastal uses and resources. The Navy has prepared a Coastal Consistency Negative Determination to address the Proposed Action's impact on the coastal zone, finding that the Proposed Action does not affect the coastal zone. Therefore, the Proposed Action would not contribute a cumulatively significant impact on land use and recreation.

5 Other Considerations Required by NEPA

5.1 Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations

In accordance with 40 Code of Federal Regulations (CFR) section 1502.16(a)(4), analysis of environmental consequences shall include discussion of possible conflicts between the Proposed Action and the objectives of federal, regional, state and local land use plans, policies, and controls. Table 5.1-1 identifies the principal federal and state laws and regulations that are applicable to the Proposed Action and describes briefly how compliance with these laws and regulations would be accomplished.

Table 5.1-1 Principal Federal and State Laws Applicable to the Proposed Action

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	Status of Compliance
23 California Code of Regulations section 492.16 Stormwater Management and Rainwater Retention	Consultation with the CRWQCB would occur as appropriate to ensure stormwater management strategies are compliant with applicable regulations.
Bald and Golden Eagle Protection Act	The applicable regulatory setting and impact analysis is discussed in Section 3.4. There is very little potential for any terrestrial wildlife, including bird species protected under the BGEPA, to be impacted by the Proposed Action and no wildlife habitat would be removed.
Clean Air Act	The applicable regulatory setting and impact analysis is discussed in Section 3.1. Air emissions would be minimal or <i>de minimis</i> , and the Proposed Action is exempt from General Conformity requirements. A Record of Non-Applicability has been completed and is provided in Appendix C.
Clean Water Act	The applicable regulatory setting and impact analysis is discussed in Section 3.2. The Port of Hueneme is designated as an estuarine and marine deep-water wetland. All potential impacts to wetlands and WOTUS would be mitigated by the Navy to ensure wetland functions within the watershed would not be appreciably affected. Coordination with the U.S. Army Corps of Engineers and CRWQCB would occur, as appropriate, to obtain the necessary permits (i.e., Sections 404 and 401 of the CWA) prior to implementation of the Proposed Action. All potential impacts to wetlands and other WOTUS would be mitigated by the Navy in a manner approved by the U.S. Army Corps of Engineers.
CZMA and California Coastal Act of 1976	Actions occurring within the coastal zone commonly have several resource areas that may be relevant to the CZMA. The Navy has prepared a Coastal Consistency Negative Determination to address the Proposed Action's impact on the coastal zone. Further information on the CZMA and the Coastal Consistency Negative Determination are provided in Appendix F.
Comprehensive Environmental Response, Compensation, and Liability Act	The applicable regulatory setting and impact analysis is discussed in Section 3.7. The Proposed Action has the potential to impact several ERP sites (SWMU 53, IRP Site 19A, SWMU 56, and SWMU 57). Construction would be conducted in accordance with the CERCLA and other federal, state, and local environmental laws, regulations, and Navy instructions. Adherence to applicable regulations would ensure that both construction and operation activities would not significantly impact IRP sites or other identified hazardous sites within NBVC Port Hueneme.

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	Status of Compliance
Emergency Planning and Community Right-to-Know Act	The Proposed Action would not introduce new waste streams or require new Emergency Planning and Community Right-to-Know Act reporting requirements.
Endangered Species Act	The applicable regulatory setting and impact analysis is discussed in Section 3.4. The Navy has initiated informal consultation with NMFS for concurrence of a determination of “may affect, but not likely to adversely affect” ESA-listed fish, sea turtles, and marine mammals and designated critical habitat for humpback whale. The Proposed Action would result in no effect to terrestrial ESA-listed species or terrestrial critical habitat.
EO 11990, <i>Protection of Wetlands</i>	There are no identified wetlands within Parcel 11 or Parcel 19 where the proposed construction activities would be located.
EO 12088, <i>Federal Compliance with Pollution Control Standards</i>	The applicable regulatory setting and impact analysis is discussed in Section 3.1 and Appendix C. The Proposed Action would not exceed NAAQS established by the U.S. Environmental Protection Agency under the CAA. Therefore, the Proposed Action would comply with EO 12088.
EO 12898, <i>Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations</i>	The Proposed Action would not result in disproportionately high and adverse human health or environmental effects on minority populations or low-income populations.
EO 13045, <i>Protection of Children from Environmental Health Risks and Safety Risks</i>	The applicable regulatory setting and impact analysis is discussed in Section 3.6. The Navy concludes the Proposed Action would not result in environmental health risks or safety risks that may disproportionately affect children.
EO 11988, <i>Floodplain Management</i>	The applicable regulatory setting and impact analysis is discussed in Section 3.2. The Proposed Action is located within the 500-year floodplain adjacent to Port Hueneme Harbor, and flood protection features would be incorporated into the design of the proposed facilities, as deemed appropriate. Therefore, the Proposed Action would be in compliance with the regulations of EO 11988.
Magnuson Stevens Fishery Conservation and Management Act	The applicable regulatory setting and impact analysis is discussed in Section 3.4. The Navy concludes that training and testing stressors under the Proposed Action would not adversely affect EFH.
Marine Mammal Protection Act	The applicable regulatory setting and impact analysis is discussed in Section 3.4. The Proposed Action has a very low potential for a large marine mammal strike (less than 10 percent) and vessel noise from XLUV and USV training and testing would have negligible impact on marine mammals protected under the MMPA.
Migratory Bird Treaty Act	The applicable regulatory setting and impact analysis is discussed in Section 3.4. There is very little potential for any terrestrial wildlife, including bird species protected under the MBTA, to be impacted by the Proposed Action and no wildlife habitat would be removed. Therefore, the Proposed Action would not result in significant impacts to migratory birds.
NEPA; CEQ NEPA implementing regulations; Navy procedures for Implementing NEPA	This environmental documentation has been prepared in accordance with the CEQ regulations implementing NEPA, and Navy NEPA procedures. Appropriate public participation and review are being conducted in compliance with NEPA.

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	Status of Compliance
National Historic Preservation Act	There are no historic properties located within the area of potential effect for the site. The Proposed Action is a project covered under the 2015 Programmatic Agreement between NBVC and the California SHPO. NBVC has determined that the Proposed Action can be approved with a finding of 'No Historic Properties Affected' consistent with Stipulation 8A of the 2015 NBVC Programmatic Agreement and 36 CFR section 800.4(d)(1). The Proposed Action would be reported to the California SHPO as part of NBVC's annual reporting per the 2015 Programmatic Agreement.
National Marine Sanctuaries Act	The Proposed Action would overlap with a small portion of the Channel Islands National Marine Sanctuary, but in compliance with the National Marine Sanctuaries Act, would not destroy, cause loss of, or injure any sanctuary resource per SEC.306 [16 U.S.C. 1436] of the Act. Further, avoidance of protected habitats and use of Lookouts would be employed.
Noise Control Act of 1972	The Proposed Action would not exceed the Occupational Safety and Health Administration established workplace standards for noise. The minimum requirement states that constant noise exposure must not exceed 90 dBA over an 8-hour period, constantly being exposed to levels exceeding 115 dBA for 15 minutes within an 8-hour period, or exposure to a noise level of 140 dBA.
Oxnard City Code 7, Article XI	Implementation of the Proposed Action would not exceed Oxnard's City Noise Standards for Exterior or Interior Noise Levels within Sound Zones and Land Use. Further, compliance to construction activity parameters would be carried forward (e.g., day of week, time of day, etc.).
Port Hueneme Municipal Code for Exterior Noise Levels	The Proposed Action would not exceed Port Hueneme Municipal Code Exterior Noise Levels for noise sensitive or residential properties. Further, compliance to construction activity parameters would be carried forward (e.g., day of week, time of day, etc.).
Resource Conservation and Recovery Act	The applicable regulatory setting is discussed in Section 3.7. The Proposed Action would not result in significant hazardous materials related impacts. Management protocols for hazardous substances related to the XLUUV/USV program would follow existing regulations and procedures for like materials.
Toxic Substances Control Act	The applicable regulatory setting is discussed in Section 3.7. Management of any listed chemicals would be conducted in accordance with the TSCA.

Legend: BGEPA = Bald and Golden Eagle Protection Act; CAA = Clean Air Act; CEQ = Council on Environmental Quality; CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; CFR = Code of Federal Regulations; CRWQCB = California Regional Water Quality Control Board; CWA = Clean Water Act; CZMA = Coastal Zone Management Act; dBA = A-weighted decibel; EFH = Essential Fish Habitat; ERP = Environmental Restoration Program; EO = Executive Order; IRP = Installation Restoration Program; MBTA = Migratory Bird Protection Act; MMPA = Marine Mammal Protection Act; NAAQS = National Ambient Air Quality Standards; NBVC = Naval Base Ventura County; NEPA = National Environmental Policy Act; SHPO = State Historic Preservation Officer; SWMU = solid waste management units; TSCA = Toxic Substances Control Act; U.S. = United States; USV = Unmanned Surface Vessel; XLUUV = Extra Large Unmanned Undersea Vehicle; WOTUS = waters of the United States

5.2 Irreversible or Irretrievable Commitments of Resources

Resources that are irreversibly or irretrievably committed to a project are those that are used on a long-term or permanent basis. This includes the use of non-renewable resources such as metal and fuel, and natural or cultural resources. These resources are irretrievable in that they would be used for this project when they could have been used for other purposes. Human labor is also considered an

irretrievable resource. Another impact that falls under this category is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

Implementation of the Proposed Action would involve human labor and the consumption of fuel, oil, and lubricants for construction vehicles. Implementing the Proposed Action would not result in significant irreversible or irretrievable commitment of resources.

5.3 Unavoidable Adverse Impacts

This Environmental Assessment/Overseas Environmental Assessment (EA/OEA) has determined that the No Action Alternative and the Proposed Action would not result in any significant impacts. Implementing the Proposed Action would result in the following unavoidable, yet not significant, environmental impacts: air emissions, temporary construction noise, and a minor traffic increase.

5.4 Relationship between Short-Term Use of the Environment and Long-Term Productivity

The National Environmental Policy Act (NEPA) requires an analysis of the relationship between a project's short-term impacts on the environment and the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing one development site reduces future flexibility in pursuing other options, or that using a parcel of land or other resources often eliminates the possibility of other uses at that site.

In the short-term, effects to the human environment with implementation of the Proposed Action would primarily relate to the construction activity itself. Air quality and noise would be impacted in the short-term. In the long-term, emissions from the Extra Large Unmanned Undersea Vehicles (XLUUV) and Unmanned Surface Vessels (USV) training and testing would be minimal, with all criteria emissions below 10 tons. The construction of the facilities and training and testing events for the XLUUVs and USVs would not significantly impact the long-term natural resource productivity of the area. The Proposed Action would not result in any impacts that would significantly reduce environmental productivity or permanently narrow the range of beneficial uses of the environment.

6 List of Preparers

This Environmental Assessment/Overseas Environmental Assessment (EA/OEA) was prepared collaboratively between the Navy and contractor preparers.

U.S. DEPARTMENT OF THE NAVY

Name	Navy Organization
Joseph Vlcek	U.S. Fleet Forces Command (USFFC)
Rose Johnson	Naval Sea Systems Command (NAVSEA)
Shelby Creager	NAVSEA
Alexander Stone	Commander, U.S. Pacific Fleet (COMPACFLT)
CAPT Edward Fultz	ASN (RD&A), Program Executive Office (PEO), PMS 406
Lori McConnell	ASN (RD&A), PEO, PMS 406
Anthony Blair	ASN (RD&A), PEO, PMS 406
Charles Kubic	ASN (RD&A), PEO, PMS 406
Chad Lousen	NSWC Port Hueneme Division (NSWC PHD)
Cory Scott	Naval Air Warfare Center Weapons Division (NAWCWD) – NAVAIR
Sarah Stallings	Naval Facilities Engineering Systems Command (NAVFAC) Atlantic
Kelli Osterkamp (Printy)	NAVFAC Southwest
Jason Golumbfskie-Jones	Commander, Navy Region Southwest
Vicky Anh Ngo	Commander, Navy Region Southwest
Kelly Finn	Commander, Navy Region Southwest
LCDR Alexandra Stormer	Commander, Navy Region Southwest
Deborah McKay	Naval Facilities Engineering and Expeditionary Warfare Center (NAVFAC EXWC)
Patrick Meddaugh	Naval Base Ventura County (NBVC)

STANTEC/AECOM Contractor

Name	Role	Years of Experience	Degree(s)
Lewis “Bud” Albee	Quality Assurance/Quality Control	33	M.S., Limnology B.A., Biology
Stella Acuna, AICP, CEP, PMP Stantec	Project Management, Quality Assurance / Quality Control	30	B.A., Environmental Design and Planning
Erik Aleksanyan AECOM	Air Quality	2	B.S., Physics
Alex Bethke Stantec	Cultural Resources, Environmental Justice, and Senior Review	15	M.A., History (Public)
Carolyn Dunmire Stantec	Environmental Justice (Senior Review)	30	M.S., Engineering-Economic Systems
Raul Castillo Stantec	Hazardous Materials, Transportation, and Land Use	5	M.U.P., Urban Planning
Stephanie Clarke, GISP Stantec	GIS	8	B.S., Biology and Environmental Studies
Brian Cook Stantec	Noise	23	B.A., Biology
Scott Coombs Stantec	Public Health and Safety (Senior Review)	23	M.S., Marine Science

Name	Role	Years of Experience	Degree(s)
Josh De Guzman, AWB Stantec	Terrestrial Biological Resources	8	B.S., Wildlife Management and Conservation
Caitlin Jafolla, AICP Stantec	Deputy Project Management	8	B.A., Urban Studies and Planning
Patrick Kester Stantec	Noise	12	B.S., Mechanical Engineering
Leah McCormick, AICP Stantec	Water Resources	9	M.A., Environmental Science and Management
Geoff Olander Stantec	Noise (Senior Review)	28	B.S., Mechanical Engineering
Daniel Ortega Stantec	Jr. Environmental Scientist / Planner	1	B.S., Biological Sciences
David Powell, PE, CEM Stantec	Infrastructure	40	B.S., Electrical Engineering
Clint Scheuerman, CWB Stantec	Biological Resources (Senior Review)	17	M.A., Biological Sciences
Richard Stolpe Stantec	Public Health and Safety, Hazardous Materials (Senior Review)	20	M.A., Geography
Gwen Vineyard Stantec	Technical Edit/Production	40	
Jennifer Weitkamp Stantec	Biological Resources	20	B.S., Fisheries
Lisa Woeber Stantec	Quality Assurance Review	26	B.B.A., Business Administration
Fang Yang AECOM	Air Quality	35	M.S., Atmospheric Science
Kim Zuk AECOM	Air Quality	18	M.S., Atmospheric Chemistry

Appendix A

Public and Agency Participation

(Note: This appendix will be provided with the Final EA/OEA.)

This page intentionally left blank.

Appendix B
Best Management Practices, Standard Operating Procedures, and
Mitigation Included in Proposed Action

This page intentionally left blank.

B Best Management Practices, Standard Operating Procedures, and Mitigation Included in Proposed Action

B.1 Best Management Practices, Standard Operating Procedures, and Mitigation Included in Proposed Action

This section presents an overview of the Best Management Practices (BMPs), Standard Operating Procedures (SOPs), and mitigation that are incorporated into the Proposed Action.

B.1.1 Best Management Practices

BMPs are existing policies, practices, and measures that the Navy uses to reduce the environmental impacts of designated activities, functions, or processes. Although BMPs mitigate potential impacts by avoiding, minimizing, or reducing/eliminating impacts, BMPs are distinguished from potential mitigation measures because BMPs are (1) existing requirements for the Proposed Action, (2) ongoing, regularly occurring practices, or (3) not unique to this Proposed Action. In other words, the BMPs identified in this document are inherently part of the Proposed Action and are not potential mitigation measures proposed as a function of the NEPA environmental review process for the Proposed Action. Table B-1 includes a list of BMPs.

BMPs include actions required by federal or state law or regulation. The recognition of the general management measures prevents unnecessary evaluation of impacts that are unlikely to occur.

Table B-1 Best Management Practices

BMP	Description	Impacts Reduced/Avoided
CULTURAL RESOURCES-1	<u>Avoidance of Submerged Properties</u> The XLUUV standard procedure is to avoid submerged objects, thereby negating the possibility for coming into contact with shipwrecks that could be listed on or eligible for the National Register of Historic Places and considered to be historic properties under Section 106 of the National Historic Preservation Act or as cultural resources under NEPA.	Impacts to cultural resources
NOISE-1	<u>Construction Noise</u> To reduce construction noise to sensitive receptors, construction contractors and subcontractors would ensure that construction equipment is properly muffled according to manufacturer's specifications; use electrically-powered tools and facilities to the maximum extent feasible; place noise-generating construction equipment and locate construction staging areas away from sensitive uses, where feasible; and, require heavily loaded trucks used during construction routed away from residential streets to the extent possible.	Impacts to noise

BMP	Description	Impacts Reduced/Avoided
WATER MGMT-1	<u>Stormwater Pollution Prevention Plan</u> Prior to any ground-disturbing activities at NBVC Port Hueneme, the Navy will establish compliance with the current USEPA Construction Stormwater General Permit. In California, the California State Water Resources Control Board is the NPDES permitting authority on federal lands. The California Construction Stormwater General Permit includes requirements for management and treatment of stormwater and the preparation of a SWPPP and associated BMPs. BMPs must be consistent with applicable stormwater management manuals or guidance. The construction contractor will prepare and implement the site-specific construction SWPPP and ensure that all BMPs and other appropriate control measures specified in both the Construction Stormwater General Permit and SWPPP are implemented, monitored, and submitted to the Navy for regular review.	Impacts to water quality
WATER MGMT-2	<u>Erosion Avoidance Practice</u> Any soil exposed as part of the project shall be protected from erosion (with plastic sheeting, filter fabric, etc.) after exposure.	Impacts to water quality
WATER MGMT-3	<u>Water Quality Permitting</u> The Navy will implement project-specific BMPs as required by USACE-issued permit(s) under CWA Section 404 and the California State Water Quality Control Board's CWA Section 401 Water Quality Certification.	Impacts to WOTUS
WATER MGMT-4	<u>General – Petroleum, Oils, Lubricants</u> All equipment shall be inspected daily by the contractor. If a leak is detected, the contractor will immediately notify the NBVC Environmental Division and construction Contracting Officer's Representative, and the equipment shall be removed from the construction area and shall not be used until the leak is repaired and equipment cleaned and shall only be returned once it is repaired and fully operational. Wash water resulting from wash-down of equipment or work areas shall be contained for proper disposal and shall not be discharged unless authorized. No oil, fuels, or chemicals shall be discharged to surface waters or onto land where there is a potential for re-entry into surface waters to occur. No cleaning solvents or chemicals used for tools or equipment cleaning shall be discharged to ground or surface waters. When possible, hydraulic fluids shall be vegetable-based.	Impacts to water quality
PUBLIC HEALTH AND SAFETY-1	<u>Maritime Training and Testing Activities</u> SOPs will be implemented as described in Appendix B to prevent vessel-to-vessel or vessel-to-object incursions.	Impacts to public health and safety
HAZARDOUS MATERIALS-1	<u>Prevention, Containment, and/or Cleanup</u> Provide personnel training on protocol and procedures to use during training and testing activities. Coordinate the disposal of anticipated hazardous materials.	Impacts from hazardous materials

BMP	Description	Impacts Reduced/Avoided
HAZARDOUS MATERIALS-2	<u>Fuel Spill Prevention and Response</u> For handling fuels at the ISP, the following spill prevention measures will be implemented: • Training in proper handling of petroleum, oils, and lubricants during fueling, including the inspection of fueling equipment, knowledge of spill response equipment and procedures, and good housekeeping practices, prior to initiating work. • Refueling of equipment shall only be permitted at approved fueling facilities and at least 50 ft (15 meters) from the water. A contingency plan to control petroleum products accidentally spilled during the project shall be developed. Absorbent pads and containment booms shall be stored on-site, if appropriate, to facilitate clean-up of accidental petroleum releases. • Fueling of vessels shall be done at approved fueling facilities. With respect to equipment that cannot be fueled out of the water (e.g., barge crane), spill prevention booms shall be employed.	Impacts on public health and safety and water quality from hazardous materials

Legend: BMPs = best management practices; CWA = Clean Water Act; ft = feet; ISP = in-water support platform; NBVC = Naval Base Ventura County; NEPA = National Environmental Policy Act; NPDES = National Pollutant Discharge Elimination System; Standard Operating Procedures = SOPs; SWPPP = Stormwater Pollution Prevention Plan; USACE = U.S. Army Corps of Engineers; USEPA = U.S. Environmental Protection Agency; WOTUS = waters of the United States; XLUUV = Extra Large Unmanned Undersea Vehicle

B.1.2 Standard Operating Procedures

For training and testing to be effective, personnel must be able to safely use their sensors, platforms, weapons, and other devices to their optimum capabilities and as intended for use in missions and combat operations. The Navy has developed SOPs through decades of experience to provide for safety and mission success. Because they are essential to safety and mission success, SOPs are part of the Proposed Action and are considered in the environmental analysis for applicable resources as described in Chapter 3 (Affected Environment and Environmental Consequences). The following SOPs are recognized as providing a benefit to public safety or environmental resources:

- The Navy deconflicts sea space use to allow for the necessary spatial and temporal separation of multiple Navy units for safety and to prevent interference with equipment sensors. Deconfliction also allows for safe separation from non-participants within established commercial shipping lanes and areas used for recreational activities. The Navy evaluates the need to publish Notices to Mariners to alert the public to stay clear of the area based on event locations and the activities involved. Notices to Mariners may be issued prior to the use of USVs or UUVs based on the event's scale, location, and timing. Additionally, when manned support vessels are already participating in events involving USVs or UUVs, they will be responsible for ensuring safe operation of the vehicle, which may include ensuring (or requesting, if needed) clearance of non-participants from the event vicinity.
- Vessels are required to operate in accordance with applicable navigation rules, including Inland Waters Navigation Rules (33 Code of Federal Regulations [CFR] section 83.01 et seq.) and International Regulations for Preventing Collisions at Sea (72 COLREGS). These rules and regulations were formalized in the Convention on the International Regulations for Preventing Collisions at Sea (1972) and implemented through the International Navigational Rules Act of 1977 (33 United States Code [U.S.C.] sections 1601–1608). Applicable navigation requirements specified in the Inland Navigation Rules include, but are not limited to, Rule 5 (Lookouts) and

Rule 6 (Safe Speed). These rules require that vessels post Lookouts and, at all times, proceed at a safe speed so proper and effective action can be taken to avoid collision and so vessels can be stopped within a distance appropriate to the prevailing circumstances and conditions. Surface ships transit at speeds that are optimal for fuel conservation, to maintain ship schedules, and to meet mission requirements. Vessel captains use the totality of the circumstances to ensure the vessel is traveling at appropriate speeds in accordance with navigation rules. Depending on the circumstances, this may involve adjusting speeds during periods of reduced visibility or in certain locations.

- Underway surface ships operated by or for the Navy have personnel assigned to stand watch at all times (day and night) for safety of navigation, collision avoidance, range clearance, and man-overboard precautions. Personnel on underway small boats (e.g., crewmembers responsible for navigation) fulfill similar watch standing responsibilities to those positioned on surface ships. Standard watch personnel, also referred to as “Lookouts,” include officers, enlisted personnel, and civilians operating in similar capacities. Personnel are trained in accordance with the U.S. Navy Lookout Training Handbook or equivalent to use correct scanning procedures while monitoring assigned sectors, to estimate the relative bearing, range, position angle, and target angle of sighted objects, and to rapidly communicate accurate sighting reports. The handbook was updated in 2022 to include a more robust chapter on environmental compliance, mitigation, and marine species observation tools and techniques (NAVEDTRA 12968-E). Watch teams may use radios to communicate with other ships operating in the vicinity to coordinate safe maneuvering. After sunset and prior to sunrise, Lookouts employ night visual search techniques, which could include the use of night vision devices. Lookouts monitor their assigned sectors for any indication of danger to the ship and the personnel onboard, such as a floating or partially submerged object or piece of debris, periscope, surfaced submarine, wisp of smoke, flash of light, or surface disturbance. As a standard collision avoidance procedure for surface vessels, Lookouts also monitor for marine mammals that have the potential to be in the direct path of the vessel.
- The Navy avoids known navigation hazards that appear on nautical charts, such as submerged wrecks and obstructions. With limited exceptions (e.g., amphibious vessels operating in designated locations), manned vessels, USVs, and UUVs avoid contact with the seafloor to prevent damage to the platforms.
- USVs or UUVs that operate autonomously may have embedded sensors designed for avoidance of large objects. For example, select USVs and UUVs have forward-looking sonar that performs obstacle avoidance. The forward-looking sonar makes detections at a sufficient range for the onboard processor to determine whether there is a need for an avoidance maneuver. If there is a need for an avoidance maneuver, the onboard vehicle control system would insert a new maneuver (in place of the currently executing activity) and continue to introduce new maneuvers if detections continue to be made. There are a number of possible maneuvers that could be implemented, from adjusting heading to stopping or hovering the vehicle.
- As an additional standard collision avoidance procedure during specific stages of training or testing (e.g., during initial training and testing phases), manned support vessels would escort USVs and UUVs. Activities involving USVs and UUVs as described in this EA/OEA include at least one manned support vessel. Lookouts on the support vessels may use radios to communicate with other vessels operating in the vicinity to coordinate safe maneuvering (e.g., communicating the positioning and safety distances for avoiding collisions with USVs or UUVs).

- As a standard collision avoidance procedure by USVs or UUVs under positive control by manned support vessels, the Navy searches the intended path for floating debris, concentrations of floating vegetation, floating objects, or animals with potential to obstruct, or damage the USV or UUV.
- During activities that involve recoverable objects (e.g., training shapes), the Navy recovers the object to the maximum extent practical consistent with personnel and equipment safety.

B.1.3 Mitigation

The terms “mitigation” and “mitigation measures” mean actions taken to completely avoid, partially reduce, or minimize the potential for a stressor to impact a resource. Mitigation was developed consistent with measures implemented for similar Navy at-sea training and testing activities.

B.1.3.1 Mitigation Dissemination

The Navy will publish, broadcast, disseminate, or distribute mitigation instructions through the Protective Measures Assessment Protocol (PMAP), pre-event briefs, governing instructions, broadcast messages, or other established internal processes. PMAP is a software program accessed by appointed personnel during pre-event planning. PMAP provides operators with notification of the required mitigation measures applicable to a particular training or testing event, as well as a visual display of the planned event location overlain with relevant environmental data.

B.1.3.2 Personnel Training

To qualify to stand watch as a Lookout, personnel undertake a training program that includes computer-based training, on-the-job instruction, and a formal qualification program. Environmental awareness and education training is provided to personnel through the Afloat Environmental Compliance Training program (described below) or equivalent. Training is designed to help personnel gain an understanding of their personal environmental compliance roles and responsibilities (including mitigation implementation). Upon reporting aboard and annually thereafter, appointed personnel must complete training identified in their career path training plan.

- **Introduction to Afloat Environmental Compliance.** Developed in 2014, the introduction module provides information on at-sea environmental laws, regulations, and compliance roles.
- **Marine Species Awareness Training (MSAT).** The MSAT module was developed by civilian marine biologists employed by the Navy and was reviewed and approved by the National Marine Fisheries Service (NMFS). The module provides information on marine mammal and sea turtle sighting cues, visual observation tools and techniques, and sighting notification procedures. It is a video-based complement to the Lookout Training Handbook.
- **Protective Measures Assessment Protocol (PMAP).** The PMAP module provides information on how personnel should access and operate the PMAP software program.

B.1.3.3 Visual Observations

Visual observations for marine mammals and sea turtles will be conducted by trained Lookouts immediately prior to and during events with a primary objective of reducing potential interactions with vessels, USVs, and UUVs, in real-time. For mitigation purposes, the minimum number of Lookouts required is provided in Table B-2. Some events may have additional personnel (beyond the minimum number of required Lookouts) who are already standing watch on participating platforms (e.g., safety craft or support vessels) and would have eyes on the water for all or part of an event. These additional personnel will serve as members of the “Lookout Team.” While performing their primary duties, the

Lookout Team will perform ad hoc visual observations before or during events as a secondary task when doing so is compatible with, and does not compromise, safety and primary duty performance.

Lookouts on small boats would be existing crewmembers responsible for duties such as navigation or other mission-essential tasks. Lookouts will employ standard visual search techniques using naked-eye scanning, potentially in combination with the use of handheld binoculars, high-powered “big-eye” binoculars mounted on the deck of a surface ship (depending on the event, observation platform, and circumstances), and night search techniques if events occur after sunset or prior to sunrise (which could include the use of night vision devices). Lookouts will be advised that personal use of polarized sunglasses, when available, may help reduce sea surface glare, which could improve the visibility of marine resources.

Immediately prior to the start of an event and throughout the duration of the event, Lookouts will observe for marine mammals and sea turtles within a “mitigation zone” and the sea space surrounding the mitigation zone; within the direct path of underway vessels, USVs, UUVs, or towed in-water devices; and throughout the range of visibility (e.g., to the horizon, depending on weather and observation platform characteristics). Mitigation zones are a radius from a vessel, USV, UUV, or towed in-water device, as specified in Table B-2. The mitigation zone sizes are the largest areas that Lookouts can reasonably be expected to observe during typical activity conditions, and that are practical to implement from an operational standpoint. Lookouts may be responsible for observing multiple mitigation zones. For example, a Lookout positioned on a support vessel may be responsible for observing the mitigation zone around the vessel on which they are stationed, as well as the mitigation zone around the USV or UUV they are escorting, and any in-water devices that vehicle is towing.

Lookouts will immediately relay relevant sightings information (e.g., animal type, bearing, distance, direction of travel or drift, position relative to the mitigation zone) to the appropriate watch station through established communication methods. Lookouts will continue to observe for new sightings while maintaining situational awareness of the originally sighted animal’s position relative to the mitigation zone (to the extent possible). Lookouts will immediately relay any relevant new or updated information to the watch station. The watch station will disseminate relevant information to other participating assets as needed for its situational awareness. Mitigation will be implemented to the maximum extent practical based on the prevailing circumstances, including consideration of safety of manned surface vessels, USVs, UUVs, towing platforms, and crews, as well as maneuverability restrictions. Mitigation will not be implemented for marine mammals (e.g., dolphins) determined to be intentionally swimming at the bow, alongside the vessel or vehicle, or directly behind the vessel or vehicle (e.g., to bow-ride or wake-ride), or for pinnipeds that are hauled out on manmade navigational structures, port structures, or vessels.

For ship classes required to maintain more than one Lookout, the specific requirement is subject to change over time in accordance with the applicable navigation instruction (e.g., the Surface Ship Navigation Department Organization and Regulations Manual [NAVDORM]). The Navy will notify NMFS should its Lookout policies change, including in the NAVDORM.

B.1.3.4 Seasonal and Real-Time Large Whale Notification Messages

The Navy will issue seasonal awareness notification messages to alert vessels operating off the U.S. West Coast to the possible presence of concentrations of large whales, including gray whales (November–March) and fin whales (November–May). Additionally, a notification message will be issued regarding mixed concentrations of blue, humpback, and fin whales that may occur based on predicted

oceanographic conditions for a given year (e.g., May–November, April–November, etc.). While blue whales tend to be more transitory, some fin whales are year-round residents that can be expected in nearshore waters within 10 nautical miles of the California mainland and offshore operating areas at any time. The notification message will notify vessels that fin whales occur in groups of one to three individuals 90 percent of the time, and in groups of four or more individuals 10 percent of the time. Unique to fin whales off Southern California, there could be multiple individuals and/or separate groups scattered within a relatively small area (1–2 nautical miles) due to foraging or social interactions. Seasonal awareness messages will emphasize that when a large whale is observed, this may be an indicator that additional marine mammals are present and nearby, and the vessel should take this into consideration when transiting. To maintain safety of navigation and to avoid interactions with large whales during transits, the Navy will instruct vessels to remain vigilant to the presence of these large whale species, that when concentrated seasonally, may become vulnerable to vessel strikes. Lookouts will use the information from the awareness notification messages to assist their visual observation of applicable mitigation zones.

The Navy will also issue real-time notifications to alert Navy vessels operating in the vicinity of large whale aggregations (four or more whales) sighted within 1 nautical mile of a Navy vessel within an area of the SOCAL Operating Area (between 32-33 degrees North and 117.2-119.5 degrees West). This area encompasses the locations of recent (2009, 2021) vessel strikes, and historic strikes where precise latitude and longitude were known. The four whales that make up a defined "aggregation" would not all need to be from the same species, and the aggregation could consist either of a single group of four (or more) whales, or any combination of smaller groups totaling four (e.g., two groups of two whales each or a group of three whales and a solitary whale) within the 1 nautical mile zone. Lookouts will use the information from the real-time notifications to inform their visual observations of applicable mitigation zones. If Lookouts observe a large whale aggregation within 1 nautical mile of the event vicinity within the area between 32-33 degrees North and 117.2-119.5 degrees West, the watch station will initiate communication with the designated point of contact to contribute to the Navy's real-time sighting notification system.

B.1.3.5 Reporting

As needed, the Navy will follow established internal communication methods as directed by Office of Chief of Naval Operations Instruction 3100.6 (series) if reportable incidents applicable to Navy activities are observed. Further, the Navy will notify NMFS and other appropriate regulatory agencies immediately (or as soon as operational security considerations allow) if a vessel or vehicle strike, injury, or mortality of a marine mammal or sea turtle occurs that is (or may be) attributable to activities conducted under the Proposed Action. The notification will include relevant information pertaining to the incident, including, but not limited to, vessel speed, vehicle speed, or event type.

Table B-2 Visual Observation Details

Mitigation Category	Lookouts	Mitigation Zones and Requirements
Manned surface vessels	One or more Lookouts on manned underway surface vessels in accordance with the most recent navigation safety instruction ¹	Immediately prior to manned surface vessels getting underway and while underway, the Lookout(s) will observe for: • Marine mammals • Sea turtles Underway manned surface vessels will maneuver themselves (which may include reducing speed) to maintain the following distances as the mission or circumstances allow:

Mitigation Category	Lookouts	Mitigation Zones and Requirements
		• 500 yards from whales • 200 yards from other marine mammals • Vicinity of sea turtles
USVs or UUVs already being escorted (and operated under positive control) by a manned surface vessel	One Lookout on a support vessel that is already participating in the event, and has positive control over the USV or UUV	Immediately prior to USVs or UUVs getting underway and while underway, the Lookout will observe for: • Marine mammals • Sea turtles A support vessel that is already participating in the event, and has positive control over the USV or UUV, will maneuver the USV or UUV (which may include reducing its speed) to ensure the unmanned vehicle maintains the following distances as the mission or circumstances allow: • 500 yards from whales • 200 yards from other marine mammals • Vicinity of sea turtles

Legend: USV = Unmanned Surface Vessel; UUV = Unmanned Undersea Vehicle

Appendix C

Air Quality

This page intentionally left blank.

C Air Quality Emission Calculations

This Appendix discusses emission calculations for the construction and training and testing activities associated with the Proposed Action. A General Conformity Record of Non-Applicability (RONA) is also included.

C.1 Construction Emissions

Construction emissions associated with the Proposed Action are due to the following activities:

- Construction of a one-story high structure for a ships and marine systems integration laboratory, a laboratory for underwater weapons systems, assembly/disassembly area, and interior vehicle staging area (43,705 square feet [SF]).
- Construction of a partial two-story secured Command, Control and Coordination (C3) area; expeditionary operations support area with secured planning cell; expeditionary material operations and storage areas; locker rooms; applied instruction classrooms; multi-purpose training rooms; training simulator; watch area; and operational and applied Research, Development, Test and Evaluation (RDT&E) administrative spaces (66,931 SF).
- Construction of an open-air vehicle wash platform to periodically remove salt and debris from vehicles (3,000 SF).
- Construction of a battery shop for charging, maintenance, and storage of XLUUV and USV batteries (5,100 SF).
- Construction of an inert storehouse, general purpose warehouse, and climate-controlled warehouse (7,255 SF).
- Construction of an open air operational laydown area (59,058 SF).
- Paving and site improvements including site paving and security fence demolition; access roadway improvements; privately owned vehicle parking lot improvements for about 225 vehicles; organizational vehicle parking for about 220 vehicles, sidewalks, curbs, gutters, and laydown area pavement; landscaping; signage; trash enclosure; break shelter; and bike area (70,875 SF) [estimated 128,218 SF if using Parcel 11 versus Parcel 19].

Emissions from this activity are primarily from the following:

- Combustion emissions and road dust from construction equipment;
- Dust from material movement;
- Combustion emissions and road dust from worker vehicles;
- Architectural coatings; and
- Paved areas (VOC off-gassing).

To determine construction emissions, the California Emissions Estimator Model (CalEEMod) version 2022.1.1.16 was utilized. CalEEMod allows for users to enter project-specific data where known and to use default data when specifics are unknown. Due to the uncertainty of equipment specifics, CalEEMod defaults were used except for the following overrides:

- Scaled the CalEEMod default construction schedule per construction phase to accommodate the known overall construction timeframe of May 2026 through October 2029.

CalEEMod defaults for the Proposed Action location were used for the following:

- Greenhouse gas intensity factors (pounds/mega-watt hour [lb/MWh]);
- Construction phases;
- Off-road construction equipment type, fuel, count, hours, horsepower, load factor;
- Off-road construction equipment emission factors (in units of grams per brake-horsepower-hour [g/bhp-hr]);
- Vehicle speeds;
- Material moisture and silt content;
- Number of worker trips, vehicle miles traveled, and vehicle types per construction phase;
- Percent paved roads (100 percent); and
- Square footage of architectural coatings application and VOC content.

CalEEMod inputs and outputs are provided within this Appendix.

C.2 Training and Testing Emissions

Training and Testing emissions from the Proposed Action are the result of the following:

- Onshore cranes used for vessel launch and recovery;
- Onshore generator sets;
- Onshore forklifts;
- Small marine crafts (for emissions purposes, assumed to be tug boats) used for various activities associated with the XLUUVs and USVs, such as vessel launch and recovery, pierside wet checks, training shape deployment, surface and submerged obstacle avoidance, at sea refueling, vessel bottom scuttle, and general support;
- Diesel engines associated with the USVs;
- Maintenance Van Generator
- Combustion emissions and road dust associated with commuter motor vehicles;
- Consumer products and architectural coatings from operations of buildings and parking spaces; and
- Energy usage, water and wastewater usage/generation, solid waste generation, and refrigerants usage from operations of buildings.

C.3 CalEEMod Calculations

CalEEMod was used to generate annual training and testing emissions from all activities, except the small marine crafts (tugboats) and diesel engines associated with the USVs. For XLUUVs, no training and testing emissions were estimated as no airborne emissions would occur during underwater training exercise. As with construction emissions, CalEEMod defaults were used when project-specific data was not known.

Due to the uncertainty of equipment and building operational specifics, CalEEMod defaults were used except for the following overrides:

- Updated commuter vehicles to 660 trips per day (representing two daily one-way trips for the estimated 330 employees);
- Assumed no landscaping activities;

- Added the use of two cranes, two forklifts and two generator sets for maintenance, and assumed 120 days of training and testing per year;
- Added the use of two cranes used for vessel launch and recovery, assumed 144 hours per year; and
- Added the use of two generator sets used for dry/wet checks, set as 40 hp (30 kW), and assumed 120 days of training and testing per year.

CalEEMod defaults were used for the following:

- Greenhouse gas intensity factors (pounds/mega-watt hour [lb/MWh]);
- Worker vehicle fleet mix;
- On-road vehicle emission factors (in units of grams per mile [g/mi] and grams per trip [g/trip]);
- Percent paved roads (100 percent);
- Road silt loading, vehicle weight, vehicle speed, material silt, and moisture content;
- Consumer product, architectural coating, and energy usage;
- Water and waste water usage;
- Solid waste generation;
- Refrigerant usage;
- Crane, forklift, and generator sets for use with maintenance-fuel type, hours of operation per day, horsepower, load factor;
- Cranes used for vessel launch and recovery – fuel type, horsepower and load factor; and
- Generators used for dry/wet checks – hours of operation per day and load factor.

CalEEMod inputs and outputs are provided within this Appendix.

C.4 Small Marine Craft (Tugboats)

To calculate emission from the tugboats, emission factors were taken from California's OFFROAD2021 (version 1.0.5) Emissions Inventory. Emission factors were pulled for main engines and auxiliary engines for the vessel categories of "Tugboat-Escort/Ship Assist" and "Tugboat-Push/Tow" for Ventura County and operational year of 2029. Emissions per vessel category were provided in units of tons per day, and total horse-power hours per year were provided for each vessel type and horsepower bin. Based on review of emissions, "Tugboats-Escort/Ship Assist" was assumed since emissions were larger than "Tugboat-Push/Tow."

Emissions in tons per day were converted to grams per horsepower-hour (g/hp-hr) by the following equation:

$$EF = E \times 1/HPH \times 365 \text{ days/year} \times 2000 \text{ pound/ton} \times 453.59 \text{ grams/pound}$$

Where:

EF = emission factor (g/hp-hr)

HPH = horsepower-hour per year

Emissions were then calculated using the derived emission factor using the following equation:

$$E = EF \times HP \times LF \times \text{Event Days/Year} \times \text{Hours/Event Days} \times \text{Number of Units} \times 1 \text{ pound}/453.59 \text{ grams} \times 1 \text{ ton}/2000 \text{ pounds}$$

Where:

E = annual emissions (tons)

EF = emission factor (g/hp-hr)

HP = horsepower (hp)

LF = load factor

Main engine tugboat horsepower was estimated using the U.S Environmental Protection Agency's "Port Emissions Inventory Guidance"¹ report, specifically Table G.1. Average installed power for tugboats was used to account for the likelihood of more than one engine. The auxiliary engine horsepower was taken from the default OFFROAD2021 horsepower bin for "Tugboat-Escort/Ship Assist."

Due to OFFROAD2021 (version 1.0.5) Emissions Inventory not providing methane (CH₄) and nitrous oxide (N₂O) emissions, emissions were calculated using factors taken from the "Port Emissions Inventory Guidance." CH₄ factors in units of g/kW-hr were taken from Table H.7 for engine size bins 'kW > 1400' for the main propulsion engines and '75 < kW < 600' for the auxiliary engine. Tier 3 engines were assumed. N₂O emission factor was calculated based on product of brake-specific fuel consumption (BSFC) and the N₂O conversion factor for diesel fuel (0.000156 g N₂O/g fuel). The BSFC was taken from Table 4.3 of the "Port Emissions Inventory Guidance" [213 g/kW-hr for kW > 37]. Equations used to calculate emissions were the same as listed above, with the additional conversion of g/kW-hr to g/hp-hr.

C.5 Maintenance Van Generator

A 59 hp, diesel-fired generator that is certified as EPA Tier 4 compliant will conservatively be operated 8,760 hours per year. To calculate emission from this generator, emission factors were taken from California's OFFROAD2021 (version 1.0.5) Emissions Inventory and EPA Tier 4 limits. Emission factors were pulled from the maximum of either "Military Tactical Support – Misc – Generator," "Portable Equipment – Non-Rental Generator," or Tier 4 emission limits. Emissions per generator category taken from OFFROAD2021 were provided in units of tons per day, and total horse-power hours per year were provided for horsepower bin.

Emissions in tons per day were converted to grams per horsepower-hour (g/hp-hr) by the following equation:

$$EF = E \times 1/HPH \times 365 \text{ days/year} \times 2000 \text{ pound/ton} \times 453.59 \text{ grams/pound}$$

Where:

EF = emission factor (g/hp-hr)

HPH = horsepower-hour per year

EPA Tier 4 final standards were taken from Table 1 of 40 CFR 1039.101. For NO_x and VOC factors for engines between 19 kW and 56 kW and less than 19 kW, a combined NO_x+NMHC factor is given and was then apportioned into NO_x and VOC rates based on the ratio of Tier 1 limits (9.2 g/kWh NO_x and 1.3 g/kWh HC).

To determine the CH₄ emission factor, the non-methane hydrocarbon (NMHC) emissions were subtracted from total hydrocarbon emissions (THC or HC):

¹ Port Emissions Inventory Guidance: Methodologies for Estimating Port-Related and Goods Movement Mobile Source Emissions. US EPA. April 2022. EPA-420-B-22-011.

$$\text{THC} - \text{CH}_4 = \text{NMHC};$$

$$\text{THC} - \text{NMHC} = \text{CH}_4;$$

$$\text{THC} - (0.984 * \text{THC}) = \text{CH}_4;$$

$$\text{THC} * (1 - 0.984) = \text{CH}_4$$

The ratio of NMHC to THC is 0.984 and taken from EPA's "Conversion Factors for Hydrocarbon Emission Components," July 2010, EPA-420-R-10-015.

Emissions of all pollutants but N₂O were then calculated using the maximum emission factor using the following equation:

$$E = \text{EF} \times \text{HP} \times \text{LF} \times 8,760 \text{ hours/year} \times \text{Number of Units} \times 1 \text{ pound}/453.59 \text{ grams} \times 1 \text{ ton}/2000 \text{ pounds}$$

Where:

E = annual emissions (tons)

EF = emission factor (g/hp-hr)

HP = horsepower (hp)

LF = load factor

For N₂O, emissions were calculated using the following factors and equation:

0.60 grams per million British thermal units (g/MMBtu) [from 40 CFR 98 Subpart C]

138,000 British thermal units per gallon (Btu/gallon) – default higher heating value for diesel fuel.

7.05 lb/gallon – default density for diesel fuel.

0.408 lb/hp-hr brake specific fuel consumption – taken from "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition" (EPA, July 2010; EPA-420-R-10-018)

$$E = \text{HP} \times 8,760 \text{ hours/year} \times 0.480 \text{ lb/hp-hr} \times (138,000 \text{ Btu/gallon}) / (10,000,000 \text{ Btu/MMBtu}) \times 0.60 \text{ g/MMBtu} \times 1 / 7.05 \text{ lb/gallon} \times 1 \text{ lb}/453.59 \text{ g} \times 1 \text{ ton}/2000 \text{ lb}$$

C.6 USVs

Emissions from the twin diesel engines associated with the USVs were calculated using emission factors taken from the Navy and MSC Engine Emission Calculator². Emission factors pulled assumed two engines and were provided in units of kilograms per hour (kg/hr). Emissions were calculated using the following equation:

$$E = \text{EF} \times \text{number of USVs} \times \text{hours/day} \times \text{days/year} \times 2.20462 \text{ pounds/kilogram} \times 1 \text{ ton}/2000 \text{ pounds}.$$

Where:

E = annual emissions (tons)

EF = emission factor (kg/hr)

Similar to the calculations for the tugboat engines, due to Navy and MSC Engine Emission Calculator not providing methane (CH₄) and nitrous oxide (N₂O) emissions, emissions were calculated using factors taken from the "Port Emissions Inventory Guidance." CH₄ factors in units of g/kW-hr were taken from Table H.7 for engine size bin '75 < kW < 600.' Tier 3 engines were assumed. N₂O emission factor was calculated based on product of BSFC and the N₂O conversion factor for diesel fuel (0.000156 g N₂O/g

² Single Naval Fuel At-Sea Diesel Impact Study <https://apps.dtic.mil/sti/pdfs/AD1167318.pdf>

fuel). The BSFC was taken from Table 4.3 of the "Port Emissions Inventory Guidance" [213 g/kW-hr for kW > 37]. The equation used to calculate emissions was the same as listed above, with the additional conversion from g/kW-hr to kg/hr and the multiplication of 2 to account for two engines:

$$EF = EF1 \times kW \times 1 \text{ kg}/1000\text{g} \times 2$$

Where:

EF = emission factor (kg/hr)

EF1 = emission factor (g/kW-hr)

C.7 Total Training and Testing Emissions

Total training and testing emissions were separated based on location of occurrence:

- Onshore
- Offshore - between 0-3 nautical miles (nm) from shore
- Offshore - between 3-12 nm from shore
- Offshore – greater than 12 nm from shore

Vessels operating in all waters were assumed to operate 5 percent of the time between 0-3 nm from shore, 20 percent of the time between 3-12 nm from shore, and 75 percent of the time beyond 12nm from shore.

CalEEMod inputs and outputs are provided within this appendix along with the tugboat and USV emission calculations.

CalEEMod Inputs and Detailed Report

This page intentionally left blank.

Training and Testing Emissions Summary

Vessel Emissions

Distance to Shore	Pollutant Emissions (tons)							
	NOx	SOx	CO	CO ₂	HC	PM	CH ₄	N ₂ O
0NM-3NM	1.1	0.0	0.1	62.9	0.1	0.0	0.0003	0.0038
3NM-12NM	4.3	0.0	0.4	251.4	0.4	0.0	0.0013	0.0154
>12NM	16.0	0.0	1.5	942.9	1.5	0.0	0.0049	0.0577

Support Emissions

Distance to Shore	Pollutant Emissions (tons)											
	HC	ROG	TOG	CO	NOx	CO ₂	PM ₁₀	PM _{2.5}	SOx	NH ₃	CH ₄	N ₂ O
Onshore	0.0	0.1	0.1	1.1	0.9	238.6	0.0	0.0	0.0	0.0	0.0	0.0
0NM-3NM	0.6	0.7	0.9	4.6	13.7	3286.2	0.2	0.2	0.0	0.0	0.0	0.2
3NM-12NM	0.6	0.7	0.8	4.6	13.4	3206.7	0.2	0.2	0.0	0.0	0.0	0.2
>12NM	1.2	1.5	1.7	9.7	27.8	6588.3	0.4	0.4	0.0	0.0	0.0	0.4

Training and Testing Emissions

	Emissions (tons)																	
	TOG	ROG	NOx	CO	SO ₂	PM ₁₀ E	PM ₁₀ D	PM ₁₀ T	PM _{2.5} E	PM _{2.5} D	PM _{2.5} T	BCO ₂	NBCO ₂	CO ₂ T	CH ₄	N ₂ O	R	CO ₂ e
Onshore	0.4	0.9	0.5	2.4	0.0	0.0	0.6	0.6	0.0	0.1	0.2	24.7	1202.7	1227.4	2.6	0.1	6.2	1313.7

Total Emissions

Distance to Shore	Pollutant Emissions (tons)												
	HC	ROG*	TOG	CO	NOx	CO ₂	PM ₁₀	PM _{2.5}	SOx	NH ₃	CH ₄	N ₂ O	CO ₂ e
Onshore	0.0	1.0	0.5	3.4	1.4	1466.1	0.6	0.2	0.01	0.0	2.6	0.05	1546.9
0NM-3NM	0.7	0.8	0.9	4.7	14.8	3349.0	0.2	0.2	0.00	0.0	0.011	0.18	3403.7
3NM-12NM	1.0	1.1	0.8	5.0	17.7	3458.2	0.2	0.2	0.00	0.0	0.01	0.2	3514.9
>12NM	2.7	3.0	1.7	11.1	43.8	7531.2	0.4	0.4	0.00	0.0	0.03	0.4	7655.3

* HC from vessel emissions included in ROG total as only available factor.

Vessel and Support Equipment

Vessel	Engine Assumption	Units	Days of events	Activity	# of events	Maximum Event days	Length of Activity (hours / event days)	Distance from Shore	Supporting Equipment	Units	Assumption for use	Horsepower	Emission Quantified	Emissions source				
XLUUV	Mostly battery use but does have diesel generators on board	6 XLUUV per event	120 Days - 10 daytime (5-10 days each) 2 nighttime (5 days each)	Vehicle Launch & recovery	2 per month per vehicle		1 hour ^b	Pierside At Shore	2 Mobile Cranes 2 Small Boats	2 2	Average Crane Tug Boat	300-600 ^c Main - 4710; Auxiliary - 175 ^d	Yes Yes	Supporting and Vessel				
				System pierside dry/wet checks ^a	12	120	2 hours	Pierside	Generators	2	Diesel Generator	40 (30 kW)	Yes	Supporting				
				Snorkeling and Battery Charging	12	110	4-8 hours	At Sea	Diesel Generators (30kw) Shore Power		Not used (Too far) >12nm Not Used (Grid Power)		No	Supporting				
				Pierside Fuel and Oil Loads	12	110			Pump		Not used (Grid Power)		No	Supporting				
				Acoustic Transmissions	12	110							No	None				
				Training Shape Deployment	12	110		Deep Waters	Crane/Winch Support Vehicle ROV Diver		Not used (Too far) >12nm	300-600 ^c	No	Supporting and Vessel				
					12	110				Not used (Too far) >12nm		No						
					12	110				Not Used Human		No						
				Anchoring	12	110		Shallow Waters					No	None				
				Surfaced Obstacle Avoidance	12	110	2 hours			Various Other vessels	4	Tug Boat ^f	Main - 4710; Auxiliary - 175 ^d	Yes	Supporting Vessel			
				Submerged Obstacle Avoidance	12	110	2 hours			Other Vessels to Deploy	4	Tug Boat ^f	Main - 4710; Auxiliary - 175 ^d	Yes	Supporting Vessel			
				At Sea Refueling	12	110	2 hours	Shallow Waters ^g	Supporting Vessels	4	Tug Boat ^f	Main - 4710; Auxiliary - 175 ^d	Yes	Supporting Vessel				
				Vehicle Bottom Scuttle	12	110	2 hours	Shallow Waters	Support Vehicle	4	Tug Boat ^f	Main - 4710; Auxiliary - 175 ^d	Yes	Supporting Vessel				
				Emergency Weight Release	12	110							No ^h	None				
				Small Craft Support Vehicle	12	110	2 hours	Shallow Waters	Small Craft (>50ft)	4	Tug Boat ^f	Main - 4710; Auxiliary - 175 ^d	Yes	Supporting Vessel				
					12	110		Open Ocean	Large Craft (300 ft)	1	Not used (Too far) >12nm		No					
				USV	2 Diesel engines (800hp each) ^h	2 USVs per event	120 Days - 10 daytime (5-10 days each) 2 nighttime (5 days each)	System pierside dry/wet checks	12	120	2 hours	Pierside	Generators	2	Diesel Generator	40 (30 kW)	Yes	Supporting
								Surfaced Obstacle Avoidance	12	110	4 hours		Various Other Vessels	4	Tug Boat ^f	Main - 4710; Auxiliary - 175 ^d	Yes	Supporting Vessel
								Testing	12	110	8 hours		Only Main Vessel	2	USV	800 ^g	Yes	Vessel
				General Maintenance	12	120	[CalEEMod default]	Pierside/At Shore	Mobile Cranes	2	Average Crane	[CalEEMod default]	Yes	Supporting				
							[CalEEMod default]	Pierside/At Shore	Forklifts	2	Average Forklift	[CalEEMod default]	Yes	Supporting				
							[CalEEMod default]	Pierside/At Shore	Generators	2	Average Diesel Generator	[CalEEMod default]	Yes	Supporting				
				Maintenance Van Generator	--	--	8760 hours per year	Pierside through Open Ocean	Generator	1	Diesel Generator	59	Yes	Supporting				
				Transportation ⁱ	--	--	--	--	--	--	--	--	No	Truck (Vehicle)				

Note:
1. In water emissions breakdown: 5% (0nm-3nm) 20% (3nm-12nm) 75% (>12nm)
Training duration 120. Event training days 110 event days.

Assumptions:

- No other emissions will be produced as submarine works on battery power.
- 30 minutes of shore to sea moving and 30 minutes of sea to shore moving.
- Event will take place in shallower water due to the use of other vessels being used.
- Main engine Tugboat horsepower was assumed using "Port Emissions Inventory Guidance" Table G.1 by the EPA. Average installed power was used to account for likely more than one engine. Auxiliary engine hp taken from default EMFAC horsepower for Tugboats. [Tugboats to be used could be more like a "Towboat/Pushboat" but using Tugboat to be conservative.]
- Horsepower was provided by CalEEMod (default).
- 4 events assumes that the tug boats are "maneuvering of XLUUV, short tows within the NIBVC harbor, traffic and range control, line-of-site command and control, crew transfer, and other general use" as quoted by XLUUV/USV_DOPRA_19 JUNE 2023.
- Assumed vessel needs to be in deep water for release.
- Engine hp based on similar sized craft. <https://man.fas.org/dod-101/svp/ship/mhc-51.htm>
- Transportation of XLUUVs is assumed to be infrequent and not included in emission totals.

Model Output: OFFROAD2021 (v1.0.5) Emissions Inventory

Region Type: County
Region: Ventura
Calendar Year: 2029
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2021 Equipment Types
Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours
<https://arb.ca.gov/emf/ac/emissions-inventory/v5d4513ce06d0b4734e7e525d69915d1726d26>

Region	Calendar Year	Vehicle Category	Model Year	Horsepower Bin	Fuel	HC_tpd	ROG_tpd	TOG_tpd	CO_tpd	NOx_tpd	CO2_tpd	PM10_tpd	PM2.5_tpd	SOx_tpd	NH3_tpd	Fuel Consumptior	Total_Activity_hpy	Total_Population	Horsepower_Hours_hhpy
Ventura	2029	Commercial Harbor Craft - ME - Tugboat-Escort/Ship Assist	Aggregate	9999	Diesel	0.000998066	0.00120766	0.001437215	0.007736264	0.0227366	5.6602409	0.000335561	0.000320797	0	0	209343.5901	14047.18872	5.250000015	4121445.25
Ventura	2029	Commercial Harbor Craft - ME - Tugboat-Push/Tow	Aggregate	9999	Diesel	2.95182E-05	3.57171E-05	4.25063E-05	0.000262578	0.000652	0.2098566	8.50362E-06	8.12946E-06	0	0	6875.539329	471.4464444	3.083333083	135418.2656
Ventura	2029	Commercial Harbor Craft - AE - Tugboat-Escort/Ship Assist	Aggregate	175	Diesel	0.000439254	0.000531497	0.000632526	0.001767496	0.0100095	1.0092012	9.82499E-05	9.39269E-05	0	0	37264.83996	12746.12881	5.250000053	659153.3015
Ventura	2029	Commercial Harbor Craft - AE - Tugboat-Push/Tow	Aggregate	50	Diesel	1.74117E-05	2.10682E-05	2.50729E-05	6.71329E-05	0.0003278	0.0351159	5.73747E-06	5.48502E-06	0	0	1159.999272	1438.694398	1.541666677	18098.77605
Ventura	2029	Military Tactical Support - Misc - Generator	Aggregate	100	Diesel	8.49826E-05	0.000101136	0.000122375	0.002222155	0.0011727	0.3912946	2.82447E-05	2.59851E-05	4.49561E-06	3.20185E-06	12727.55	4478.55	14.93	371719.65
Ventura	2029	Portable Equipment - Non-Rental Generator	Aggregate	100	Diesel	0.000127682	0.000154495	0.000183862	0.004168212	0.0010888	0.5727749	9.34593E-05	8.59825E-05	5.30528E-06	4.68685E-06	18630.51628	12529.07937	8.651190718	1115663.431
Maintenance Van Generator updates:					Tier 4		g/hp-hr		g/hp-hr	g/hp-hr		g/hp-hr	g/hp-hr						
							0.4333		3.7	3.067		0.022	0.022						

* Conservatively used Tugboat - Escort/Ship emission factors since larger.

Tugboat CH₄ and N₂O From:
BSFC, CH₄ and N₂O emission factors: EPA's "Port Emissions Inventory Guidance: Methodologies for Estimating Port-Related and Goods Movement Mobile Source Emissions". Report dated April 2022. Table 4.3 and Table H.7. N₂O emission factor calculated based on product of BSFC and N₂O conversion factor (0.000156 g N₂O/g fuel).
Assumes Tier 3 engine.

	kW bin	BSFC	CH ₄ (g/kWh)	N ₂ O (g/kWh)
Tugboat - ME	kW > 1400	213	0.002	0.033
Tugboat - AE	75 < kW ≤ 600	213	0.0028	0.033

Generator Tier 4 Factors and CH₄/N₂O From:
EPA Tier 4 final standards from Table 1 of 40 CFR 1039.101. For NOx and VOC factors for engines between 19 kW and 56 kW and less than 19 kW, a combined NOx+NMHC factor given and was then apportioned into NOx and VOC rates based on the ratio of Tier 1 limits (9.2 g/kWh NOx and 1.3 g/kWh HC)
Emissions estimate for N₂O is based on a diesel higher heating value of 138000 Btu/gallon and a density of 7.05 lb/gallon
CH₄ emission factor: subtracting methane from THC to calculate NMHC. THC - CH₄ = NMHC; THC - NMHC = CH₄; THC - (0.984 * THC) = CH₄; THC * (1-0.984) = CH₄
0.984 is the ratio of MNHC to THC from "Conversion Factors for Hydrocarbon Emission Components", July 2010, EPA-420-R-10-015.
BSFC from "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition" (EPA, July 2010; EPA-420-R-10-018) [Table A4]
BSFC: 0.408 lb/hp-hr

Support Equipment Emission Factors

Equipment	Horsepower	Load Factor ¹	Pollutant g/hp-hr											N ₂ O (g/MMBtu for Generator) ²
			HC	ROG	TOG	CO	NOx	CO ₂	PM ₁₀	PM _{2.5}	SOx	NH ₃	CH ₄	
Tug Boat	Main Engine 4710	0.68	0.0801859	0.0970250	0.1154677	0.6215413	1.8266911	454.7509644	0.0269594	0.0257732	0.0000000	0.0000000	0.0014914	0.0247785
	Auxiliary Engine 175	0.43	0.2206569	0.2669949	0.3177460	0.8878921	5.0282270	506.9668687	0.0493553	0.0471837	0.0000000	0.0000000	0.0020880	0.0247785
Maintenance Van Generator	Generator 59	0.43	0.0757012	0.4333333	0.1090097	3.7000000	3.0666667	348.5592332	0.0277381	0.0255191	0.0040046	0.0028522	0.0012112	0.60

Note:

1. Load Factor for tugboat is from "Ports Emissions Inventory Guidance: Methodologies for Estimating Port-Related and Goods Movement Mobile Source Emissions" Table 4.4 for Towboat/Pushboat (conservative as Tugboat has load factor of 0.50). Load factor for generator is from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling" [EPA, July 2010; EPA-420-R-10-016]

2. Generator emission factor for N₂O from 40 CFR 98 Subpart C.

4.7. Offroad Emissions By Equipment Type

4.7.1 Unmitigated

Equipment Type	TOG	ROG	NOx	CO	SO ₂	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO ₂	NBCO ₂	CO ₂ T	CH ₄	N ₂ O	R	CO ₂ e
Daily, Summer (Max)																		
Cranes	0.913231687	0.767368291	6.266970549	6.781131044	0.020583216	0.262416326		0.262416326	0.241423022		0.241423022		2228.354562	2228.35456	0.090391806	0.0181		2236.00171
Forklifts	0.144254562	0.121213903	1.131286934	2.065095178	0.002816036	0.040572496		0.040572496	0.037326696		0.037326696		304.9097271	304.909727	0.012368472	0.0025		305.9561
Generator Sets	0.930469779	0.768983288	8.127335222	8.676094519	0.018240352	0.1547848		0.1547848	0.142402016		0.142402016		1394.427554	1394.42755	0.05656408	0.0113		1399.21288
Total	1.987956028	1.657565482	15.52559271	17.52232074	0.041639604	0.457773621		0.457773621	0.421151735		0.421151735		3927.691843	3927.69184	0.159324358	0.0319		3941.17068
Daily, Winter (Max)																		
Cranes	0.913231687	0.767368291	6.266970549	6.781131044	0.020583216	0.262416326		0.262416326	0.241423022		0.241423022		2228.354562	2228.35456	0.090391806	0.0181		2236.00171
Forklifts	0.144254562	0.121213903	1.131286934	2.065095178	0.002816036	0.040572496		0.040572496	0.037326696		0.037326696		304.9097271	304.909727	0.012368472	0.0025		305.9561
Generator Sets	0.930469779	0.768983288	8.127335222	8.676094519	0.018240352	0.1547848		0.1547848	0.142402016		0.142402016		1394.427554	1394.42755	0.05656408	0.0113		1399.21288
Total	1.987956028	1.657565482	15.52559271	17.52232074	0.041639604	0.457773621		0.457773621	0.421151735		0.421151735		3927.691843	3927.69184	0.159324358	0.0319		3941.17068
Annual																		
Cranes	0.056011543	0.047065255	0.384374194	0.415909371	0.001262437	0.016094868		0.016094868	0.014807279		0.014807279		123.987275	123.987275	0.005029466	0.001		124.412768
Forklifts	0.008655274	0.007272834	0.067877216	0.123905711	0.000168962	0.00243435		0.00243435	0.002239602		0.002239602		16.59658683	16.5965868	0.00067323	0.0001		16.6535421
Generator Sets	0.055828187	0.046138997	0.487640113	0.520565671	0.001094421	0.009287088		0.009287088	0.008544121		0.008544121		75.90029415	75.9002941	0.003078848	0.0006		76.1607647
Total	0.120495004	0.100477087	0.939891523	1.060380753	0.002525821	0.027816306		0.027816306	0.025591001		0.025591001		216.484156	216.484156	0.008781544	0.0018		217.227075

Note:

1. Data is from CalEEMod report. (with exception of converting GHG metric tons to tons)

2. Daily emissions is lb/day, annual emissions is ton/yr.

3. Emission include 2 average cranes, 2 average forklifts, 2 average diesel generator sets, and 4 sets of 40 hp (30kW) generator sets.

Support Equipment Emissions

Vessel Activities											Pollutant Emissions (tons)											
Vessel	Units of Vessel	Activity	# of events	Maximum Event days	Length of Activity (hours / event days)	Distance from Shore	Supporting Equipment	Units	Assumption for use	Horsepower	HC	ROG	TOG	CO	NOx	CO ₂	PM ₁₀	PM _{2.5}	SOx	NH ₃	CH ₄	N ₂ O
XLUUV	6	Vehicle Launch & Recovery	2 per month per vehicle	144	1	Pierside	2 Mobile Cranes	2	Crane	300-600	NA	0.04707	0.05601	0.41591	0.38437	136.673	0.01609	0.01481	0.00126	NA	0.00554	0.00111
				144	1	At Shore (0-3NM)	2 Small Boats	2	Tug Boat	4710/175	0.520816547	0.63019	0.74998	3.91909	11.8648	2846.96	0.17155	0.164	0	0	0.0094	0.15472
		Surfaced Obstacle Avoidance	12	110	2	All waters (0->12NM)	Various other vessels	4	Tug Boat	4710/175	0.265230649	0.32093	0.38193	1.99583	6.04225	1449.84	0.08736	0.08352	0	0	0.00479	0.07879
		Submerged Obstacle Avoidance	12	110	2	All waters (0->12NM)	Other vessels to deploy	4	Tug Boat	4710/175	0.265230649	0.32093	0.38193	1.99583	6.04225	1449.84	0.08736	0.08352	0	0	0.00479	0.07879
		At Sea Refueling	12	110	2	All waters (0->12NM)	Supporting Vessels	4	Tug Boat	4710/175	0.265230649	0.32093	0.38193	1.99583	6.04225	1449.84	0.08736	0.08352	0	0	0.00479	0.07879
		Vehicle Bottom Scuttle	12	110	2	Shallow Waters (3-12NM)	Support Vehicle	4	Tug Boat	4710/175	0.265230649	0.32093	0.38193	1.99583	6.04225	1449.84	0.08736	0.08352	0	0	0.00479	0.07879
		Small Craft Support Vehicle	12	110	2	All Waters (0->12NM)	Small Craft (>50ft)	4	Tug Boat	4710/175	0.265230649	0.32093	0.38193	1.99583	6.04225	1449.84	0.08736	0.08352	0	0	0.00479	0.07879
		Surfaced Obstacle Avoidance	12	110	4	All waters (0->12NM)	Various other vessels	4	Tug Boat	4710/175	0.530461298	0.64186	0.76386	3.99167	12.0845	2899.68	0.17472	0.16703	0	0	0.00957	0.15758
XLUUV/USV	2	XLUUV - System pierside dry/wet checks	12	120	2	Pierside	Generators	2	Diesel Generator	30 kW	NA	0.04614	0.05583	0.52057	0.48764	83.6658	0.00929	0.00854	0.00109	NA	0.00339	0.00068
		USV - System pierside dry/wet checks	12	120	2	Pierside	Generators	2	Diesel Generator	30 kW	see above - emissions from CalEEMod incorporates all maintenance and dry/wet checks.											
		General Maintenance	12	120		[CalEEMod default]	Pierside/At Shore	2	Average crane	[CalEEMod default]	see above - emissions from CalEEMod incorporates all cranes											
					[CalEEMod default]	Pierside/At Shore	2	Average forklift	[CalEEMod default]	NA	0.00727	0.00866	0.12391	0.06788	18.2946	0.00243	0.00224	0.00017	NA	0.00074	0.00015	
						[CalEEMod default]	Pierside/At Shore	2	Diesel Generator	[CalEEMod default]	see above - emissions from CalEEMod incorporates all maintenance and dry/wet checks.											
		Maintenance Van Generator	--	--	8760 hours per year	Pierside through Open Ocean	Generator	1	Diesel Generator	59	0.018545214	0.10616	0.02671	0.90642	0.75127	85.3898	0.0068	0.00625	0.00098	0.0007	0.0003	0.00273

Formula:
Emissions (Vehicle Launch & Recovery, Vessel) = Emission Factor * Horsepower * Units of Equipment* Length of Activity * Maximum Event Days * Units of Vessel
Emissions (All others) = Emission Factor * Horsepower * Units of Equipment * Length of Activity * Maximum Event Days

Support Emissions Breakdown

Distance to Shore	Pollutant Emissions (tons)											
	HC	ROG	TOG	CO	NOx	CO ₂	PM ₁₀	PM _{2.5}	SOx	NH ₃	CH ₄	N ₂ O
Onshore	0	0.100477	0.120495	1.060381	0.939892	238.6329	0.027816	0.025591	0.002525821	0	0.00968	0.001936
0NM-3NM	0.601313	0.731775	0.865891	4.563162	13.71502	3286.177	0.198093	0.189365	4.90525E-05	3.4936E-05	0.010849	0.178491
3NM-12NM	0.587216	0.727276	0.845592	4.572118	13.4432	3206.723	0.193553	0.184988	0.00019621	0.000139744	0.010589	0.173887
>12NM	1.207447	1.523799	1.738723	9.661067	27.75358	6588.317	0.398221	0.380516	0.000735787	0.00052404	0.02176	0.356608

Note:

In water emissions breakdown: 5% (0NM-3NM) 20% (3NM-12NM) 75% (>12NM)

Vessel	NOx	Pollutant (kg/hour)							
		SOx	CO	CO ₂	HC	PM	CH ₄	N ₂ O	
USV		11	0	1	648	1	0	0.003341	0.039646

Note:
Engine is 800 hp. USV is assumed to have a similar strength engine.
Vessel emissions account for 2 engines being used

Source:
Emissions: Navy and MSC Engine Emission Calculator
Engine: Single Naval Fuel At-Sea Diesel Impact Study
<https://apps.dtic.mil/sti/pdfs/AD1167318.pdf>

From:
BSFC, CH₄ and N₂O emission factors: EPA's "Port Emissions Inventory Guidance: Methodologies for Estimating Port-Related and Goods Movement Mobile Source Emissions". Report dated April 2022.
Table 4.3 and Table H.7. N₂O emission factor calculated based on product of BSFC and N₂O conversion factor (0.000156 g N₂O/g fuel).

Assumes Tier 3 engine.

kW - per engine	kW bin	BSFC	CH ₄ (g/kWh)	N ₂ O (g/kWh)
596.6	75 < kW ≤ 600	213	0.0028	0.033

USV Emission Factors

Emissions

Analysis Parameters

Hrs Underway 1 Hrs Restricted Waters 1 Hrs Not Underway 1 Fuel Sulfur % 0.0015 Shore Power No

Analysis Results

Engine ID36SS8V-AM(M) No. of Engines 2 Use MPDE Operating Profile Variable Speed

Emission Data:

	kg NOx	kg SOx	kg CO	kg CO ₂	kg HC	kg PM
Underway	11	0	1	648	1	0
Restricted Waters	15	0	2	872	1	0
Not Underway	0	0	0	0	0	0
ID36SS8V-AM(M) Total	26	0	3	1,520	2	0

Engine

Table 9. Diesel Engine Maintenance Costs

U.S. NAVY MPDE/SSDG/EDG MAINTENANCE POOL									
Equipment Type/Application	Unit Rating (KW/BHP)	No./ Ship	No. of Ships	Total Units	Overhaul Cost/ Unit(\$K)	Estimated Hours Between Overhauls	No. of CY 03 Corrective Maintenance Actions	No. of CY 03 Fuel- Related Corrective Maintenance Actions	CY 03 Fuel- Related TOC(\$K)
ALCO 251/EDG	2000 KW	2	13	26	1,000	16,000	47	6	38.80
CAT 399/SSDG	1100 BHP	1	4	4	600	12,000	12	5	85
CAT 3608/SSDG	3485 BHP	5	4	20	800	20,000	16	0	75
Coltec PC2.5V MPDE	8500 BHP	4	12	48	3,000	18,000	25	4	79.68
DD 16V-149T1 SSDG	1000 KW	4	31	124	250	11,000	20	1	380.95
EMD 567/EDG	1500 KW	4	1	4	650	20,000	3	0	21
EMD 645/EDG	2000 KW	4	9	36	750	20,000	20	1	8.60
FM 38ND 8 1/8 SSDG	1200-2000 BHP	1/2/4	108	120	1,000	18,000	65	7	248.33
FM 38F 5 1/4/EDG	428 BHP	2	11	22	800	16,000	25	0	15
IF ID36SS6V-AM MPDE/SSDG	600 BHP	7	12	84	250	6,000	44	4	274
IF ID36SS8V-AM MPDE/SSDG	800 BHP	5	12	60	350	6,000	19	0	1,933
Paxman 16RP200CM MPDE	3350 BHP	4	13	52	450	12,000	10	0	1,435
Waukesha L1616DSIN MPDE/SSDG	600 BHP	7	2	14	200	6,000	13	3	507.92

USV Emissions

Vessel Activities											Pollutant Emissions (tons)								
Vessel	Engine Assumption	Days of events	Activity	# of events	Maximum Event days	Length of Activity (hours / event days)	Units	Assumption for use	Horsepower	Emission Quantified	Emissions source	NOx	SOx	CO	CO ₂	HC	PM	CH ₄	N ₂ O
USV	2 Diesel engines (800hp each) ^h	120 Days 10 daytime (5-10 days each) 2 nighttime (5 days each)	Testing	12	110	8	2	USV	800 x2	Yes	Vessel	21.34072	0	1.940066	1257.163	1.940066	0	0.006481	0.076915

USV Emission Breakdown

Distance to Shore	Pollutant Emissions (tons)							
	NOx	SOx	CO	CO ₂	HC	PM	CH ₄	N ₂ O
0NM-3NM	1.067036	0	0.097003	62.85813	0.097003	0	0.000324	0.003846
3NM-12NM	4.268144	0	0.388013	251.4325	0.388013	0	0.001296	0.015383
>12NM	16.00554	0	1.455049	942.8719	1.455049	0	0.004861	0.057686

Note:

In water emissions breakdown: 5% (0NM-3NM) 20% (3NM-12NM) 75% (>12NM)

CalEEMod Operational Emissions Breakdown

2. Emissions Summary

2.5 Operations Emissions by Sector, Unmitigated

Sector	TOG	ROG	NOx	CO	SO ₂	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO ₂	NBCO ₂	CO ₂ T	CH ₄	N ₂ O	R	CO ₂ e
Daily, Summer (Max)																		
Mobile Area	3.45724	3.22648	2.19999	21.3117	0.05409	0.03531	5.35165	5.38696	0.03307	1.35735	1.39041		5511.57	5511.57	0.23555	0.23171	15.3406	5601.85
		2.8177																
Energy	0.14999	0.075	1.36358	1.14541	0.00818	0.10363		0.10363	0.10363		0.10363		3244.87	3244.87	0.24435	0.01523		3255.52
Water												54.5009	282.187	336.688	5.60595	0.1349		517.037
Waste												81.0199	0	81.0199	8.09765	0		283.461
Refrig.																	30.1266	30.1266
Off-Road	1.98796	1.65757	15.5256	17.5223	0.04164	0.45777		0.45777	0.42115		0.42115		3927.69	3927.69	0.15932	0.03186		3941.17
Total	5.59519	7.77674	19.0892	39.9795	0.10392	0.59672	5.35165	5.94836	0.55785	1.35735	1.9152	135.521	12966.3	13101.8	14.3428	0.4137	45.4672	13629.2
Daily, Winter (Max)																		
Mobile Area	3.42621	3.18636	2.45762	21.2223	0.05225	0.03533	5.35165	5.38698	0.03309	1.35735	1.39044		5324.65	5324.65	0.25691	0.24796	0.39777	5405.36
		2.8177																
Energy	0.14999	0.075	1.36358	1.14541	0.00818	0.10363		0.10363	0.10363		0.10363		3244.87	3244.87	0.24435	0.01523		3255.52
Water												54.5009	282.187	336.688	5.60595	0.1349		517.037
Waste												81.0199	0	81.0199	8.09765	0		283.461
Refrig.																	30.1266	30.1266
Off-Road	1.98796	1.65757	15.5256	17.5223	0.04164	0.45777		0.45777	0.42115		0.42115		3927.69	3927.69	0.15932	0.03186		3941.17
Total	5.56416	7.73662	19.3468	39.89	0.10207	0.59674	5.35165	5.94839	0.55787	1.35735	1.91522	135.521	12779.4	12914.9	14.3642	0.42995	30.5244	13432.7
Average Daily																		
Mobile Area	1.94343	1.80834	1.37612	11.8999	0.03006	0.02021	3.03047	3.05068	0.01892	0.76874	0.78766		3063.08	3063.08	0.14223	0.13947	3.78989	3111.99
		2.8177																
Energy	0.14999	0.075	1.36358	1.14541	0.00818	0.10363		0.10363	0.10363		0.10363		3244.87	3244.87	0.24435	0.01523		3255.52
Water												54.5009	282.187	336.688	5.60595	0.1349		517.037
Waste												81.0199	0	81.0199	8.09765	0		283.461
Refrig.																	30.1266	30.1266
Off-Road	0.66025	0.55056	5.15009	5.81031	0.01384	0.15242		0.15242	0.14022		0.14022		1307.58	1307.58	0.05304	0.01061		1312.06
Total	2.75367	5.2516	7.88979	18.8556	0.05208	0.27626	3.03047	3.30673	0.26278	0.76874	1.03152	135.521	7897.72	8033.24	14.1432	0.30021	33.9165	8510.2
Annual																		
Mobile Area	0.35468	0.33002	0.25114	2.17173	0.00549	0.00369	0.55306	0.55675	0.00345	0.14029	0.14375		507.129	507.129	0.02355	0.02309	0.62746	515.226
		0.51423																
Energy	0.02737	0.01369	0.24885	0.20904	0.00149	0.01891		0.01891	0.01891		0.01891		537.226	537.226	0.04045	0.00252		538.989
Water												9.02325	46.7192	55.7425	0.92813	0.02233		85.6014
Waste												13.4138	0	13.4138	1.34066	0		46.9302
Refrig.																	4.9878	4.9878
Off-Road	0.1205	0.10048	0.93989	1.06038	0.00253	0.02782		0.02782	0.02559		0.02559		216.484	216.484	0.00878	0.00176		217.227
Total	0.50254	0.95842	1.43989	3.44115	0.0095	0.05042	0.55306	0.60348	0.04796	0.14029	0.18825	22.437	1307.56	1329.99	2.34157	0.0497	5.61526	1408.96

Note:

1. Data from CalEEMod report (with exception of converting GHG metric tons to tons)
2. Daily emissions in lbs/day, annual in tons/year

CalEEMod Operational Emissions

	Emissions (tons)																	
	TOG	ROG	NOx	CO	SO ₂	PM ₁₀ E	PM ₁₀ D	PM ₁₀ T	PM _{2.5} E	PM _{2.5} D	PM _{2.5} T	BCO ₂	NBCO ₂	CO ₂ T	CH ₄	N ₂ O	R	CO ₂ e
Total	0.38205	0.85794	0.499995	2.380768	0.006978	0.022601	0.55306	0.575661	0.022366	0.140295	0.162661	24.73259	1202.703	1227.435	2.571462	0.052852	6.189766	1313.662

Note:
1. Does not include off-road component in order to avoid double counting of those emissions [these emissions are included with the vessel support summary]

CalEEMod Inputs

Project Name	XLUV
Construction Start Date	5/1/2026
Operational Year	2029
County	Ventura
City	Port Hueneme
Air District	Ventura County APCD
Air Basin	South Central Coast

Land Use and Square Footage is represented below:

Source: XLUV USV DORAA 19 JUNE 2023.

Construction associated with the Proposed Action will be funded by Military Construction Project P-487. The overall P-487 project scope includes the following key items (approximate SF in parenthesis) (Figure 2-1):

- One-story high bay ships and marine systems integration laboratory with 30-ton bridge crane, a Laboratory for underwater weapons systems with specialized crane system (either overhead dual cranes (60-ton) or single crane (125-ton)), assembly/disassembly area and interior vehicle staging area. (43,705 SF) [One Story](#)
- Partial two-story secured Command, Control and Coordination (C3) area, expeditionary operations support area with secured planning cell, expeditionary material operations and storage areas, locker rooms, applied instruction classrooms, multi-purpose training rooms, training simulator, watch area and operational and applied Research, Development, Test and Evaluation (RD&E) administrative spaces for approximately 30 XLUV and 256 USV personnel. (66,931 SF) [2 Story](#)
- Vehicle wash platform to periodically remove salt and debris from vehicles. This facility includes capture and filtration systems. (3,000 SF) [Vehicle Wash](#)
- Battery shop for charging, maintenance, and storage of XLUV and USV batteries. Special fire suppression and location offset of at least fifty ft from other assets due to potential volatile nature of damaged/degraded batteries. (5,100 SF) [Battery](#)
- Inert storehouse, general purpose warehouse, and climate-controlled warehouse. (7,255 SF) [Storage](#)
- Open air operational laydown area. (59,058 SF) [Open Air / Paving](#)
- Paving and site improvements include site paving and security fence demolition, access roadway improvements, privately owned vehicle parking lot improvements for about 225 vehicles, organizational vehicle parking for about 220 vehicles, sidewalks, curbs, gutters, and laydown area pavement, landscaping, signage, trash enclosure, break shelter and bike area. (70,875 SF) [Open Air / Paving](#)

Square Footage	
One Story	43705
2 Story	66931
Veh. Wash	3000
Battery	5100
Storage	7255
Open Air/Paving	59058
Open Air/Paving	70875

Description	Type	Subtype	Lot Size (sq ft)	Acres	Building Square Footage	Landscaping**
One Story	Industrial	General Light Industry	43705	1.003	43705	No
Vehicle Wash	Parking	Other Non-Asphalt Surfaces	3000	0.069	---	No
Open Air/Paving**	Parking	Other Asphalt Surfaces	187276	4.299	---	No
2 Story	Industrial	Manufacturing	66931	1.537	66931	No
Battery	Industrial	General Light Industry	5100	0.117	5100	No
Storage	Industrial	Unrefrigerated Warehouse-No Rail	7255	0.167	7255	No

* Based on current land use at site location, no significant landscaping is assumed.

** If Parcel 11 is used instead of Parcel 19, additional asphalt will be required. To account for this potential, the paving portion from Parcel 19 (70,875 sf) was scaled by ratio of total Parcel 11 acres vs. Parcel 19 acres.

Construction: Construction Phases							
Days of Phase	Demolition	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Total
Default CalEEMod	20	10	20	230	20	20	320
Scaled*	57	29	57	657	57	57	914
Length of Construction	May 1 2026	Oct 31 2029					
Number of Days	914						
Work days extended to account for extended period. From May 1st 2026 to Oct 31st 2029							
* Scaled individual days per phase may be adjusted by a day to ensure start date is 5/1/2026 and end date is 10/31/2029							

Work days extended to account for extended project, from May 1st 2026 to Oct 31st 2029

* Scaled individual days per phase may be adjusted by a day to ensure start date is 5/1/2026 and end date is 10/31/2029

Construction: Off-Road Equipment - CalEEMod defaults
Construction Dust Control - No dust control is assumed as part of unmitigated emission calculations.
Construction: Dust from Material Movement - No material imported/exported.
Construction: Demolition - No demolition (demolition quantities from fencing are assumed to be insignificant)
Construction: Trips and VMT - CalEEMod defaults
Construction: On-Road Fugitive Dust - CalEEMod defaults (100 percent paved roads)
Construction: Architectural Coatings - CalEEMod defaults
Construction: Electricity - CalEEMod defaults
Operations: Vehicle Data
2 story building has 330 employees that will travel to it on weekdays. [Weekday Trip Rate (size/day) = 9.861]
Operations: Road Dust - CalEEMod defaults
Operations: Hearths - CalEEMod defaults (none)
Operations: Consumer Products - CalEEMod defaults
Operations: Architectural Coatings - CalEEMod defaults
Operations: Landscape Equipment - No landscaping
Operations: Energy Use - CalEEMod defaults
Operations: Water and Waste Water - CalEEMod defaults
Operations: Solid Waste - CalEEMod defaults
Operations: Refrigerants - CalEEMod defaults
Operations: Off-Road Equipment
Cranes, Forklifts and Generator sets are to be used for general maintenance and events. 2 of each equipment will be used for only 120 days a year. CalEEMod default fuel, horsepower, hours/day operation, load factor. In addition, 2 cranes for launch and recovery at frequency of 144 hours year, 2 diesel generator (30 kW) for dry/wet checks used at same frequency as general maintenance equipment and a 59 hp maintenance van generator that conservatively operates 8,760 hrs per year.

CalEEMod Combined Output Summary

Construction																		
Year	Emissions (tons)																	
	TOG	ROG	NOx	CO	SO ₂	PM ₁₀ E	PM ₁₀ D	PM ₁₀ T	PM _{2.5} E	PM _{2.5} D	PM _{2.5} T	BCO ₂	NBCO ₂	CO ₂ T	CH ₄	N ₂ O	R	CO ₂ e
2026	0.22	0.18	1.61	1.77	0.00	0.07	0.51	0.58	0.06	0.25	0.31		330.33	330.33	0.01	0.00	0.05	332.11
2027	0.19	0.16	1.35	2.05	0.00	0.05	0.11	0.15	0.04	0.03	0.07		474.06	474.06	0.02	0.02	0.21	479.86
2028	0.18	0.16	1.28	2.03	0.00	0.04	0.11	0.15	0.04	0.03	0.06		472.02	472.02	0.01	0.02	0.19	477.58
2029	0.10	0.40	0.69	1.14	0.00	0.02	0.05	0.07	0.02	0.01	0.03		239.78	239.78	0.01	0.01	0.08	242.25
Total	0.69	0.90	4.94	6.99	0.01	0.17	0.79	0.96	0.16	0.32	0.48	0.00	1516.19	1516.19	0.05	0.05	0.52	1531.81

Operational																		
	Emissions (tons/year)																	
	TOG	ROG	NOx	CO	SO ₂	PM ₁₀ E	PM ₁₀ D	PM ₁₀ T	PM _{2.5} E	PM _{2.5} D	PM _{2.5} T	BCO ₂	NBCO ₂	CO ₂ T	CH ₄	N ₂ O	R	CO ₂ e
Total	0.50	0.96	1.44	3.44	0.01	0.05	0.55	0.60	0.05	0.14	0.19	24.73	1441.34	1466.07	2.58	0.05	6.19	1553.11

Note:

1. Operational data is only summary of CalEEMod operational output. View "Operations Emissions" sheet for full operational emissions

CalEEMod Construction Summary

2. Emissions Summary

2.2 Construction Emissions by Year, Unmitigated

Year	TOG	ROG	NOx	CO	SO ₂	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO ₂	NBCO ₂	CO ₂ T	CH ₄	N ₂ O	R	CO ₂ e
Daily - Summer (Max)																		
2026	3.821133	3.214857	29.2326	29.83482	0.048904	1.242513	19.88575	21.12826	1.143112	10.15606	11.29917		5527.276	5527.276	0.217994	0.051276	0.860414	5548.867
2027	1.485135	1.247148	10.29537	15.99572	0.027929	0.34564	0.847667	1.193308	0.314181	0.205916	0.520097		3661.275	3661.275	0.11399	0.13317	3.698436	3707.507
2028	1.412427	1.201871	9.770314	15.81849	0.027933	0.304771	0.847667	1.152439	0.280752	0.205916	0.486668		3635.2	3635.2	0.112867	0.12864	3.319919	3679.677
2029	1.374145	11.07322	9.36908	15.60629	0.027928	0.280175	0.847667	1.127842	0.258124	0.205916	0.46404		3607.105	3607.105	0.112397	0.128635	2.966417	3651.215
Daily - Winter (Max)																		
2026	2.026999	1.706378	15.04353	18.23337	0.02793	0.646216	7.278651	7.924867	0.594519	3.470694	4.065213		3655.36	3655.36	0.123363	0.13431	0.10684	3698.398
2027	1.483107	1.243982	10.34827	15.72654	0.027929	0.34564	0.847667	1.193308	0.314181	0.205916	0.520097		3632.177	3632.177	0.115129	0.134309	0.095823	3675.175
2028	1.409261	1.198704	9.823652	15.56082	0.027933	0.304771	0.847667	1.152439	0.280752	0.205916	0.486668		3606.681	3606.681	0.1147	0.129779	0.086015	3648.309
2029	1.372117	11.06855	9.443487	15.36083	0.027928	0.280175	0.847667	1.127842	0.258124	0.205916	0.46404		3579.16	3579.16	0.113536	0.129774	0.076833	3620.748
Average Daily																		
2026	1.18877	0.999871	8.845104	9.675719	0.015637	0.364681	2.818695	3.183376	0.335179	1.373441	1.70862		1810.028	1810.028	0.068649	0.026084	0.282569	1819.8
2027	1.058866	0.888062	7.389738	11.23568	0.019949	0.246886	0.599455	0.846341	0.224415	0.145577	0.369993		2597.592	2597.592	0.082235	0.095935	1.140291	2629.377
2028	1.009691	0.859697	7.030986	11.15021	0.020007	0.21829	0.601097	0.819388	0.201087	0.145976	0.347063		2586.383	2586.383	0.081338	0.092138	1.025614	2616.899
2029	0.545144	2.194058	3.799687	6.227437	0.010318	0.118289	0.287673	0.405961	0.108928	0.06942	0.178348		1313.887	1313.887	0.043107	0.040207	0.422346	1327.369
Annual																		
2026	0.21695	0.182476	1.614232	1.765819	0.002854	0.066554	0.514412	0.580966	0.06117	0.250653	0.311823		299.6708	299.6708	0.011366	0.004319	0.046783	301.2887
2027	0.193243	0.162071	1.348627	2.050511	0.003641	0.045057	0.109401	0.154457	0.040956	0.026568	0.067524		430.061	430.061	0.013615	0.015883	0.188788	435.3234
2028	0.184269	0.156895	1.283155	2.034913	0.003651	0.039838	0.1097	0.149538	0.036698	0.026641	0.063339		428.2052	428.2052	0.013466	0.015254	0.169802	433.2575
2029	0.099489	0.400416	0.693443	1.136507	0.001883	0.021588	0.0525	0.074088	0.019879	0.012669	0.032549		217.529	217.529	0.007137	0.006657	0.069924	219.7611

Note:

1. This information is directly from the CalEEMod report generated (with exception of converting GHG metric tons to tons).
2. Daily emissions are lbs/day, annual emissions are tons/year

CalEEMod Operational Summary

2. Emissions Summary

2.4 Operations Emissions Compared Against Thresholds

Un/Mit.	TOG	ROG	NOx	CO	SO ₂	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO ₂	NBCO ₂	CO ₂ T	CH ₄	N ₂ O	R	CO ₂ e
Daily, Summer (Max)																		
Unmit.	5.595189	7.776744	19.08917	39.97948	0.103916	0.596717	5.351646	5.948363	0.557849	1.357349	1.915198	135.5209	12966.33	13101.85	14.34283	0.413702	45.4672	13629.17
Daily, Winter (Max)																		
Unmit.	5.564159	7.736622	19.3468	39.89003	0.102067	0.59674	5.351646	5.948386	0.557872	1.357349	1.915221	135.5209	12779.4	12914.92	14.36418	0.429953	30.52436	13432.68
Average Daily (Max)																		
Unmit.	2.75367	5.251602	7.889791	18.85561	0.052078	0.276259	3.030468	3.306727	0.262781	0.768738	1.031519	135.5209	7897.721	8033.242	14.14323	0.300209	33.91648	8510.201
Annual (Max)																		
Unmit.	0.502545	0.958417	1.439887	3.441149	0.009504	0.050417	0.55306	0.603478	0.047957	0.140295	0.188252	22.43703	1307.558	1329.995	2.341573	0.049703	5.615261	1408.961

Note:

1. This information is directly from the CalEEMod report generated (with exception of converting GHG metric tons to tons).
2. Daily emissions are lbs/day, annual emissions are tons/year
3. Emission include 2 average cranes, 2 average forklifts, 2 average diesel generator sets, and 4 sets of 40 hp (30kW) generator sets.

XLUUV Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

1.2. Land Use Types

1.3. User-Selected Emission Reduction Measures by Emissions Sector

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

2.2. Construction Emissions by Year, Unmitigated

2.4. Operations Emissions Compared Against Thresholds

2.5. Operations Emissions by Sector, Unmitigated

3. Construction Emissions Details

3.1. Demolition (2026) - Unmitigated

3.3. Site Preparation (2026) - Unmitigated

3.5. Grading (2026) - Unmitigated

3.7. Building Construction (2026) - Unmitigated

3.9. Building Construction (2027) - Unmitigated

3.11. Building Construction (2028) - Unmitigated

3.13. Building Construction (2029) - Unmitigated

3.15. Paving (2029) - Unmitigated

3.17. Architectural Coating (2029) - Unmitigated

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

4.3. Area Emissions by Source

4.3.1. Unmitigated

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.9. Operational Mobile Sources

5.9.1. Unmitigated

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

5.10.3. Landscape Equipment

5.11. Operational Energy Consumption

5.11.1. Unmitigated

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

6.2. Initial Climate Risk Scores

6.3. Adjusted Climate Risk Scores

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

7.2. Healthy Places Index Scores

7.3. Overall Health & Equity Scores

7.4. Health & Equity Measures

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	XLUUV
Construction Start Date	5/1/2026
Operational Year	2029
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.20
Precipitation (days)	16.0
Location	34.155839922202205, -119.21028833734823
County	Ventura
City	Port Hueneme
Air District	Ventura County APCD
Air Basin	South Central Coast
TAZ	3418
EDFZ	8
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.20

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
------------------	------	------	-------------	-----------------------	------------------------	--------------------------------	------------	-------------

General Light Industry	43.7	1000sqft	1.00	43,705	0.00	0.00	—	One Story
Other Non-Asphalt Surfaces	3.00	1000sqft	0.07	0.00	0.00	0.00	—	Vehicle Wash
Other Asphalt Surfaces	187	1000sqft	4.30	0.00	0.00	0.00	—	Open Air/Paving
Manufacturing	66.9	1000sqft	1.54	66,931	0.00	0.00	—	2 Story
General Light Industry	5.10	1000sqft	0.12	5,100	0.00	0.00	—	Battery
Unrefrigerated Warehouse-No Rail	7.25	1000sqft	0.17	7,255	0.00	0.00	—	Storage

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.82	11.1	29.2	29.8	0.05	1.24	19.9	21.1	1.14	10.2	11.3	—	5,527	5,527	0.22	0.13	3.70	5,549
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.03	11.1	15.0	18.2	0.03	0.65	7.28	7.92	0.59	3.47	4.07	—	3,655	3,655	0.12	0.13	0.11	3,698
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.19	2.19	8.85	11.2	0.02	0.36	2.82	3.18	0.34	1.37	1.71	—	2,598	2,598	0.08	0.10	1.14	2,629

Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.22	0.40	1.61	2.05	< 0.005	0.07	0.51	0.58	0.06	0.25	0.31	—	430	430	0.01	0.02	0.19	435

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	3.82	3.21	29.2	29.8	0.05	1.24	19.9	21.1	1.14	10.2	11.3	—	5,527	5,527	0.22	0.05	0.86	5,549
2027	1.49	1.25	10.3	16.0	0.03	0.35	0.85	1.19	0.31	0.21	0.52	—	3,661	3,661	0.11	0.13	3.70	3,708
2028	1.41	1.20	9.77	15.8	0.03	0.30	0.85	1.15	0.28	0.21	0.49	—	3,635	3,635	0.11	0.13	3.32	3,680
2029	1.37	11.1	9.37	15.6	0.03	0.28	0.85	1.13	0.26	0.21	0.46	—	3,607	3,607	0.11	0.13	2.97	3,651
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	2.03	1.71	15.0	18.2	0.03	0.65	7.28	7.92	0.59	3.47	4.07	—	3,655	3,655	0.12	0.13	0.11	3,698
2027	1.48	1.24	10.3	15.7	0.03	0.35	0.85	1.19	0.31	0.21	0.52	—	3,632	3,632	0.12	0.13	0.10	3,675
2028	1.41	1.20	9.82	15.6	0.03	0.30	0.85	1.15	0.28	0.21	0.49	—	3,607	3,607	0.11	0.13	0.09	3,648
2029	1.37	11.1	9.44	15.4	0.03	0.28	0.85	1.13	0.26	0.21	0.46	—	3,579	3,579	0.11	0.13	0.08	3,621
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.19	1.00	8.85	9.68	0.02	0.36	2.82	3.18	0.34	1.37	1.71	—	1,810	1,810	0.07	0.03	0.28	1,820
2027	1.06	0.89	7.39	11.2	0.02	0.25	0.60	0.85	0.22	0.15	0.37	—	2,598	2,598	0.08	0.10	1.14	2,629
2028	1.01	0.86	7.03	11.2	0.02	0.22	0.60	0.82	0.20	0.15	0.35	—	2,586	2,586	0.08	0.09	1.03	2,617
2029	0.55	2.19	3.80	6.23	0.01	0.12	0.29	0.41	0.11	0.07	0.18	—	1,314	1,314	0.04	0.04	0.42	1,327
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.22	0.18	1.61	1.77	< 0.005	0.07	0.51	0.58	0.06	0.25	0.31	—	300	300	0.01	< 0.005	0.05	301

2027	0.19	0.16	1.35	2.05	< 0.005	0.05	0.11	0.15	0.04	0.03	0.07	—	430	430	0.01	0.02	0.19	435
2028	0.18	0.16	1.28	2.03	< 0.005	0.04	0.11	0.15	0.04	0.03	0.06	—	428	428	0.01	0.02	0.17	433
2029	0.10	0.40	0.69	1.14	< 0.005	0.02	0.05	0.07	0.02	0.01	0.03	—	218	218	0.01	0.01	0.07	220

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.60	7.78	19.1	40.0	0.10	0.60	5.35	5.95	0.56	1.36	1.92	136	12,966	13,102	14.3	0.41	45.5	13,629
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.56	7.74	19.3	39.9	0.10	0.60	5.35	5.95	0.56	1.36	1.92	136	12,779	12,915	14.4	0.43	30.5	13,433
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.75	5.25	7.89	18.9	0.05	0.28	3.03	3.31	0.26	0.77	1.03	136	7,898	8,033	14.1	0.30	33.9	8,510
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.50	0.96	1.44	3.44	0.01	0.05	0.55	0.60	0.05	0.14	0.19	22.4	1,308	1,330	2.34	0.05	5.62	1,409

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	3.46	3.23	2.20	21.3	0.05	0.04	5.35	5.39	0.03	1.36	1.39	—	5,512	5,512	0.24	0.23	15.3	5,602

Area	—	2.82	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.15	0.07	1.36	1.15	0.01	0.10	—	0.10	0.10	—	0.10	—	3,245	3,245	0.24	0.02	—	3,256
Water	—	—	—	—	—	—	—	—	—	—	—	54.5	282	337	5.61	0.13	—	517
Waste	—	—	—	—	—	—	—	—	—	—	—	81.0	0.00	81.0	8.10	0.00	—	283
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30.1	30.1
Off-Road	1.99	1.66	15.5	17.5	0.04	0.46	—	0.46	0.42	—	0.42	—	3,928	3,928	0.16	0.03	—	3,941
Total	5.60	7.78	19.1	40.0	0.10	0.60	5.35	5.95	0.56	1.36	1.92	136	12,966	13,102	14.3	0.41	45.5	13,629
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	3.43	3.19	2.46	21.2	0.05	0.04	5.35	5.39	0.03	1.36	1.39	—	5,325	5,325	0.26	0.25	0.40	5,405
Area	—	2.82	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.15	0.07	1.36	1.15	0.01	0.10	—	0.10	0.10	—	0.10	—	3,245	3,245	0.24	0.02	—	3,256
Water	—	—	—	—	—	—	—	—	—	—	—	54.5	282	337	5.61	0.13	—	517
Waste	—	—	—	—	—	—	—	—	—	—	—	81.0	0.00	81.0	8.10	0.00	—	283
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30.1	30.1
Off-Road	1.99	1.66	15.5	17.5	0.04	0.46	—	0.46	0.42	—	0.42	—	3,928	3,928	0.16	0.03	—	3,941
Total	5.56	7.74	19.3	39.9	0.10	0.60	5.35	5.95	0.56	1.36	1.92	136	12,779	12,915	14.4	0.43	30.5	13,433
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.94	1.81	1.38	11.9	0.03	0.02	3.03	3.05	0.02	0.77	0.79	—	3,063	3,063	0.14	0.14	3.79	3,112
Area	—	2.82	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.15	0.07	1.36	1.15	0.01	0.10	—	0.10	0.10	—	0.10	—	3,245	3,245	0.24	0.02	—	3,256
Water	—	—	—	—	—	—	—	—	—	—	—	54.5	282	337	5.61	0.13	—	517
Waste	—	—	—	—	—	—	—	—	—	—	—	81.0	0.00	81.0	8.10	0.00	—	283
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30.1	30.1
Off-Road	0.66	0.55	5.15	5.81	0.01	0.15	—	0.15	0.14	—	0.14	—	1,308	1,308	0.05	0.01	—	1,312
Total	2.75	5.25	7.89	18.9	0.05	0.28	3.03	3.31	0.26	0.77	1.03	136	7,898	8,033	14.1	0.30	33.9	8,510
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mobile	0.35	0.33	0.25	2.17	0.01	< 0.005	0.55	0.56	< 0.005	0.14	0.14	—	507	507	0.02	0.02	0.63	515
Area	—	0.51	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.03	0.01	0.25	0.21	< 0.005	0.02	—	0.02	0.02	—	0.02	—	537	537	0.04	< 0.005	—	539
Water	—	—	—	—	—	—	—	—	—	—	—	9.02	46.7	55.7	0.93	0.02	—	85.6
Waste	—	—	—	—	—	—	—	—	—	—	—	13.4	0.00	13.4	1.34	0.00	—	46.9
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.99	4.99
Off-Road	0.12	0.10	0.94	1.06	< 0.005	0.03	—	0.03	0.03	—	0.03	—	216	216	0.01	< 0.005	—	217
Total	0.50	0.96	1.44	3.44	0.01	0.05	0.55	0.60	0.05	0.14	0.19	22.4	1,308	1,330	2.34	0.05	5.62	1,409

3. Construction Emissions Details

3.1. Demolition (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.72	2.29	20.7	19.0	0.03	0.84	—	0.84	0.78	—	0.78	—	3,427	3,427	0.14	0.03	—	3,438
Demolition	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.43	0.36	3.23	2.97	0.01	0.13	—	0.13	0.12	—	0.12	—	535	535	0.02	< 0.005	—	537
Demolition	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.07	0.59	0.54	< 0.005	0.02	—	0.02	0.02	—	0.02	—	88.6	88.6	< 0.005	< 0.005	—	88.9
Demolition	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.06	0.88	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	197	197	< 0.005	0.01	0.74	199
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.12	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	29.6	29.6	< 0.005	< 0.005	0.05	30.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.89	4.89	< 0.005	< 0.005	0.01	4.96
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Site Preparation (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.74	3.14	29.2	28.8	0.05	1.24	—	1.24	1.14	—	1.14	—	5,298	5,298	0.21	0.04	—	5,316
Dust From Material Movement	—	—	—	—	—	—	19.7	19.7	—	10.1	10.1	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.30	0.25	2.32	2.29	< 0.005	0.10	—	0.10	0.09	—	0.09	—	421	421	0.02	< 0.005	—	422
Dust From Material Movement	—	—	—	—	—	—	1.56	1.56	—	0.80	0.80	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.05	0.42	0.42	< 0.005	0.02	—	0.02	0.02	—	0.02	—	69.7	69.7	< 0.005	< 0.005	—	69.9

Dust From Material Movement	—	—	—	—	—	—	0.29	0.29	—	0.15	0.15	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.07	1.03	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	229	229	< 0.005	0.01	0.86	233
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	17.5	17.5	< 0.005	< 0.005	0.03	17.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.90	2.90	< 0.005	< 0.005	< 0.005	2.94
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Grading (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.96	1.65	15.0	17.4	0.03	0.65	—	0.65	0.59	—	0.59	—	2,960	2,960	0.12	0.02	—	2,970
Dust From Material Movement:	—	—	—	—	—	—	7.08	7.08	—	3.42	3.42	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.96	1.65	15.0	17.4	0.03	0.65	—	0.65	0.59	—	0.59	—	2,960	2,960	0.12	0.02	—	2,970
Dust From Material Movement:	—	—	—	—	—	—	7.08	7.08	—	3.42	3.42	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.31	0.26	2.34	2.72	< 0.005	0.10	—	0.10	0.09	—	0.09	—	462	462	0.02	< 0.005	—	464
Dust From Material Movement:	—	—	—	—	—	—	1.11	1.11	—	0.53	0.53	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.43	0.50	< 0.005	0.02	—	0.02	0.02	—	0.02	—	76.5	76.5	< 0.005	< 0.005	—	76.8

Dust From Material Movement	—	—	—	—	—	—	0.20	0.20	—	0.10	0.10	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.06	0.88	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	197	197	< 0.005	0.01	0.74	199
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.07	0.80	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	188	188	< 0.005	0.01	0.02	190
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.12	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	29.6	29.6	< 0.005	< 0.005	0.05	30.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.89	4.89	< 0.005	< 0.005	0.01	4.96
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.09	0.85	1.12	< 0.005	0.03	—	0.03	0.03	—	0.03	—	206	206	0.01	< 0.005	—	207
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.15	0.20	< 0.005	0.01	—	0.01	0.01	—	0.01	—	34.2	34.2	< 0.005	< 0.005	—	34.3
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.24	0.21	0.25	2.74	0.00	0.00	0.68	0.68	0.00	0.16	0.16	—	647	647	0.01	0.03	0.07	655
Vendor	0.03	0.02	0.77	0.24	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	611	611	0.01	0.09	0.04	638

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.24	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	56.1	56.1	< 0.005	< 0.005	0.09	56.9
Vendor	< 0.005	< 0.005	0.07	0.02	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	—	52.6	52.6	< 0.005	0.01	0.06	55.0
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	9.29	9.29	< 0.005	< 0.005	0.02	9.42
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.71	8.71	< 0.005	< 0.005	0.01	9.10
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.88	0.74	6.71	9.24	0.02	0.24	—	0.24	0.22	—	0.22	—	1,712	1,712	0.07	0.01	—	1,718
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	0.13	1.22	1.69	< 0.005	0.04	—	0.04	0.04	—	0.04	—	283	283	0.01	< 0.005	—	284
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.23	0.20	0.20	2.84	0.00	0.00	0.68	0.68	0.00	0.16	0.16	—	665	665	0.01	0.02	2.30	675
Vendor	0.03	0.01	0.70	0.22	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	599	599	0.01	0.09	1.39	627
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.23	0.20	0.23	2.56	0.00	0.00	0.68	0.68	0.00	0.16	0.16	—	636	636	0.01	0.03	0.06	644
Vendor	0.03	0.01	0.73	0.23	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	599	599	0.01	0.09	0.04	626
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.14	0.16	1.83	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	457	457	0.01	0.02	0.71	464
Vendor	0.02	0.01	0.52	0.16	< 0.005	0.01	0.12	0.13	< 0.005	0.03	0.04	—	428	428	0.01	0.06	0.43	448
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.03	0.33	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	75.7	75.7	< 0.005	< 0.005	0.12	76.8
Vendor	< 0.005	< 0.005	0.09	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	70.9	70.9	< 0.005	0.01	0.07	74.1
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Building Construction (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	0.99	8.92	12.9	0.02	0.30	—	0.30	0.28	—	0.28	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	0.99	8.92	12.9	0.02	0.30	—	0.30	0.28	—	0.28	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.85	0.71	6.39	9.26	0.02	0.22	—	0.22	0.20	—	0.20	—	1,717	1,717	0.07	0.01	—	1,723
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.13	1.17	1.69	< 0.005	0.04	—	0.04	0.04	—	0.04	—	284	284	0.01	< 0.005	—	285
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.20	0.18	2.67	0.00	0.00	0.68	0.68	0.00	0.16	0.16	—	653	653	0.01	0.02	2.08	663
Vendor	0.03	0.01	0.67	0.22	< 0.005	< 0.005	0.17	0.18	< 0.005	0.05	0.05	—	585	585	0.01	0.08	1.24	611
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.19	0.21	2.40	0.00	0.00	0.68	0.68	0.00	0.16	0.16	—	624	624	0.01	0.03	0.05	632
Vendor	0.03	0.01	0.69	0.22	< 0.005	< 0.005	0.17	0.18	< 0.005	0.05	0.05	—	585	585	0.01	0.08	0.03	610
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.14	0.15	1.73	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	450	450	0.01	0.02	0.64	456
Vendor	0.02	0.01	0.49	0.16	< 0.005	< 0.005	0.12	0.13	< 0.005	0.03	0.04	—	419	419	0.01	0.06	0.38	437
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.03	0.32	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	74.6	74.6	< 0.005	< 0.005	0.11	75.6
Vendor	< 0.005	< 0.005	0.09	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	69.3	69.3	< 0.005	0.01	0.06	72.4
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Building Construction (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	1.15	0.97	8.58	12.9	0.02	0.28	—	0.28	0.25	—	0.25	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.15	0.97	8.58	12.9	0.02	0.28	—	0.28	0.25	—	0.25	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.33	0.27	2.42	3.64	0.01	0.08	—	0.08	0.07	—	0.07	—	675	675	0.03	0.01	—	678
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.44	0.66	< 0.005	0.01	—	0.01	0.01	—	0.01	—	112	112	< 0.005	< 0.005	—	112
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.19	0.19	0.16	2.50	0.00	0.00	0.68	0.68	0.00	0.16	0.16	—	642	642	0.01	0.02	1.87	651
Vendor	0.03	0.01	0.63	0.21	< 0.005	< 0.005	0.17	0.18	< 0.005	0.05	0.05	—	569	569	0.01	0.08	1.10	595
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.19	0.17	0.20	2.25	0.00	0.00	0.68	0.68	0.00	0.16	0.16	—	613	613	0.01	0.03	0.05	621

Vendor	0.03	0.01	0.66	0.21	< 0.005	< 0.005	0.17	0.18	< 0.005	0.05	0.05	—	569	569	0.01	0.08	0.03	594
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.05	0.64	0.00	0.00	0.19	0.19	0.00	0.04	0.04	—	174	174	< 0.005	0.01	0.23	176
Vendor	0.01	< 0.005	0.18	0.06	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.01	—	160	160	< 0.005	0.02	0.13	168
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.12	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	28.8	28.8	< 0.005	< 0.005	0.04	29.2
Vendor	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	26.5	26.5	< 0.005	< 0.005	0.02	27.7
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.15. Paving (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.80	0.67	6.46	9.92	0.01	0.24	—	0.24	0.22	—	0.22	—	1,511	1,511	0.06	0.01	—	1,516
Paving	—	0.20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.13	0.11	1.01	1.55	< 0.005	0.04	—	0.04	0.03	—	0.03	—	236	236	0.01	< 0.005	—	237
Paving	—	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.18	0.28	< 0.005	0.01	—	0.01	0.01	—	0.01	—	39.1	39.1	< 0.005	< 0.005	—	39.2
Paving	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.05	0.73	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	186	186	< 0.005	0.01	0.54	189
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.10	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	28.0	28.0	< 0.005	< 0.005	0.04	28.4
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.64	4.64	< 0.005	< 0.005	0.01	4.70
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.17. Architectural Coating (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.79	1.11	< 0.005	0.01	—	0.01	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architect ural Coatings	—	10.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.79	1.11	< 0.005	0.01	—	0.01	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architect ural Coatings	—	10.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.12	0.17	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	20.8	20.8	< 0.005	< 0.005	—	20.9
Architect ural Coatings	—	1.71	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.45	3.45	< 0.005	< 0.005	—	3.46
Architect ural Coatings	—	0.31	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.50	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	128	128	< 0.005	< 0.005	0.37	130
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.04	0.45	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	123	123	< 0.005	0.01	0.01	124
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	19.3	19.3	< 0.005	< 0.005	0.03	19.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.20	3.20	< 0.005	< 0.005	< 0.005	3.24
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	0.86	0.80	0.55	5.30	0.01	0.01	1.33	1.34	0.01	0.34	0.35	—	1,371	1,371	0.06	0.06	3.82	1,393
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Manufacturing	2.60	2.42	1.65	16.0	0.04	0.03	4.02	4.05	0.02	1.02	1.04	—	4,141	4,141	0.18	0.17	11.5	4,208
Unrefrigerated Warehouse-No Rail	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	3.46	3.23	2.20	21.3	0.05	0.04	5.35	5.39	0.03	1.36	1.39	—	5,512	5,512	0.24	0.23	15.3	5,602
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	0.85	0.79	0.61	5.28	0.01	0.01	1.33	1.34	0.01	0.34	0.35	—	1,324	1,324	0.06	0.06	0.10	1,345

Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Manufacturing	2.57	2.39	1.85	15.9	0.04	0.03	4.02	4.05	0.02	1.02	1.04	—	4,000	4,000	0.19	0.19	0.30	4,061
Unrefrigerated Warehouse-No Rail	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	3.43	3.19	2.46	21.2	0.05	0.04	5.35	5.39	0.03	1.36	1.39	—	5,325	5,325	0.26	0.25	0.40	5,405
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	0.02	0.02	0.02	0.13	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	31.5	31.5	< 0.005	< 0.005	0.04	32.0
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Manufacturing	0.33	0.31	0.24	2.04	0.01	< 0.005	0.52	0.52	< 0.005	0.13	0.13	—	476	476	0.02	0.02	0.59	483
Unrefrigerated Warehouse-No Rail	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.35	0.33	0.25	2.17	0.01	< 0.005	0.55	0.56	< 0.005	0.14	0.14	—	507	507	0.02	0.02	0.63	515

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	661	661	0.04	< 0.005	—	664
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	907	907	0.06	0.01	—	911
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	—	49.3	49.3	< 0.005	< 0.005	—	49.5
Total	—	—	—	—	—	—	—	—	—	—	—	—	1,618	1,618	0.10	0.01	—	1,624
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	661	661	0.04	< 0.005	—	664
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	907	907	0.06	0.01	—	911
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	—	49.3	49.3	< 0.005	< 0.005	—	49.5
Total	—	—	—	—	—	—	—	—	—	—	—	—	1,618	1,618	0.10	0.01	—	1,624
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	110	110	0.01	< 0.005	—	110
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	150	150	0.01	< 0.005	—	151
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	—	8.16	8.16	< 0.005	< 0.005	—	8.20
Total	—	—	—	—	—	—	—	—	—	—	—	—	268	268	0.02	< 0.005	—	269

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
----------	-----	-----	-----	----	-----	-------	-------	-------	--------	--------	--------	------	-------	------	-----	-----	---	------

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	0.06	0.03	0.56	0.47	< 0.005	0.04	—	0.04	0.04	—	0.04	—	667	667	0.06	< 0.005	—	669
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Manufacturing	0.08	0.04	0.77	0.64	< 0.005	0.06	—	0.06	0.06	—	0.06	—	915	915	0.08	< 0.005	—	917
Unrefrigerated Warehouse-No Rail	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	45.0	45.0	< 0.005	< 0.005	—	45.2
Total	0.15	0.07	1.36	1.15	0.01	0.10	—	0.10	0.10	—	0.10	—	1,627	1,627	0.14	< 0.005	—	1,631
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	0.06	0.03	0.56	0.47	< 0.005	0.04	—	0.04	0.04	—	0.04	—	667	667	0.06	< 0.005	—	669
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Manufacturing	0.08	0.04	0.77	0.64	< 0.005	0.06	—	0.06	0.06	—	0.06	—	915	915	0.08	< 0.005	—	917

Unrefrige rated Warehou Rail	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	45.0	45.0	< 0.005	< 0.005	—	45.2
Total	0.15	0.07	1.36	1.15	0.01	0.10	—	0.10	0.10	—	0.10	—	1,627	1,627	0.14	< 0.005	—	1,631
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	0.01	0.01	0.10	0.09	< 0.005	0.01	—	0.01	0.01	—	0.01	—	110	110	0.01	< 0.005	—	111
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Manufact uring	0.02	0.01	0.14	0.12	< 0.005	0.01	—	0.01	0.01	—	0.01	—	151	151	0.01	< 0.005	—	152
Unrefrige rated Warehou se-No Rail	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.46	7.46	< 0.005	< 0.005	—	7.48
Total	0.03	0.01	0.25	0.21	< 0.005	0.02	—	0.02	0.02	—	0.02	—	269	269	0.02	< 0.005	—	270

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Consumer Products	—	2.65	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architect ural Coatings	—	0.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	2.82	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	2.65	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architect ural Coatings	—	0.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	2.82	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.48	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architect ural Coatings	—	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	0.51	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
----------	-----	-----	-----	----	-----	-------	-------	-------	--------	--------	--------	------	-------	------	-----	-----	---	------

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	21.6	112	134	2.22	0.05	—	205
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	29.7	154	183	3.05	0.07	—	281
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	3.21	16.6	19.9	0.33	0.01	—	30.5
Total	—	—	—	—	—	—	—	—	—	—	—	54.5	282	337	5.61	0.13	—	517
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	21.6	112	134	2.22	0.05	—	205
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	29.7	154	183	3.05	0.07	—	281

Unrefrige rated Warehou Rail	—	—	—	—	—	—	—	—	—	—	—	3.21	16.6	19.9	0.33	0.01	—	30.5
Total	—	—	—	—	—	—	—	—	—	—	—	54.5	282	337	5.61	0.13	—	517
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	3.58	18.5	22.1	0.37	0.01	—	34.0
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Manufact uring	—	—	—	—	—	—	—	—	—	—	—	4.91	25.4	30.3	0.51	0.01	—	46.6
Unrefrige rated Warehou se-No Rail	—	—	—	—	—	—	—	—	—	—	—	0.53	2.76	3.29	0.05	< 0.005	—	5.05
Total	—	—	—	—	—	—	—	—	—	—	—	9.02	46.7	55.7	0.93	0.02	—	85.6

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

General Light Industry	—	—	—	—	—	—	—	—	—	—	—	32.6	0.00	32.6	3.26	0.00	—	114
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	44.7	0.00	44.7	4.47	0.00	—	156
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	3.68	0.00	3.68	0.37	0.00	—	12.9
Total	—	—	—	—	—	—	—	—	—	—	—	81.0	0.00	81.0	8.10	0.00	—	283
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	32.6	0.00	32.6	3.26	0.00	—	114
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	44.7	0.00	44.7	4.47	0.00	—	156
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	3.68	0.00	3.68	0.37	0.00	—	12.9

Total	—	—	—	—	—	—	—	—	—	—	—	81.0	0.00	81.0	8.10	0.00	—	283
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	5.40	0.00	5.40	0.54	0.00	—	18.9
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	7.41	0.00	7.41	0.74	0.00	—	25.9
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	0.61	0.00	0.61	0.06	0.00	—	2.13
Total	—	—	—	—	—	—	—	—	—	—	—	13.4	0.00	13.4	1.34	0.00	—	46.9

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.7	12.7
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17.4	17.4

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30.1	30.1
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.7	12.7
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17.4	17.4
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30.1	30.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.10	2.10
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.88	2.88
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.99	4.99

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cranes	0.91	0.77	6.27	6.78	0.02	0.26	—	0.26	0.24	—	0.24	—	2,228	2,228	0.09	0.02	—	2,236
Forklifts	0.14	0.12	1.13	2.07	< 0.005	0.04	—	0.04	0.04	—	0.04	—	305	305	0.01	< 0.005	—	306
Generator Sets	0.93	0.77	8.13	8.68	0.02	0.15	—	0.15	0.14	—	0.14	—	1,394	1,394	0.06	0.01	—	1,399

Total	1.99	1.66	15.5	17.5	0.04	0.46	—	0.46	0.42	—	0.42	—	3,928	3,928	0.16	0.03	—	3,941
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cranes	0.91	0.77	6.27	6.78	0.02	0.26	—	0.26	0.24	—	0.24	—	2,228	2,228	0.09	0.02	—	2,236
Forklifts	0.14	0.12	1.13	2.07	< 0.005	0.04	—	0.04	0.04	—	0.04	—	305	305	0.01	< 0.005	—	306
Generator Sets	0.93	0.77	8.13	8.68	0.02	0.15	—	0.15	0.14	—	0.14	—	1,394	1,394	0.06	0.01	—	1,399
Total	1.99	1.66	15.5	17.5	0.04	0.46	—	0.46	0.42	—	0.42	—	3,928	3,928	0.16	0.03	—	3,941
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cranes	0.06	0.05	0.38	0.42	< 0.005	0.02	—	0.02	0.01	—	0.01	—	124	124	0.01	< 0.005	—	124
Forklifts	0.01	0.01	0.07	0.12	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	16.6	16.6	< 0.005	< 0.005	—	16.7
Generator Sets	0.06	0.05	0.49	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	75.9	75.9	< 0.005	< 0.005	—	76.2
Total	0.12	0.10	0.94	1.06	< 0.005	0.03	—	0.03	0.03	—	0.03	—	216	216	0.01	< 0.005	—	217

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	5/1/2026	7/20/2026	5.00	57.0	—
Site Preparation	Site Preparation	7/21/2026	8/28/2026	5.00	29.0	—
Grading	Grading	8/29/2026	11/17/2026	5.00	57.0	—
Building Construction	Building Construction	11/18/2026	5/24/2029	5.00	657	—
Paving	Paving	5/25/2029	8/13/2029	5.00	57.0	—
Architectural Coating	Architectural Coating	8/14/2029	10/31/2029	5.00	57.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20

Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	—	10.2	HHDT,MHDT
Demolition	Hauling	0.00	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	15.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT

Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	51.7	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	20.2	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	10.3	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	184,487	61,496	11,417

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Ton of Debris)	Material Exported (Ton of Debris)	Acres Graded (acres)	Material Demolished (Ton of Debris)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	0.00	—
Site Preparation	0.00	0.00	43.5	0.00	—
Grading	0.00	0.00	57.0	0.00	—
Paving	0.00	0.00	0.00	0.00	4.37

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
General Light Industry	0.00	0%
Other Non-Asphalt Surfaces	0.07	0%
Other Asphalt Surfaces	4.30	100%
Manufacturing	0.00	0%
General Light Industry	0.00	0%
Unrefrigerated Warehouse-No Rail	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	532	0.03	< 0.005
2027	0.00	532	0.03	< 0.005
2028	0.00	532	0.03	< 0.005
2029	0.00	532	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
General Light Industry	0.00	0.00	219	11,395	0.00	0.00	1,885	98,273
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manufacturing	660	0.00	0.00	172,073	5,692	0.00	0.00	1,484,055
General Light Industry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unrefrigerated Warehouse-No Rail	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	184,487	61,496	11,417

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00

Summer Days	day/yr	0.00
-------------	--------	------

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
General Light Industry	406,409	532	0.0330	0.0040	1,864,005
Other Non-Asphalt Surfaces	0.00	532	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	532	0.0330	0.0040	0.00
Manufacturing	622,386	532	0.0330	0.0040	2,854,588
General Light Industry	47,424	532	0.0330	0.0040	217,514
Unrefrigerated Warehouse-No Rail	33,836	532	0.0330	0.0040	140,511

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
General Light Industry	10,106,781	0.00
Other Non-Asphalt Surfaces	0.00	0.00
Other Asphalt Surfaces	0.00	0.00
Manufacturing	15,477,794	0.00
General Light Industry	1,179,375	0.00
Unrefrigerated Warehouse-No Rail	1,677,719	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
General Light Industry	54.2	—
Other Non-Asphalt Surfaces	0.00	—
Other Asphalt Surfaces	0.00	—
Manufacturing	83.0	—
General Light Industry	6.32	—
Unrefrigerated Warehouse-No Rail	6.82	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Served
General Light Industry	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0
Manufacturing	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0
General Light Industry	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Cranes	Diesel	Average	2.00	8.00	367	0.29
Forklifts	Diesel	Average	2.00	8.00	82.0	0.20
Generator Sets	Diesel	Average	2.00	8.00	14.0	0.74
Generator Sets	Diesel	Average	4.00	8.00	40.0	0.74

Cranes	Diesel	Average	2.00	1.00	367	0.29
--------	--------	---------	------	------	-----	------

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor
----------------	-----------	----------------	---------------	----------------	------------	-------------

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)
----------------	-----------	--------	--------------------------	------------------------------	------------------------------

5.17. User Defined

Equipment Type	Fuel Type
----------------	-----------

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres
--------------------------	----------------------	---------------	-------------

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres
--------------------	---------------	-------------

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)
-----------	--------	------------------------------	------------------------------

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	10.3	annual days of extreme heat
Extreme Precipitation	4.65	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	9.96	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters

Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A

Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	24.9
AQ-PM	32.5
AQ-DPM	46.7
Drinking Water	0.59
Lead Risk Housing	51.8
Pesticides	0.00
Toxic Releases	75.9
Traffic	53.3
Effect Indicators	—
CleanUp Sites	89.4
Groundwater	98.0
Haz Waste Facilities/Generators	63.6
Impaired Water Bodies	72.2
Solid Waste	0.00
Sensitive Population	—
Asthma	36.4
Cardio-vascular	25.2
Low Birth Weights	14.4
Socioeconomic Factor Indicators	—
Education	2.30
Housing	94.0
Linguistic	—
Poverty	74.9

Unemployment	17.1
--------------	------

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	34.13319646
Employed	0.038496086
Median HI	34.60798152
Education	—
Bachelor's or higher	55.13922751
High school enrollment	100
Preschool enrollment	28.41011164
Transportation	—
Auto Access	94.58488387
Active commuting	94.90568459
Social	—
2-parent households	77.26164507
Voting	4.029257026
Neighborhood	—
Alcohol availability	76.81252406
Park access	23.09765174
Retail density	14.51302451
Supermarket access	17.96484024
Tree canopy	14.80816117
Housing	—
Homeownership	0.153984345

Housing habitability	18.06749647
Low-inc homeowner severe housing cost burden	5.042987296
Low-inc renter severe housing cost burden	40.84434749
Uncrowded housing	87.19363531
Health Outcomes	—
Insured adults	98.58847684
Arthritis	0.0
Asthma ER Admissions	90.8
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	81.3
Cognitively Disabled	85.7
Physically Disabled	98.7
Heart Attack ER Admissions	89.2
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	19.6
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0

No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	66.8
Children	1.0
Elderly	99.8
English Speaking	84.6
Foreign-born	4.0
Outdoor Workers	3.3
Climate Change Adaptive Capacity	—
Impervious Surface Cover	59.8
Traffic Density	19.7
Traffic Access	23.0
Other Indices	—
Hardship	20.3
Other Decision Support	—
2016 Voting	12.1

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	40.0
Healthy Places Index Score for Project Location (b)	17.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Construction phase spans 5/1/2028 through October 2029.
Operations: Vehicle Data	2 story building has 330 employees that will travel to it on weekdays.
Operations: Landscape Equipment	No landscaping
Operations: Off-Road Equipment	Cranes (2 used for maintenance and 2 used for vehicle launch and recovery [2 cranes per XLUUV x 6 XLUUV x 12 Months x 1 hour per event = 144 hours per year]), Forklifts (2 for maintenance) and Generator sets (4 at 30 kW/40 HP for dry/wet checks of XLUUVs and USVs [2 sets each], 2 average sets for maintenance).

A General Conformity Record of Non-Applicability

**United States Navy
Record of Non-Applicability for Clean Air Act Conformity**

INTRODUCTION

This Proposed Action falls under the Record of Non-Applicability (RONA) category and is documented with this RONA. Federal regulations state that no department, agency, or instrumentality of the federal government shall engage in, support in any way or provide financial assistance for, license to permit, or approve any activity that does not conform to an applicable State Implementation Plan (SIP). It is the responsibility of the federal agency to determine whether a federal action conforms to the applicable SIP before the action is taken (40 CFR section 93.150).

Federal actions are exempt from conformity determinations if their emissions do not exceed designated *de minimis* levels for criteria pollutants (40 CFR Part 93.153(c)). The General Conformity Rule also exempts certain federal actions from the requirements of the rule, as these actions are assumed to conform to a SIP. General Conformity *de minimis* levels (in tons/year) for Ventura County, which is located in the South Central Coast Air Basin (SCCAB), are listed in Table 1.

Table 1 Conformity *De Minimis* Levels for Criteria Pollutants in Ventura County

Criteria Pollutant	<i>De Minimis</i> Level (tpy) ¹
Volatile Organic Compounds (VOCs)	50
Oxides of Nitrogen (NO _x)	50

Legend: NO_x = nitrogen oxide; tpy = tons per year; VOC = volatile organic compounds

(1) Note: Ventura County is designated as serious nonattainment for the 2008 and 2015 Federal 8-hour ozone standards.

PROPOSED ACTION

Activity: The Navy proposes to establish training and testing support facilities at Naval Base Ventura County (NBVC), Port Hueneme, for up to six (6) Extra Large Unmanned Undersea Vehicles (XLUUVs), and up to two (2) Unmanned Surface Vehicles (USVs). The Proposed Action includes construction of the training and support facilities, vehicle maintenance areas, and the training and testing of the XLUUVs and USVs. Facility construction and pierside renovations would begin in 2026. Temporary facilities would be utilized until permanent facilities are completed. Both terrestrial and in-water pierside facilities are required to support the XLUUVs and USVs.

Location: NBVC Port Hueneme, California

Proposed Action Name: Introduction of the Extra Large Unmanned Undersea Vehicle and Unmanned Surface Vehicle at NBVC Port Hueneme.

Proposed Action Summary: The Proposed Action includes construction activities that are anticipated to occur from May 2026 through October 2029. Additionally, after construction is complete, the up to six (6) XLUUVs and two (2) USVs would begin arriving for home basing. Testing and training events for the XLUUVs and USVs will typically be 120 days annually.

Air Emissions Summary: Based on the air quality analysis, the emissions from construction and the training and testing of the Proposed Action would be below conformity *de minimis* levels. Attachment 1 of this RNA presents the air emission documentation for the Proposed Action.

Affected Air Basin: SCCAB

Date RONA Prepared: August 20, 2023

RONA Prepared By: Fang Yang/AECOM

PROPOSED ACTION EXEMPTIONS

The Proposed Action is exempt because the calculated total emissions are below *de minimis* levels set forth in the Clean Air Act General Conformity Regulation.

Attainment Status and Emissions Evaluation and Conclusion

The General Conformity Rule requires conformity evaluations for proposed emissions that would occur within areas that are in nonattainment or maintenance of a national ambient air quality standard. The project site is within Ventura County and is under the jurisdiction of the Ventura County Air Pollution Control District. Therefore, the focus of this conformity applicability analysis is to compare project emissions to *de minimis* levels applicable to Ventura County.

Ventura County is classified as in serious nonattainment for both the 2008 and the 2015 8-hour federal ozone standard. Ozone is a secondary pollutant formed when ozone precursors, nitrogen oxides (NO_x) and volatile organic compounds (VOCs) combine in the atmosphere in the presence of sunlight. Therefore, the United States Environmental Protection Agency General Conformity regulations set *de minimis* levels for ozone precursors instead of ozone. Based upon these designations, the applicable annual conformity *de minimis* thresholds for Ventura County are 50 tons each of VOCs and NO_x.

Table 2 summarizes the conformity-related emissions that would occur from implementation of the Proposed Action within Ventura County. The main sources of conformity-related emissions associated with the project construction and training and testing would include combustive emissions due to the use of fossil fuel-powered equipment and engines. To be conservative and account for any potential overlap, maximum potential annual training and testing emissions were summed with each year's construction emissions to verify a maximum per year emissions total was evaluated. The data show that conformity-related emissions for the Proposed Action would be well below the applicable *de minimis* levels and exempt from conformity under the Clean Air Act, as amended.

Table 2 Annual General Conformity-Related Emissions from the Proposed Action

Activity	Air Pollution Emissions (tpy)	
	VOCs	NO _x
2026 Construction plus Training and Testing Emissions	2.0	17.8
2027 Construction plus Training and Testing Emissions	1.9	17.6
2028 Construction plus Training and Testing Emissions	1.9	17.5
2029 Construction plus Training and Testing Emissions	2.2	16.9
Annual Training and Testing and Commuter Emissions [within 3 nm of shore]	1.8	16.2
General Conformity <i>De Minimis</i> Level (tpy)	50	50
Exceeds General Conformity <i>De Minimis</i> Level?	No	No

Legend: nm = nautical miles; NO_x = nitrogen oxides; tpy = tons per year; VOC = volatile organic compounds

RONA Approval

To the best of my knowledge, the information presented in this RONA is correct and accurate, and I concur in the finding that the Proposed Action does not require a formal Clean Air Act General Conformity Determination.

Date: _____

Signature: _____

Appendix D

Noise

This page intentionally left blank.

D Noise

This appendix includes a general discussion on noise, the noise model, and noise metrics used in analysis of this Environmental Assessment/Overseas Environmental Assessment (EA/OEA). Additionally, Roadway Construction Noise Model 1.0 (RCNM) output files and noise level calculations are included.

D.1 Noise

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air or water, and are sensed by the human ear. Sound is all around us. The perception and evaluation of sound involves three basic physical characteristics:

- Intensity – the acoustic energy expressed in terms of sound pressure, in decibels (dB)
- Frequency – the number of cycles per second the air vibrates, in Hertz
- Duration – the length of time the sound can be detected

Noise is defined as unwanted or annoying sound that interferes with or disrupts normal human activities. Although continuous and extended exposure to high noise levels (e.g., through occupational exposure) can cause hearing loss, the principal human response to noise is annoyance. The response of different individuals to similar noise events is diverse and is influenced by the type of noise, perceived importance of the noise, its appropriateness in the setting, time of day, type of activity during which the noise occurs, and sensitivity of the individual.

D.2 Basics of Sound and A-Weighted Sound Level

The loudest sounds that can be detected comfortably by the human ear have intensities one trillion times greater than those of sounds barely detectable. This vast range renders a linear scale impractical to represent all sound intensities. The dB is a logarithmic unit used to represent the intensity of a sound, also referred to as the sound level.

All sounds have a spectral content, which means their magnitude or level changes with frequency, where frequency is measured in cycles per second or Hertz. To mimic the human ear's non-linear sensitivity and perception of different frequencies of sound, the spectral content is weighted. For example, environmental noise measurements are usually on an "A-weighted" scale that filters out very low and very high frequencies in order to replicate human sensitivity. It is common to add the "A" to the measurement unit in order to identify that the measurement has been made with this filtering process (dBA). In this document, the dB unit refers to A-weighted sound levels whether presented as dB or dBA.

Table D-1 provides a comparison of how the human ear perceives changes in loudness on this logarithmic scale. A difference of 3 dBA is generally barely perceptible while a difference of 20 dBA is typically experienced as a fourfold change in loudness.

Table D-1 Subjective Responses to Changes in A-Weighted Decibels

<i>Change</i>	<i>Change in Perceived Loudness</i>
3 dBA	Barely perceptible
5 dBA	Quite noticeable
10 dBA	Dramatic – twice or half as loud
20 dBA	Striking – fourfold change

Legend: dBA = A-weighted decibel

Figure D-1 (Cowan 1994) provides a chart of A-weighted sound levels from typical noise sources. Some noise sources (e.g., air conditioner, vacuum cleaner) are continuous sounds that maintain a constant sound level for some period of time. Other sources (e.g., automobile, heavy truck) are the maximum sound produced during an event like a passing vehicle. Other sounds (e.g., urban daytime, urban nighttime) are averages taken over extended periods of time. A variety of noise metrics have been developed to describe noise over different time periods, as discussed below.

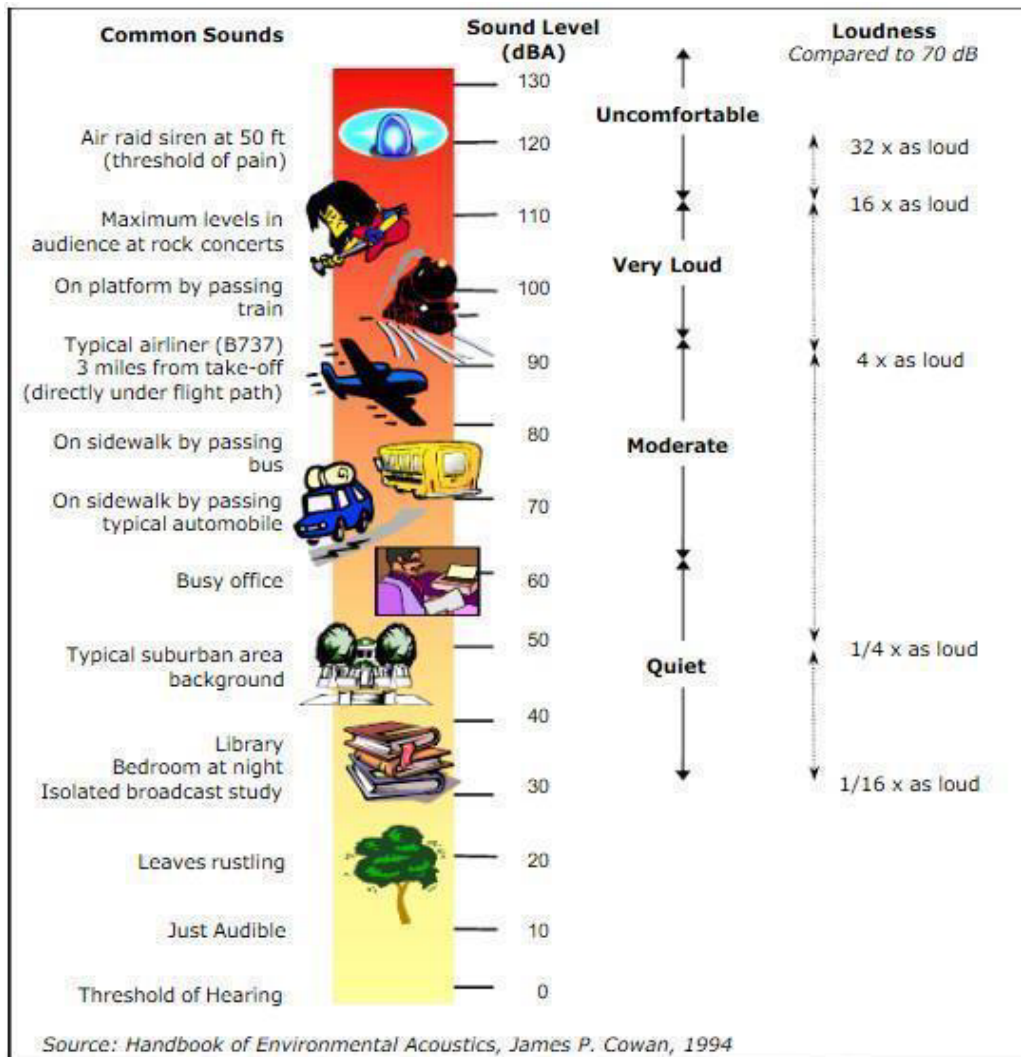


Figure D-1 A-Weighted Sound Levels from Typical Sources

D.3 Noise Metrics

A metric is a system for measuring or quantifying a particular characteristic of a subject. Since noise is a complex physical phenomenon, different noise metrics help to quantify the noise environment. While the Day-Night Average Sound Level and Community Noise Equivalent Level, when operating within the State of California, noise metrics are the most commonly used tools for analyzing noise. Additional metrics and analysis tools provide more detailed noise exposure information for the decision process and improve the discussion regarding noise exposure. The following sections summarize the DoD's noise

metrics (equivalent sound level [Leq] and maximum sound level [Lmax]) used to complete the analysis in this EA/OEA.

D.3.1 Equivalent Sound Level

The Leq is the average acoustic energy content of noise for a stated period of time. Thus, the Leq of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night. This metric is frequently used to assess noise levels associated with various types of construction equipment over specific periods of time, commonly 1- or 8-hour time periods. In this EA/OEA, Leq is used to evaluate noise impacts associated with construction and operations that occur over a defined time period. For example, an 8-hour construction day or for the entire time a generator is operating.

D.3.2 Maximum Sound Level

The highest sound level measured during a single event where the sound level changes value with time (e.g., an aircraft overflight) is called the Lmax. During an aircraft overflight, the noise level starts at the ambient or background noise level, rises to the maximum level as the aircraft flies closest to the observer, and returns to the background level as the aircraft recedes into the distance. Lmax defines the maximum sound level occurring for a fraction of a second. In this EA/OEA, Lmax is used in the analysis of construction and operations when a single event occurs over a fraction of a second. For example, a semi-tractor trailer or water craft passing by a receptor.

D.3.3 Noise Modeling and Methodology

Computer modeling provides a tool to assess potential noise impacts. The Leq and Lmax noise levels are generated by a computer model that draws from a library of construction equipment and usage percentage (percent of time the equipment is used over a given time period). Noise levels and corresponding contours depict a noise exposure footprint to be used in comparison to existing conditions and projections of areas of exposure during operation and construction.

The noise environment for this EA/OEA was modeled using the Federal Highway Administration's Roadway Construction Noise Model (RCNM) 1.0, which analyzes all the operational data (construction equipment, distance to receptors). The results of the modeling are noise levels at varying distances from which noise contours (lines connecting points of equal value) are developed (e.g., 65 dBA Leq and 70 dBA Leq).

Table D-2 provides a summary of the calculation results of the RCNM modeling for Parcel 19. Table D-3 provides this information for Parcel 11. The raw unformatted outputs for each of the two parcels follow the tables.

Table D-2 Back-Up Calculations for Construction/Operations and Noise Attenuation for Parcel 19

Formula for Point Noise Source Attenuation with Distance			L2=L1-20*log(D2/D1)	
Construction				
Location	Lmax (dBA)		Distance (ft)	
	L1	L2	D1	D2
NBVC Fire Station	90.3	90.3	50.0	50.0
On-base Housing	90.3	59.0	50.0	1833.0
Residences, City of Oxnard	90.3	60.4	50.0	1560.0
Residences, City of Port Hueneme	90.3	56.3	50.0	2520.0
Location	Leq (dBA)		Distance (ft)	
NBVC Fire Station	86.9	86.9	50.0	50.0
On-base Housing	86.9	55.6	50.0	1833.0
Residences, City of Oxnard	86.9	57.0	50.0	1560.0
Residences, City of Port Hueneme	86.9	52.9	50.0	2520.0
Operations				
Location	Multiple Sources (=L1+10*LOG10(#sources))		Baseline (dBA)	Total (dBA)
XLUUV + 3 support watercraft	4.0		84.0	90.0
USV + 1 support watercraft	2.0		84.0	87.0
Location	Lmax (dBA)		Distance (ft)	
	L1	L2	D1	D2
NBVC Fire Station (XLUUV)	90.0	56.7	25.0	1160.0
NBVC Fire Station (USV)	87.0	53.7	25.0	1160.0
On-base Housing (XLUUV)	90.0	50.3	25.0	2410.0
On-base Housing (USV)	87.0	47.3	25.0	2410.0
Residences, City of Oxnard (XLUUV)	90.0	58.7	25.0	925.0
Residences, City of Oxnard (USV)	87.0	55.6	25.0	925.0
Residences, City of Port Hueneme (XLUUV)	90.0	55.0	25.0	1410.0
Residences, City of Port Hueneme (USV)	87.0	52.0	25.0	1410.0
Transportation (Facility to Wharf)				
Location	Lmax (dBA)		Distance (ft)	
	L1	L2	D1	D2
NBVC Fire Station	84.0	84.0	50.0	50.0
On-base Housing	84.0	52.0	50.0	2000.0
Residences, City of Oxnard	84.0	53.9	50.0	1600.0
Residences, City of Port Hueneme	84.0	53.4	50.0	1700.0
Location	Leq (dBA)		Distance (ft)	
NBVC Fire Station	80.0	80.0	50.0	50.0
On-base Housing	80.0	48.0	50.0	2000.0
Residences, City of Oxnard	80.0	49.9	50.0	1600.0

Table D-2 Back-Up Calculations for Construction/Operations and Noise Attenuation for Parcel 19

Formula for Point Noise Source Attenuation with Distance		$L2 = L1 - 20 \cdot \log(D2/D1)$		
Residences, City of Port Hueneme	80.0	49.4	50.0	1700.0
Generators				
Location	Lmax (dBA)		Distance (ft)	
	L1	L2	D1	D2
NBVC Fire Station	82.0	54.7	50.0	1160.0
On-base Housing	82.0	48.3	50.0	2410.0
Residences, City of Oxnard	82.0	56.7	50.0	925.0
Residences, City of Port Hueneme	82.0	53.0	50.0	1410.0
Location	Leq (dBA)		Distance (ft)	
	L1	L2	D1	D2
NBVC Fire Station	82.0	54.7	50.0	1160.0
On-base Housing	82.0	48.3	50.0	2410.0
Residences, City of Oxnard	82.0	56.7	50.0	925.0
Residences, City of Port Hueneme	82.0	53.0	50.0	1410.0

Legend: dBA = A-weighted decibel; Lmax = maximum sound level; ft = feet; Leq = equivalent sound level; NBVC = Naval Base Ventura County; USV = Unmanned Surface Vessel; XLUUV = Extra Large Unmanned Undersea Vehicles

Table D-3 Back-Up Calculations for Construction/Operations and Noise Attenuation for Parcel 11

Formula for Point Noise Source Attenuation with Distance		L2=L1-20*log(D2/D1)		
Construction				
Location	Lmax (dBA)		Distance (ft)	
	L1	L2	D1	D2
NBVC Fire Station	90.3	68.4	50.0	620.0
On-base Housing	90.3	55.8	50.0	2660.0
Residences, City of Oxnard	90.3	70.7	50.0	475.0
Residences, City of Port Hueneme	90.3	54.4	50.0	3110.0
Location	Leq (dBA)		Distance (ft)	
NBVC Fire Station	86.9	65.0	50.0	620.0
On-base Housing	86.9	52.4	50.0	2660.0
Residences, City of Oxnard	86.9	67.3	50.0	475.0
Residences, City of Port Hueneme	86.9	51.0	50.0	3110.0
Operations				
Location	Multiple Sources (=L1+10*LOG10(#sources))		Baseline (dBA)	Total (dBA)
XLUUV + 3 support watercraft	4.0		84.0	90.0
USV + 1 support watercraft	2.0		84.0	87.0
Location	Lmax (dBA)		Distance (ft)	
	L1	L2	D1	D2
NBVC Fire Station (XLUUV)	90.0	56.7	25.0	1160.0
NBVC Fire Station (USV)	87.0	53.7	25.0	1160.0
On-base Housing (XLUUV)	90.0	50.3	25.0	2410.0
On-base Housing (USV)	87.0	47.3	25.0	2410.0
Residences, City of Oxnard (XLUUV)	90.0	58.7	25.0	925.0
Residences, City of Oxnard (USV)	87.0	55.6	25.0	925.0
Residences, City of Port Hueneme (XLUUV)	90.0	55.0	25.0	1410.0
Residences, City of Port Hueneme (USV)	87.0	52.0	25.0	1410.0
Transportation (Facility to Wharf)				
Location	Lmax (dBA)		Distance (ft)	
	L1	L2	D1	D2
NBVC Fire Station	84.0	84.0	50.0	50.0
On-base Housing	84.0	52.0	50.0	2000.0
Residences, City of Oxnard	85.0	65.5	50.0	470.0
Residences, City of Port Hueneme	84.0	53.4	50.0	1700.0
Location	Leq (dBA)		Distance (ft)	
NBVC Fire Station	80.0	80.0	50.0	50.0
On-base Housing	80.0	48.0	50.0	2000.0
Residences, City of Oxnard	80.0	60.5	50.0	470.0

Table D-3 Back-Up Calculations for Construction/Operations and Noise Attenuation for Parcel 11

Formula for Point Noise Source Attenuation with Distance		$L2=L1-20*\log(D2/D1)$		
Residences, City of Port Hueneme	80.0	49.4	50.0	1700.0
Generators				
Location	Lmax (dBA)		Distance (ft)	
	L1	L2	D1	D2
NBVC Fire Station	82.0	54.7	50.0	1160.0
On-base Housing	82.0	48.3	50.0	2410.0
Residences, City of Oxnard	82.0	56.7	50.0	925.0
Residences, City of Port Hueneme	82.0	53.0	50.0	1410.0
Location	Leq (dBA)		Distance (ft)	
	L1	L2	D1	D2
NBVC Fire Station	82.0	54.7	50.0	1160.0
On-base Housing	82.0	48.3	50.0	2410.0
Residences, City of Oxnard	82.0	56.7	50.0	925.0
Residences, City of Port Hueneme	82.0	53.0	50.0	1410.0

Legend: dBA = A-weighted decibel; Lmax =maximum sound level; ft = feet; Leq = equivalent sound level; NBVC = Naval Base Ventura County; USV = Unmanned Surface Vessel; XLUUV = Extra Large Unmanned Undersea Vehicles

Roadway Construction Noise Model Output for Parcel 19

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 07/21/2023
Case Description: SitePrep_Residential to SouthE_Offbase

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
SE Offbase Residential	Residential	55.0	50.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compactor (ground)	No	20		83.2	50.0	0.0
Dozer	No	40		81.7	50.0	0.0
Dump Truck	No	40		76.5	50.0	0.0
Grader	No	40	85.0		50.0	0.0
Mounted Impact Hammer (hoe ram)	Yes	20		90.3	50.0	0.0
Front End Loader	No	40		79.1	50.0	0.0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compactor (ground)	83.2	76.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	76.5	72.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mounted Impact Hammer (hoe ram)	90.3	83.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	90.3	86.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 07/17/2023
Case Description: Site Preparation_Residential to East_On Base

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
OnBase Residential	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compactor (ground)	No	20		83.2	1833.0	0.0
Dozer	No	40		81.7	1833.0	0.0
Dump Truck	No	40		76.5	1833.0	0.0
Grader	No	40	85.0		1833.0	0.0
Mounted Impact Hammer (hoe ram)	Yes	20		90.3	1833.0	0.0
Front End Loader	No	40		79.1	1833.0	0.0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compactor (ground)	51.9	45.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	50.4	46.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	45.2	41.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	53.7	49.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mounted Impact Hammer (hoe ram)	59.0	52.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	47.8	43.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	59.0	55.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 07/21/2023
Case Description: SitePrep_Residential to SouthE_Offbase

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
SE Offbase Residential	Residential	55.0	50.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)		Receptor Distance (feet)	Estimated Shielding (dBA)
			Lmax	Actual Lmax (dBA)		
Compactor (ground)	No	20		83.2	2520.0	0.0
Dozer	No	40		81.7	2520.0	0.0
Dump Truck	No	40		76.5	2520.0	0.0
Grader	No	40	85.0		2520.0	0.0
Mounted Impact Hammer (hoe ram)	Yes	20		90.3	2520.0	0.0
Front End Loader	No	40		79.1	2520.0	0.0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compactor (ground)	49.2	42.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	47.6	43.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	42.4	38.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	51.0	47.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mounted Impact Hammer (hoe ram)	56.2	49.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	45.1	41.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	56.2	52.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 07/17/2023
Case Description: Site Preparation_Residential to West

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Strand Residential	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)		Receptor Distance (feet)	Estimated Shielding (dBA)
			Lmax	Actual Lmax (dBA)		
Compactor (ground)	No	20		83.2	1560.0	0.0
Dozer	No	40		81.7	1560.0	0.0
Dump Truck	No	40		76.5	1560.0	0.0
Grader	No	40	85.0		1560.0	0.0
Mounted Impact Hammer (hoe ram)	Yes	20		90.3	1560.0	0.0
Front End Loader	No	40		79.1	1560.0	0.0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compactor (ground)	53.3	46.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	51.8	47.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	46.6	42.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	55.1	51.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mounted Impact Hammer (hoe ram)	60.4	53.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	49.2	45.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	60.4	57.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 07/17/2023
Case Description: Development_Residential to East_On Base

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
On Base Residential	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	1833.0	0.0
Concrete Mixer Truck	No	40		78.8	1833.0	0.0
Crane	No	16		80.6	1833.0	0.0
Flat Bed Truck	No	40		74.3	1833.0	0.0
Generator	No	50		80.6	1833.0	0.0
Man Lift	No	20		74.7	1833.0	0.0
Pneumatic Tools	No	50		85.2	1833.0	0.0
Paver	No	50		77.2	1833.0	0.0
Welder / Torch	No	40		74.0	1833.0	0.0

Results

Equipment	Noise Limits (dBA)								Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	46.4	42.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck	47.5	43.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	49.3	41.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck	43.0	39.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	49.3	46.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	43.4	36.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pneumatic Tools	53.9	50.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	45.9	42.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	42.7	38.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	53.9	54.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 07/18/2023
Case Description: Development_Residential to SouthE_Offbase

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
SE Offbase Residential	Residential	55.0	50.0	45.0

Description	Equipment		Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
	Impact Device	Usage (%)				
Compressor (air)	No	40		77.7	2520.0	0.0
Concrete Mixer Truck	No	40		78.8	2520.0	0.0
Crane	No	16		80.6	2520.0	0.0
Flat Bed Truck	No	40		74.3	2520.0	0.0
Generator	No	50		80.6	2520.0	0.0
Man Lift	No	20		74.7	2520.0	0.0
Pneumatic Tools	No	50		85.2	2520.0	0.0
Paver	No	50		77.2	2520.0	0.0
Welder / Torch	No	40		74.0	2520.0	0.0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	43.6	39.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck	44.8	40.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	46.5	38.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck	40.2	36.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	46.6	43.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	40.7	33.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pneumatic Tools	51.1	48.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	43.2	40.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	40.0	36.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	51.1	51.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 07/17/2023
Case Description: Development_Residential to West_Strand

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Strand Residential	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	1560.0	0.0
Concrete Mixer Truck	No	40		78.8	1560.0	0.0
Crane	No	16		80.6	1560.0	0.0
Flat Bed Truck	No	40		74.3	1560.0	0.0
Generator	No	50		80.6	1560.0	0.0
Man Lift	No	20		74.7	1560.0	0.0
Pneumatic Tools	No	50		85.2	1560.0	0.0
Paver	No	50		77.2	1560.0	0.0
Welder / Torch	No	40		74.0	1560.0	0.0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	47.8	43.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck	48.9	44.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	50.7	42.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck	44.4	40.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	50.7	47.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	44.8	37.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pneumatic Tools	55.3	52.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	47.3	44.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	44.1	40.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	55.3	55.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 07/24/2023
Case Description: SemiTruck_OffshoretoOnshore

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Residenices	Residential	55.0	50.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Flat Bed Truck	No	40	84.0		1600.0	0.0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Flat Bed Truck	53.9	49.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	53.9	49.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1															
Report date:		07/24/2023													
Case Description:		SemiTruck_OffshoretoOnshore													
**** Receptor #1 ****															
Description	Land Use	Daytime	Baselines (dBA)												
			Evening	Night											
Residenices	Residential	55.0	50.0	45.0											
Equipment															
Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)									
Generator	No	50	82.0		2000.0	0.0									
Results															
Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)						
			Day		Evening		Night		Day		Evening		Night		
Equipment		Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Generator		50.0	46.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	50.0	46.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model Output for Parcel 11

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 10/13/2023
Case Description: Development_FireStation

**** Receptor #1 ****

Description	Land Use	Daytime	Baselines (dBA)	
			Evening	Night
FireStation	Residential	55.0	50.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Mixer Truck	No	40		78.8	1695.0	0.0
Crane	No	16		80.6	1695.0	0.0
Flat Bed Truck	No	40		74.3	1695.0	0.0
Generator	No	50		80.6	1695.0	0.0
Man Lift	No	20		74.7	1695.0	0.0
Pneumatic Tools	No	50		85.2	1695.0	0.0
Paver	No	50		77.2	1695.0	0.0
Welder / Torch	No	40		74.0	1695.0	0.0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	47.1	43.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck	48.2	44.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	49.9	42.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck	43.6	39.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	50.0	47.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	44.1	37.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pneumatic Tools	54.6	51.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	46.6	43.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	43.4	39.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	54.6	54.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 10/13/2023
Case Description: Development_OffBaseRes_E

**** Receptor #1 ****

Description	Land Use	Daytime	Baselines (dBA)	
			Evening	Night
OffBase East	Residential	55.0	50.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	2520.0	0.0
Concrete Mixer Truck	No	40		78.8	2520.0	0.0
Crane	No	16		80.6	2520.0	0.0
Flat Bed Truck	No	40		74.3	2520.0	0.0
Generator	No	50		80.6	2520.0	0.0
Man Lift	No	20		74.7	2520.0	0.0
Pneumatic Tools	No	50		85.2	2520.0	0.0
Paver	No	50		77.2	2520.0	0.0
Welder / Torch	No	40		74.0	2520.0	0.0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
			Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	43.6	39.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck	44.8	40.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	46.5	38.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck	40.2	36.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	46.6	43.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	40.7	33.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pneumatic Tools	51.1	48.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	43.2	40.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	40.0	36.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	51.1	51.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 10/13/2023
Case Description: Development_OnBaseRes_E

**** Receptor #1 ****

Description	Land Use	Daytime	Baselines (dBA)	
			Evening	Night
OnBaseEast	Residential	55.0	50.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	3750.0	0.0
Concrete Mixer Truck	No	40		78.8	3750.0	0.0
Crane	No	16		80.6	3750.0	0.0
Flat Bed Truck	No	40		74.3	3750.0	0.0
Generator	No	50		80.6	3750.0	0.0
Man Lift	No	20		74.7	3750.0	0.0
Pneumatic Tools	No	50		85.2	3750.0	0.0
Paver	No	50		77.2	3750.0	0.0
Welder / Torch	No	40		74.0	3750.0	0.0

Results

Equipment	Noise Limits (dBA)								Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	40.2	36.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck	41.3	37.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	43.0	35.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck	36.7	32.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	43.1	40.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	37.2	30.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pneumatic Tools	47.7	44.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	39.7	36.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	36.5	32.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	47.7	47.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 10/13/2023
Case Description: Development_OffBaseRes_W

**** Receptor #1 ****

Description	Land Use	Daytime	Baselines (dBA)	
			Evening	Night
OffBase West	Residential	55.0	50.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)		Receptor Distance (feet)	Estimated Shielding (dBA)
			Lmax	Lmax		
Compressor (air)	No	40		77.7	195.0	0.0
Concrete Mixer Truck	No	40		78.8	195.0	0.0
Crane	No	16		80.6	195.0	0.0
Flat Bed Truck	No	40		74.3	195.0	0.0
Generator	No	50		80.6	195.0	0.0
Man Lift	No	20		74.7	195.0	0.0
Pneumatic Tools	No	50		85.2	195.0	0.0
Paver	No	50		77.2	195.0	0.0
Welder / Torch	No	40		74.0	195.0	0.0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	65.8	61.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck	67.0	63.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	68.7	60.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck	62.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	68.8	65.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	62.9	55.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pneumatic Tools	73.4	70.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	65.4	62.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	62.2	58.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	73.4	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 10/13/2023
Case Description: SitePrep_fireStation

**** Receptor #1 ****

Description	Land Use	Daytime	Baselines (dBA)	
			Evening	Night
FireStation	Residential	55.0	50.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)		Receptor Distance (feet)	Estimated Shielding (dBA)
			Lmax	Lmax		
Compactor (ground)	No	20		83.2	620.0	0.0
Dozer	No	40		81.7	620.0	0.0
Dump Truck	No	40		76.5	620.0	0.0
Grader	No	40	85.0		620.0	0.0
Mounted Impact Hammer (hoe ram)	Yes	20		90.3	620.0	0.0
Front End Loader	No	40		79.1	620.0	0.0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compactor (ground)	61.4	54.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	59.8	55.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	54.6	50.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	63.1	59.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mounted Impact Hammer (hoe ram)	68.4	61.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	57.2	53.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	68.4	65.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 10/13/2023
Case Description: SitePrep_Residential to E

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
E Offbase Residential	Residential	55.0	50.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compactor (ground)	No	20		83.2	3110.0	0.0
Dozer	No	40		81.7	3110.0	0.0
Dump Truck	No	40		76.5	3110.0	0.0
Grader	No	40	85.0		3110.0	0.0
Mounted Impact Hammer (hoe ram)	Yes	20		90.3	3110.0	0.0
Front End Loader	No	40		79.1	3110.0	0.0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compactor (ground)	47.4	40.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	45.8	41.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	40.6	36.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	49.1	45.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mounted Impact Hammer (hoe ram)	54.4	47.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	43.2	39.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	54.4	51.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 10/13/2023
Case Description: SitePrep_Residential to W

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
W Offbase Residential	Residential	55.0	50.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compactor (ground)	No	20		83.2	475.0	0.0
Dozer	No	40		81.7	475.0	0.0
Dump Truck	No	40		76.5	475.0	0.0
Grader	No	40	85.0		475.0	0.0
Mounted Impact Hammer (hoe ram)	Yes	20		90.3	475.0	0.0
Front End Loader	No	40		79.1	475.0	0.0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compactor (ground)	63.7	56.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	62.1	58.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56.9	52.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	65.4	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mounted Impact Hammer (hoe ram)	70.7	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	59.6	55.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	70.7	67.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 10/13/2023
Case Description: SitePrep_Residential to E On Base

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
SE Onbase Residential	Residential	55.0	50.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compactor (ground)	No	20		83.2	2660.0	0.0
Dozer	No	40		81.7	2660.0	0.0
Dump Truck	No	40		76.5	2660.0	0.0
Grader	No	40	85.0		2660.0	0.0
Mounted Impact Hammer (hoe ram)	Yes	20		90.3	2660.0	0.0
Front End Loader	No	40		79.1	2660.0	0.0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compactor (ground)	48.7	41.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	47.2	43.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	41.9	38.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	50.5	46.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mounted Impact Hammer (hoe ram)	55.8	48.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	44.6	40.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	55.8	52.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 12/19/2023
Case Description: Generator at Wharf 4

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Oxnard	Residential	55.0	50.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Generator	No	50	82.0		925.0	0.0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Generator	56.7	53.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	56.7	53.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 12/19/2023
Case Description: Generator at Wharf 5

**** Receptor #1 ****

Description	Land Use	Daytime	Baselines (dBA)	
			Evening	Night
Port Hueneme	Residential	55.0	50.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Generator	No	50		80.6	1410.0	0.0

Results

Equipment	Calculated (dBA)	Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
				Day		Evening		Night		Day		Evening		Night	
		Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Generator		51.6	48.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total		51.6	48.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Appendix E

Ship Strike Probability Calculation

This page intentionally left blank.

E Ship Strike Probability Calculation

Table E-1 Probability of Strike Calculated for the XLUUV and USV EA/OEA

Probability	
Probability (%)	Probability Description
89.6%	Chance of 0 strike over the period between 2024-2026 from XLUUV/USV training and testing events
9.9%	Chance of 1 strike over the period between 2024-2026 from XLUUV/USV training and testing events
0.5%	Chance of 2 strikes over the period between 2024-2026 from XLUUV/USV training and testing events
Calculation Inputs	
Value (unit varies, see descriptions)	Description
0.000111	Daily ship strike rate (from the 2023 Proposed Rule) ¹
991	Total number of at sea days for XLUUV/USV training and testing for the period between 2024-2026 ²
0.11	Calculated strikes from XLUUV/USV training and testing events between 2024-2026 ²

Legend: % = percent; EA = Environmental Assessment; HSTT = Hawai'i-Southern California Training and Testing; LOA = Letter of Authorization; OEA = Overseas Environmental Assessment; USV = Unmanned Surface Vessel; XLUUV = Extra Large Unmanned Undersea Vehicle

(1) Note: **Background on the Daily Ship Strike Rate and Probability Calculation**

The table above presents the probability of strikes over the period from 2024 to 2026 from Extra Large Unmanned Undersea Vehicle (XLUUV) and Unmanned Surface Vessel (USV) training and testing in the Nearshore and Offshore Proposed Action Areas as described in this Environmental Assessment/Overseas Environmental Assessment (EA/OEA). The probability of strikes was derived from a Poisson distribution and used the daily ship strike rate from the Hawaii-Southern California Training and Testing (HSTT) Study Area, as provided in National Marine Fisheries Service (NMFS) 2023 Proposed Rule (88 FR 68290; October 3, 2023).

A Poisson distribution, or over-dispersed Poisson distribution, is often used to describe random occurrences when the probability of an occurrence is small (e.g., count data such as cetacean sighting data, or in this case strike data). The formula for a Poisson distribution is:

$$P(n|\mu) = \frac{e^{-\mu} \cdot \mu^n}{n!}$$

$P(n|\mu)$ is the probability of observing n events in some time interval, when the expected number of events in that time interval is μ . Using the calculated strike rate for the total at-sea days, the Poisson distribution can estimate the probability of n where $n=0$ (no strikes), 1 strike, 2 strikes, and 3 strikes.

During the consultation for the HSTT Study Area, the Navy and NMFS Marine Mammal Protection Act (MMPA) staff agreed the probability of when large whale takes are likely to occur would be when the probability is at or above the 10 percent level (U.S. Department of the Navy 2022).

In 2022, the Navy reanalyzed the potential for vessel strike in the HSTT Study Area to include 2 strikes that occurred in 2021 (for a total of 4 strikes for the period between 2009-2021). The following Poisson calculation was presented in the March 2022 Application for Revision to 7-Year Rule and Letters of Authorization (LOAs) (U.S. Department of the Navy 2022):

Results

- Step 1: Calculate strike rate from 2009-2021. 4 strikes during 2009-2021 / 57,757 ship days at sea = 0.000069 strikes per day
- Step 2: Calculate predicted strike rate over a four-year period from 2022-2025 remaining in permit. 18,464 ship days at sea x 0.000069 strikes per day = 1.2788 strikes over 4-years.
- Step 3: Use Poisson distribution to calculate probability of getting "n" strikes when it is "expected" there could be 1.2788 strikes over the 4-year period remaining in HSTT permit between 2022 and 2025. Probabilities are:

<u>Scenario (n)</u>	<u>Probability (%)</u>
Probability of zero strikes (n=0)	27.8%
Probability of one strike (n=1)	35.6%
Probability of two strikes (n=2)	22.7%
Probability of three strikes (n=3)	9.7%

However, in the 2023 Proposed Rule published in the Federal Register, NMFS updated the Navy's analysis to reflect that an additional strike of an unidentified large whale occurred in May 2023 (for a total of 5 strikes between 2009 and mid-2023) and revised the total number of at-sea days during that same period (45,048 days). The 2023 Proposed Rule provided the following explanation:

Based on further discussions with the Navy, NMFS has also updated the way it calculated at-sea days. This is a different manner of calculating at-sea days for the purposes of the strike analysis rather than a change in Navy's activity levels. For 2010–2015, the at-sea days used in NMFS' calculation reflected historic at-sea days in the HSTT action area based on positional vessel data records (Mintz, 2016). While the actual annual at-sea days from 2016-present are currently classified, NMFS' updated calculation reflects an extrapolation of the 2010–2015 at-sea days (using the formula $y = -64x + 131555$) to estimate the number of at-sea days in 2016 (Navy, 2022). [...]

This analysis only included at-sea days for Navy warships greater than 65 feet (*i.e.*, destroyers are the smallest ship class included). Navy vessels smaller than 65 feet have never reported a whale strike in the Pacific, and therefore, we consider it unlikely that this would occur in the remaining 2.5 years of the regulations. NMFS then used the number of past Navy vessel strikes and the at-sea days to calculate a vessel strike rate for 2009 through mid-2023. The estimated total number of Navy at-sea days (for vessels greater than 65 feet) for 2009 through mid-2023 was 45,048 days. Dividing the five known strikes during that period by the at-sea days (*i.e.*, 5 strikes/45,048 at-sea days) results in a strike rate of 0.000111 strikes per day. [...]

NMFS' probability analysis concluded that there is a 57 percent chance that zero whales would be struck by U.S. Navy vessels over the remaining period of the rule (mid-2023 through 2025), and a 32, 9, and 2 percent chance that one, two, or three whales, respectively, would be struck over the remaining 2.5 years of the

regulations. Further, there is an estimated 11 percent chance that the Navy would strike more than one large whale over the remaining period of the rule (mid-2023 through 2025). We have assessed these probabilities and determined that the strike up to two large whales could occur over the remaining duration of the regulations, for a total of five takes by serious injury or mortality of large whales by vessel strike total over the 7-year duration of the regulations (three takes authorized in the 2020 HSTT final rule (85 FR 41780, July 10, 2020) which have occurred, plus two additional takes).

In addition to the reasons listed above that make it unlikely that the Navy will hit a large whale (more maneuverable ships, larger crew, *etc.*), vessel strike of dolphins, small whales, porpoises, and pinnipeds is considered very unlikely. (88 FR 68290; October 3, 2023)

The 2023 Proposed Rule to add the two additional takes was published in the Federal Register on 3 October 2023 and the public commenting period ended 17 November 2023. Agency responses to public comments will be provided in the notice of the final decision.

(2) Note: **XLUUV and USV EA/OEA Calculation Notes**

The total at-sea hours for XLUUV and USV training and testing (estimated to occur during the 3-year period between 2024 and 2026) and the probability for a certain number of strikes (0, 1, 2, 3, 4, or 5) over that period (2024-2026) using a Poisson distribution were calculated by spreadsheet (screenshots provided at the end of this appendix).

Applying similar assumptions used for the HSTT analysis (see note 1 above), the at-sea days for training and testing under this EA/OEA were calculated for the 2 USVs, each accompanied by 1 large support vessel (over 65 feet in length), and the 1 large support vessel that would support each of the 6 XLUUVs. At-sea days for the XLUUV units themselves are not included in the total, as submarines were not included in the HSTT ship strike analysis. The small support vessels described in the XLUUV and USV EA/OEA (Chapter 2) would be less than 40 feet in length and thus those hours were not counted (but up to 2 small support vessels, in addition to the 1 large, could accompany each XLUUV or USV during a training and testing event).

Each XLUUV and associated support vessel is assumed to conduct one 100-day training and testing event in the year the vehicle arrives at NBVC Port Hueneme (with 2 estimated to arrive in 2024 and 4 estimated to arrive in 2025). The 2 USVs would arrive at NBVC Port Hueneme in 2024 and would conduct one 120-day training and testing event each year between 2024-2026 with 1 large support vessel supporting each USV.

A portion of the XLUUV and USV training and testing events each year (approximately 50 percent) would occur within the adjacent SOCAL Complex portion of the HSTT range, and thus those days are not attributed to the at-sea days that would occur in the XLUUV and USV EA/OEA Nearshore and Offshore Proposed Action Areas.

Additional Information on Vessel Strike Reporting from HSTT Environmental Impact Statement/ Overseas Environmental Impact Statement (U.S. Department of the Navy 2018, Appendix F)

It is Navy policy to report all marine mammal strikes encountered from a Navy vessel. The information is collected by the Office of the Chief of Naval Operations Environmental Readiness and provided to NMFS on an annual basis. Only the Navy and the U.S. Coast Guard report in this manner. Therefore, it should be noted that Navy vessel strikes reported in the scientific literature and NMFS databases are the result of the Navy's commitment to reporting all vessel strikes to NMFS rather than a greater frequency of

collisions relative to other ship types. Historically and as a cautionary practice today, some Navy strikes are reported to NMFS even though the strike to a marine mammal could not be confirmed, or if a large cetacean was struck then exact species may not be known. Most vessel strikes of marine mammals reported involve commercial vessels and occur over or near the continental shelf (Laist et al., 2001, as cited in U.S. Department of the Navy 2018). Reporting to NMFS of whale strikes by commercial vessels is not required and reporting rates are therefore unknown but likely to be much lower than actual occurrences.

Between 2007 and 2009, the Navy developed and distributed additional training, mitigation, and reporting tools to Navy operators to improve marine mammal protection and to ensure compliance with upcoming permit requirements. In 2007, the Navy implemented the Marine Species Awareness Training, which is designed to improve the effectiveness of visual observations for marine resources, including marine mammals and sea turtles. In subsequent years, the Navy issued refined policy guidance regarding marine mammal incidents (e.g., ship strikes) in order to collect the most accurate and detailed data possible in response to a possible incident. For over a decade, the Navy has implemented the Protective Measures Assessment Protocol software tool, which provides operators with notification of the required mitigation and a visual display of the planned training or testing activity location overlaid with relevant environmental data. Similar mitigation, reporting, and monitoring requirements have been in place since 2009 and are expected to continue into the future. Therefore, the conditions affecting the potential for ship strikes are the most consistent across this time frame.

References

- NMFS. 2023. Incidental Take Authorization: U.S. Navy Hawaii-Southern California Training and Testing (HSTT) (2018-2025). Proposed Rule. Available online at: <https://www.fisheries.noaa.gov/action/incidental-take-authorization-us-navy-hawaii-southern-california-training-and-testing-hstt>.
- U.S. Department of the Navy. 2018. Hawai'i Southern California Training and Testing Environmental Impact Statement Overseas Environmental Impact Statement. December 18.
- U.S. Department of the Navy. 2022. Request for Regulations and Letters of Authorization for the Incidental Taking of Marine Mammals Resulting from U.S. Navy Training and Testing Activities in the Hawai'i-Southern California Training and Testing Study Area. March 29.

At Sea Days Calculation

Phasing ⁽¹⁾ Number of Units Available for Training and Testing by Year			
	2024	2025	2026
XLUUV	2	4	0
USV	2	2	2

Total # Units Covered by EA/OEA ⁽²⁾	Type	# Support Vessels per Unit, per Event ⁽³⁾	Days per Event ⁽⁴⁾	# Events per Year ⁽⁴⁾	% Time Spent in EA/OEA Proposed Action Areas (versus SOCAL Range) ⁽⁵⁾	2024 ⁽⁶⁾	2025 ⁽⁶⁾	2026 ⁽⁶⁾
6	XLUUV	1	100	1	50%	100	200	0
2	USV	1	120	1	48%	230	230	230
						330	430	230
						Grand Total At Sea Days (2024-2026)		991

2023 Proposed Rule (Period from 2009-2023)			XLUUV-USV Training-Testing Events (Period from 2024-2026)	
# Strikes	At Sea Days	Strike/Day Rate	Est. Total Days	Est. Total Strikes
5	45,048	0.0001110	991	0.11

# of Events		#	%	Period between 2024-2026
0	P(0) =	0.896	89.6%	chance of 0 strike
1	P(1) =	0.099	9.9%	chance of 1 strike
2	P(2) =	0.005	0.5%	chance of 2 strikes
3	P(3) =	0.000	0.0%	chance of 3 strikes
4	P(4) =	0.000	0.0%	chance of 4 strikes
5	P(5) =	0.000	0.0%	chance of 5 strikes

Notes:

- (1) The Phasing table indicates how many of each XLUUV/USV units would undergo (1) training and testing event in that year.
2024: 2 XLUUV / 2 USV
2025: 4 XLUUV / 2 USV
2026: 2 USV
- (2) The XLUUV units themselves are not counted in the at sea days calculation in this table since they operate like submarines, which are not typically considered in ship strike analyses. The XLUUV unit number is used to calculate the total number of large support vessels on the surface supporting the XLUUVs during training and testing events.
- (3) Only the large support vessels are included here (description from Chapter 2 of the EA/OEA: An additional larger vessel, between 150 ft and 300 ft in length and comparable to a research vessel, offshore support vessel, or multipurpose support vessel, would also be used to support training and testing activities). This is because the Navy's ship strike analysis used for the HSTT Study Area (in 2018/2022) only included potential strikes from Navy warships greater than 65 feet, with destroyers being the smallest ship class considered. Even though 2 smaller support vessels (less than 40' in length, based on DOPAA descriptions) may accompany each USV or XLUUV during a training event, only the large support vessels are included for the at sea days calculation.
- (4) For both XLUUVs and USVs, training and testing events would be divided into approximately ten daytime sub-events lasting 5-10 days in duration and two nighttime events lasting 5-10 days in duration. One, 100-day training event per XLUUV and 120-day training event per USV is assumed to occur per year.
- (5) Total annual hours for the XLUUV/USV training and testing events will be distributed between the Nearshore and Offshore Proposed Action Areas
- (6) Formulas (each year, applying phasing):
XLUUV
 $((\# \text{ of units in PHASE YEAR} * \# \text{ support vessels}) * (\# \text{ of days per event})) * \# \text{ of events per year} * \% \text{ of time spent in EA/OEA Proposed Action Areas}$
USV
 $((\# \text{ units in PHASE YEAR} + (\# \text{ of units in PHASE YEAR} * \# \text{ support vessels})) * (\# \text{ of days per event})) * \# \text{ of events per year} * \% \text{ of time spent in EA/OEA Proposed Action Areas}$

This page intentionally left blank.

Appendix F

Coastal Zone Management Act Documentation

(Note: This appendix will be provided with the Final EA/OEA.)

This page intentionally left blank.

Appendix G References

This page intentionally left blank.

G References

- Assistant Secretary of the Navy. 2023. DON's Strategic Management Response for PFAS. Available at: https://www.secnav.navy.mil/eie/Pages/PFAS_Home.aspx. Accessed November 8, 2023.
- Au, W. W.L., and M. Green. 2000. Acoustic interaction of humpback whales and whale watching boats. *Marine Environmental Research* 49(5):469-481.
- Bernardini, Marco; Luca Fredianelli, Francesco Fidecaro, Paolo Gagliardi, Marco Nastasi and Gaetano Licitra. 2019. Noise Assessment for Small Vessels for Action Planning in Canal Cities Environments. March 5, 2019.
- Bograd. 2004. As cited in U.S. Department of the Navy. 2018. Hawai'i Southern California Training and Testing Environmental Impact Statement. Overseas Environmental Impact Statement. December 18, 2018.
- Bowles, Ann E. 1995. Responses of wildlife to noise. *Wildlife and Recreationists: Coexistence through Management and Research*, 109-156.
- California Air Pollution Control Officers Association. 2022. California Emissions Estimator Model 2022.1. Retrieved from CalEEMod.com.
- California Air Resources Board. 2023. Maps of State and Federal Area Designations. Retrieved from <https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations>.
- California Department of Water Resources. 2023. California's Groundwater Live: Groundwater Levels. Retrieved from <https://storymaps.arcgis.com/stories/b3886b33b49c4fa8adf2ae8bdd8f16c3>.
- Calambokidis, J., Steiger, G.H., Curtice, C., Harrison, J., Ferguson, M.C., Becker, E., et al. 2015. Biologically dE selected cetaceans within U.S. Waters – west coast region. *Aquat. Mamm.* 41, 39-53. Doi: 10.1578/AM.41.1.2015.39.
- Calambokidis, J., Kratofil, MA., Palacios, DM., Lagerquist, BA., Schorr, GS., Hanson, MB., Baird, RW., Forney, KA., Becker, EA., Rockwood, RC., and Hazen, EL. 2024. Biologically Important Areas II for cetaceans within U.S. and adjacent waters – West Coast Region. *Front. Mar. Sci.* 11:1283231. Doi: 10.3389/fmars.2024.1283231.
- CalRecycle. 2019. Solid Waste Information System. Retrieved from SWIS Facility Detail (Simi Valley Landfill and Recycling Center and Toland Landfill): <https://www2.calrecycle.ca.gov/swfacilities/Directory/56-AA-0007/>.
- Caltrans. 2023. Traffic AADT. Available at: <https://caltrans-gis.dot.ca.gov/portal/home/item.html?id=60e97eec773345f9815a2feaaa61dec1>.
- CGS. 2002. Seismic Hazard Zone Report for The Oxnard 7.5' Quadrangle Ventura County, California. Seismic Hazard Zone Report 052.
- CGS. 2003. Geologic Map of The Oxnard 7.5' Quadrangle Ventura County, California: A Digital Database. Version 1.0. K.B. Clahan.
- CGS. 2022. CGS Seismic Hazards Program: Liquefaction Zones. DCAT Modification Date: February 11, 2022. Available at: <https://data.ca.gov/dataset/cgs-seismic-hazards-program-liquefaction-zones>.

- City of Oxnard. 2017. Public Works Integrated Master Plan Wastewater Project Memorandum 3.7.1 Traditional Oxnard Wastewater Treatment Plant Alternatives - Upgrade In Place Revised Final Draft. September 2017.
- City of Oxnard. 2022. Final Environmental Impact Report Volume I. Port of Hueneme – Temporary Outdoor Vehicle Storage Facility Project. SCH No. 2020069039. September.
- City of Oxnard. 2023a. Oxnard Local Coastal Program Update. Available at: <https://www.oxnard.org/city-department/community-development/planning/local-coastal-program-update/>.
- City of Oxnard. 2023b. Port of Hueneme 34-Acre Project. Available online at: <https://www.oxnard.org/tag/port-of-hueneme-34-acre-project/>. Accessed July 3, 2023.
- City of Port Hueneme. 2021a. Port Hueneme General Plan Background Report, Noise. September. Available at: <https://www.ci.port-hueneme.ca.us/DocumentCenter/View/4038/7-Noise>.
- City of Port Hueneme. 2021b. City of Port Hueneme General Plan Update EIR, Final Environmental Impact Report. September 2021.
- City of Port Hueneme. 2022. Notice of Intent to Adopt a Negative Declaration for the Bubbling Springs Natural Channel Vegetation Removal Project. February 25.
- Cooper, L. 2020. EUM ENGR, NAVFAC SW, NBVC, CA. (J. Butts, Interviewer). June 1, 2020.
- Council on Environmental Quality. 2005. Guidance on the Consideration of Past Actions in Cumulative Effects Analysis. June 24, 2005.
- Cowan. 1994. Handbook of Environmental Acoustics.
- Currie, J. J., Stack, S. H., and Kaufman, G. D. 2017. Modeling Whale-vessel Encounters: the Role of Speed in Mitigating Collisions with Humpback Whales (*Megaptera novaeangliae*). *J. Cetac. Res. Manage.* 17, 57-64.
- De Robertis, A. and N. O. Handegard. 2013. Fish avoidance of research vessels and the efficacy of noise-reduced vessels: A review. *ICES Journal of Marine Science*, 70(1), 34–45. DOI:10.1093/icesjms/fss155.
- Dunlop, R. A. 2019. The effects of vessel noise on the communication network of humpback whales. *Royal Society of Open Science*, 6(11). DOI:10.1098/rsos.190967
- Dwyer, S.L., Kozmian-Ledward, L., and Stockin, K.A. 2014. Short-term survival of severe propeller strike injuries and observations on wound progression in a bottlenose dolphin. *New Zeal. J. Mar. Fresh.* Doi: 10.1080/00288330.2013.866578.
- Dyndo, M., D. M. Wisniewska, L. Rojano-Donate, and P. T. Madsen. 2015. Harbour porpoises react to low levels of high frequency vessel noise. *Scientific Reports*, 5, 11083.
- FEMA. 2010. Ventura County, California. Flood Insurance Map. January 20, 2010.
- Engås, A., O. A. Misund, A. V. Soldal, B. Horvei, and A. Solstad. 1995. Reactions of penned herring and cod to playback of original, frequency-filtered and time-smoothed vessel sound. *Fisheries Research*, 22(3), 243–254.
- Erbe, C., C. Reichmuth, K. Cunningham, K. Lucke, and R. Dooling. 2016. Communication masking in marine mammals: A review and research strategy. *Marine Pollution Bulletin*, 103(1–2), 15–38. DOI:10.1016/j.marpolbul.2015.12.007

- Etnoyer, P., and L.E. Morgan. 2005. Habitat-forming deep-sea corals in the Northeast Pacific Ocean. In A. Freiwald & J.M. Roberts (Eds.), *Cold-water Corals and Ecosystems* (pp. 331-343). Berlin Heidelberg: Springer-Verlag.
- FEMA. 2021. Flood Hazard Information, Ventura County, CA. Map Revised January 29, 2021.
- Fiori, L., E. Martinez, M. B. Orams, and B. Bollard. 2019. Effects of whale-based tourism in Vava'u, Kingdom of Tonga: Behavioural responses of humpback whales to vessel and swimming tourism activities. *PLoS ONE*, 14(7). DOI:10.1371/journal.pone.0219364.
- FitzGerald, A.M., and Martin, B.T. 2022. Quantification of thermal impacts across freshwater life stages to improve temperatures management for anadromous salmonids. *Conserv. Physiol* 10(1): coac013; doi:10.1093/conphys/coa013.
- Fournet, M. E. H., L. P. Matthews, C. M. Bagriele, S. Haver, D. K. Mellinger, and H. Klinck. 2018. Humpback whales *Megaptera novaeangliae* alter calling behavior in response to natural sounds and vessel noise. *Marine Ecology Progress Series*, 607, 251–268
- Fox Canyon Groundwater Management Agency. 2019. Groundwater Sustainability Plan for the Oxnard Subbasin. December.
- Gaines, Steve, PhD. 2017. Upwelling. Ocean Explorer. NOAA.
<https://oceanexplorer.noaa.gov/explorations/02quest/background/upwelling/upwelling.html>.
- Gende, S. M., A. N. Hendrix, K. R. Harris, B. Eichenlaub, J. Nielsen, and S. Pyare. 2011. A Bayesian approach for understanding the role of ship speed in whale-ship encounters. *Ecological Applications*, 21(6), 2232–2240.
- Griffith, et al. 2016. Descriptions of the Level IV Ecoregions of California.
- Handegard, N. O., K. Michalsen, and D. Tjostheim. 2003. Avoidance behaviour in cod (*Gadus morhua*) to a bottom-trawling vessel. *Aquatic Living Resources*, 16(3), 265–270.
- Harrison, J., Ferguson, M., Cl, New, L., Cleary, J., Curtice, C., DeLand, S., et al. 2023. Biologically Important areas for cetaceans within the U.S. and adjacent waters: Updates and the application of a new scoring system. *Front. Mar. Sci* 10,1081893. Doi: 10.3389/fmars.20231081893.
- Hazel, J., Lawler, I. R., Marsh, H., and Robson, S. 2007. Vessel speed increases collision risk for the green turtle, *Chelonia mydas*. *Endanger. Species Res.* 3,105-113. Doi:10.3354/esroo3105.
- Hildebrand, J. A. 2009. Anthropogenic and natural sources of ambient noise in the ocean. *Marine Ecology Progress Series* 395:5-20.
- Intergovernmental Panel on Climate Change. 2023: Sections. In: *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II, and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, H. Lee and J. Romero (eds)]. IPCC, Geneva, Switzerland, pp. 35-115, doi: 10.29327/IPCC/AR6-9789291691647.
- Levinton, J. S. 2009. *Marine Biology: Function, Biodiversity, Ecology* (3rd ed.). New York, NY: Oxford University Press.
- Lohmann, K.J. and C.M. F. Lohmann. 2019. There are back again: natal homing by magnetic navigation in sea turtles and salmon. *Journal of Experimental Biology*, 222 (Pt Suppl 1). DOI:10.1242/jeb.184077/
- Machernis, A., J. R. Powell, L. K. Engleby, and T. R. Spradlin. 2018. *An Updated Literature Review Examining the Impacts of Tourism on Marine Mammals over the Last Fifteen Years (2000-2015)*

- to Inform Research and Management Programs*. St. Petersburg, FL: National Marine Fisheries Service, Southeast Regional Office.
- Mckenna, M. F., D. Ross, S. M. Wiggins, and J. A. Hildebrand. 2012. Underwater radiated noise from modern commercial ships. *Journal of the Acoustical Society of America* 131(2):92-103.
- Merkel & Associates, Inc. 2008. Marine Biological Resources Assessment for the Port Hueneme Sediment Dredging and Confined Aquatic Disposal Project. Prepared for Bechtel Environmental, Inc. San Diego, CA. June.
- Munday, Dixon, D. L., Donelson, J. M., Jones, G. P., Pratchett, M. S., Devitsina, G. V., & Doving, K. B. 2009. Ocean Acidification Impairs Olfactory Discrimination and Homing Ability of a Marine Fish. *Proceedings of the National Academy of Sciences of the United States of America* 106(6), 1848–52. Retrieved March 25, 2021, from <https://pubmed.ncbi.nlm.nih.gov/19188596/>.
- Merkel, F.R. and K.L. Johansen. 2011. Light-induced bird strikes on vessels in Southwest Greenland. *Marine Pollution Bulletin*, 62(11), 2330-2336.
- Misund, O. A. 1997. Underwater acoustics in marine fisheries and fisheries research. *Reviews in Fish Biology and Fisheries*, 7, 1–34
- Narazaki, T., K. Sato, K. J. Abernathy, G. J. Marshall, and N. Miyazaki. 2013. Loggerhead turtles (*Caretta caretta*) use vision to forage on gelatinous prey in mid-water. *PLoS ONE*, 8(6), e66043. DOI:10.1371/journal.pone.0066043.
- NAVFAC. 2016a. Final Environmental Assessment for Construction and Operation of Solar Photovoltaic Systems at Multiple Installations in California. January.
- NAVFAC. 2017. Climate Change Installation Adaptation and Resilience Planning Handbook. January.
- NAVFAC. 2020. P-025 MQ-25 Squadron Hangar Basis of Design.
- NAVFAC SW. 2011. Integrated Pest Management Plan, Naval Base Ventura County, California. November 2011.
- NAVFAC SW. 2019. Final Record of Decision - Installation Restoration Program Sites 5, 6, 8, 10, 15, 16, 21, and 23.
- NAVFAC SW. 2020. Final Hazardous Waste Management Plan, Naval Base Ventura County, Ventura, California. November 2020.
- NAVFAC SW. 2022. Final Basewide Preliminary Assessment/Site Inspection Report for Per- and Polyfluoroalkyl Substances, Naval Base Ventura County Port Hueneme, California. March 2022.
- NAVFAC SW. 2023. Whole Building Design Guide. Available online at: <https://www.wbdg.org/ffc/navy-navfac>.
- Naval Sea Systems Command. 2021. Navy Cuts Ribbon on Unmanned Vehicle Testing Facilities at Port Hueneme. December 14.
- NBVC. No date. FY13 CHIEF OF NAVAL OPERATIONS ENVIRONMENTAL AWARD, Environmental Quality – Individual/Team.
- NBVC Point Mugu. 2015, December. Naval Base Ventura County Point Mugu Air Installations Compatible Use Zones Study.

- NBVC Port Hueneme. 2019. Integrated Natural Resources Management Plan. Navy Region Southwest, Naval Base Ventura County, Port Hueneme, Environmental Division. January 2019.
- National Oceanic and Atmospheric Administration. 2022. Global and Regional Sea Level Rise Scenarios for the United States. February.
- Neilson, J.L., Gabriele, C.M., Jensen, A.S. Jackson, K., and Straley, J.M. 2012. Summary of reported whale-vessel collisions in Alaskan waters. *J. Mar. Biol.* 2012:106282. Doi:10.1155/2012/106282.
- NOAA. 2017. NOAA Nautical Chart 18724 Port Hueneme and Approach. 3rd Edition, June 2013. Cleared through LNM: 23 May 2017; NM: 27 May 2017.
- NOAA. 2023. What lives in a kelp forest? Accessed June 21 from <https://oceanservice.noaa.gov/>
- NOAA Fisheries. 2022. Vessel Strikes. <https://www.fisheries.noaa.gov/national/vessel-strikes>. Accessed December 19.
- NOAA Fisheries. 2023a. ESA Threatened & Endangered Species Directory. [Species Directory - ESA Threatened & Endangered | NOAA Fisheries](#). Accessed June 21.
- NOAA Fisheries. 2023b. Southern California Aquaculture Opportunity Area. Available at: <https://www.fisheries.noaa.gov/action/southern-california-aquaculture-opportunity-area>. Accessed July 7, 2023.
- Notteboom, T. and P. Carriou. 2009. Fuel surcharge practices of container shipping lines: Is it about cost recovery or revenue?." Proceeding of the 2009 International Association of Maritime Economists (IAME) Conference, June, Copenhagen, Denmark.
- Nowacek, D.P., M.P. Johnson, and P.L. Tyack. 2004. North Atlantic right whale (*Eubalaena glacialis*) ignore ships but respond to alerting stimuli. The Royal Society. Woods Hole Oceanographic Institution, Woods Hole, MA 02543, USA. May.
- Pacific Fisheries Management Council (PFMC). 2022. Pacific Coast Groundfish Fishery Management Plan for the California, Oregon, and Washington Groundfish Fishery. August.
- PFMC. 2023a. Coastal Pelagic Species Fishery Management Plan as amended through Amendment 20. June.
- PFMC. 2023b. Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species as amended through Amendment 7. March.
- Peel, D., Smith, J. N., and Childerhouse, S. 2018. Vessel Strike of Whales in Australia: the Challenges of Analysis of Historical Incident Data. *Front. Mar. Sci.* 5:69 doi: 10.3389/fmars.2018.00069.
- Petersen, C.E., R.E. Lovich, and S. Stallings. 2018. Amphibians and Reptiles of United States Department of Defense Installations. *Herpetological Conservation and Biology* 13(3): 652-661.
- Popper, A. N., A. D. Hawkins, R. R. Fay, D. A. Mann, S. M. Bartol, T. J. Carlson, S. Coombs, W. T. Ellison, R. L. Gentry, M. B. Halvorsen, S. Lokkeborg, P. H. Rogers, B. L. Southall, D. G. Zeddies, and W. N. Tavolga. 2014. *ASA S3/SC1.4 TR-2014 Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report prepared by ANSI-Accredited Standards Committee S3/SC1 and registered with ANSI*. New York, NY and London, United Kingdom: Acoustical Society of America Press and Springer Briefs in Oceanography.

- Port Hueneme Water Agency. 2016. Final Port Hueneme Water Agency 2015 Urban Water Management Plan. August.
- Putman, N. F., P. Verley, C. S. Endres, and K. J. Lohmann. 2015. Magnetic navigation behavior and the oceanic ecology of young loggerhead sea turtles. *The Journal of Experimental Biology*, 218(7), 1044–1050.
- Richter, C., S. M. Dawson, and E. Slooten. 2003. Sperm whale watching off Kaikoura, New Zealand: Effects of current activities on surfacing and vocalisation patterns. *Science for Conservation*, 219, 78.
- Rockwood, R. C., J. Calambokidis, and J. Jahncke. 2018. Correction: High mortality of blue, humpback and fin whales from modeling of vessel collisions on the U.S. West Coast suggests population impacts and insufficient protection. *PLoS ONE*, 13(7): e0201080.
- Schoeman, R. P., Patterson-Abrolat, C., and Plon, S. 2020. A Global Review of Vessel Collisions with Marine Animals. *Front. Mar. Sci.* 7:292. Doi: 10.3389/fmars.2020.00292.
- Shannon, G. M., McKenna, M.F., Angeloni, L.M., Crooks, K.R., Fristrup, K.M., Brown, E., Warner, K.A., Nelson, M.D., White, C., Brigs, J., McFarland, S., and Wittemyer, G. 2016. A synthesis of two decades of research documenting the effects of noise on wildlife. *Biological Reviews*, 91(4), pp.982-1005.
- Smale, D. 2020. Impacts of ocean warming on kelp forest ecosystems. *New Phytologist*. 225: 1447-1454. Doi: 10.1111/nph.16107.
- State Water Resources Control Board. 2020. 2018 Integrated Report for Clean Water Act Sections 305 (b) and 303 (d). Adopted October 20, 2020.
- Stewart, J. G., and B. Myers. 1980. Assemblages of Algae and Invertebrates in Southern California Phyllospadix-Dominated Intertidal Habitats. *Aquatic Botany*, 9, 73–94.
- The Port of Hueneme. 2021. News Release: History in the Making! Port of Hueneme Celebrates Completion of Deepening Project with Ribbon-Cutting Ceremony. June 28.
- The Port of Hueneme. 2023a. Initial Study/Final Mitigated Negative Declaration. Former Navy Property Restoration Project. SCH #2023030737. May.
- The Port of Hueneme. 2023b. 10-Year Strategic Plan. Available at: <https://www.portofhueneme.org/10-year-strategic-plan/>. Accessed July 3, 2023.
- United Water Conservation District. 2023. Extraction Barrier Brackish Water Treatment. Available at: <https://www.unitedwater.org/coastal-brackish-water-treatment-project/>. Accessed July 3, 2023.
- USACE. 1987. Wetlands Research Program Technical Report Y-87-1 (online edition), Corps of Engineers Wetlands Delineation Manual. January 1987.
- USACE. 2007. Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States. December 2, 2008.
- USACE. 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). September 2008.
- U.S. Census Bureau. 2023. QuickFacts. Port Hueneme City, California. Population Estimates, July 1, 2022 (V2022). Available online at: <https://www.census.gov/quickfacts/fact/table/porthuenemecitycalifornia/PST045222>.

- U.S. Department of Defense. 2012. Sustaining U.S. Global Leadership: Priorities for 21st Century Defense. January 2012.
- U.S. Department of Defense. 2017. Department of Defense Instruction 2000.12, DoD Antiterrorism (AT) Program.
- U.S. Department of Defense. 2019. Department of Defense Indo-Pacific Strategy Report. June 2019.
- U.S. Department of Defense. 2022. Unified Facilities Criteria (UFC) 3-201-01.
- U.S. Department of the Navy. 2000. Finding of No Significant Impact for the Virtual Test Capability at Port Hueneme Division Naval Surface Warfare Center, Surface Warfare Engineering Facility, Port Hueneme, California. June 22.
- U.S. Department of the Navy. 2010. Energy Program for Security and Independence. December.
- U.S. Department of the Navy. 2013b. Final Environmental Assessment for the Home Basing of the MQ-4C Triton Unmanned Aircraft System at Naval Base Ventura County Point Mugu, California. April.
- U.S. Department of the Navy. 2014a. Point Mugu Sea Range Expansion of Unmanned Systems Operations Environmental Assessment/Overseas Environmental Assessment. October.
- U.S. Department of the Navy. 2014b. Point Mugu Sea Range Countermeasures Testing and Training Environmental Assessment. June.
- U.S. Department of the Navy. 2016a. Memorandum for Commander Naval Installations Command, Deputy Commandant of the Marine Corps (Installations and Logistics). Perfluorinated Compounds, Perfluoroalkyl Substances (PFC/PFAS) - Identification of Potential Areas of Concern (AOCs). June 20.
- U.S. Department of the Navy. 2016b. Memorandum for Deputy Chief of Naval Operations (Fleet Readiness and Logistics), Deputy Commandant of the Marine Corps (Installations and Logistics), Deputy Commandant of the Marine Corps (Aviation). Aqueous Film-Forming Foam (AFFF) control, removal, and disposal. June 16.
- U.S. Department of the Navy. 2018. Hawai'i-Southern California Training and Testing Environmental Impact Statement Overseas Environmental Impact Statement. December 18.
- U.S. Department of the Navy. 2020. Taxiway Access Apron Ramp for MQ-25A. Special Project Number NF20-1672. Naval Base Ventura County Point Mugu.
- U.S. Department of the Navy. 2022a. Point Mugu Sea Range Final EIS/OEIS. January. Available at: <https://pmsr-eis.com>.
- U.S. Department of the Navy. 2022b. Climate Action 2030.
- U.S. Department of the Navy. 2022c. Request for Regulations and Letters of Authorization for the Incidental Taking of Marine Mammals Resulting from U.S. Navy Training and Testing Activities in the Hawai'i-Southern California Training and Testing Study Area. March 29.
- U.S. Department of the Navy. 2023. GIS Geodatabase. NBVC_43.gdb. Accessed on April 27, 2023.
- U.S. Department of the Navy. 2024. Hawaii-California Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement. Available at: <https://www.nepa.navy.mil/hctteis/>. Accessed on March 1, 2024.

- USEPA and USACE. 2020. The Navigable Waters Protection Rule: Definition of "Waters of the United States." April.
- USEPA. 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with and Adequate Margin of Safety. EPA550/9-74-004. Washington, DC.
- USEPA. 2016. Promising Practices for EJ Methodologies in NEPA Reviews. Available online at: https://www.epa.gov/sites/default/files/2016-08/documents/nepa_promising_practices_document_2016.pdf.
- USEPA. 2021. 2017 National Emissions Inventory (January 2021 version).
- USEPA. 2022a. National Pollutant Discharge Elimination System (NPDES), Construction General Permit for Stormwater Discharges from Construction Activities.
- USEPA. 2023a. Nonattainment Areas for Criteria Pollutants (Green Book). Retrieved from <https://www.epa.gov/green-book>.
- USEPA. 2023b. PFOA, PFOS and Other PFAS Explained. Retrieved from <https://www.epa.gov/pfas/pfas-strategic-roadmap-epas-commitments-action-2021-2024>.
- USEPA. 2023c. Understanding the Science of Ocean and Coastal Acidification. [Understanding the Science of Ocean and Coastal Acidification | US EPA](#). Accessed December 19.
- United Water Conservation District. 2023. About Us. Available at: <https://www.unitedwater.org/about-us/#history>. Accessed on June 6, 2023.
- USFWS. 2023. Information for Planning and Consulting. Retrieved from: <https://ipac.ecosphere.fws.gov/location/E55EZ7QD2FFUFETMTK4ACZCBZU/resources>.
- USFWS. 2023. National Wetlands Inventory. June 6, 2023.
- Van der Hoop, et al. 2013. Assessment of Management to Mitigate Anthropogenic Effects on Large Whales. Conservation Biology. February 2013.
- Van der Hoop, et al. 2014. Vessel Strikes to Large Whales before and after the 2008 Ship Strike Rule. Conservation Letters, 8(1),24-32.
- VCAPCD. 2023. NBVC Port Hueneme Permitted Source Emissions, per 40 CFR Part 70 Title V Permit, Number 01006, issued by VCAPCD. Retrieved from: http://www.vcapcd.org/title_v.htm.
- Vanderlaan, A.S.M., and Taggart, C.T. 2007. Vessel collisions with whales: the probability of lethal injury based on vessel speed. Mar. Mamm. Sci. 23,144-156/ doi: 10.1111/j.1748-7692.2006.00098.x.
- Veelenturf, C.A., Sinclair, E.M., Paladino, F.V., Honarvar, S. 2020. Predicting the impacts of sea level rise in sea turtle nesting habitat on Bioko Island, Equatorial Guinea. PLoS ONE 15(7): e0222251. <https://doi.org/10.1371/journal.pone.0222251>.
- Ventura County Transportation Commission. 2015. Naval Base Ventura County Joint Land Use Plan. Prepared by Matrix Design Group.
- Ventura County. 2020. Ventura County 2040 General Plan, Circulation, Transportation, and Mobility Element. September 2020.
- Ventura County Star. 2022. Port of Hueneme gets OK to build controversial south Oxnard parking lot. December 8. Available online at: <https://www.vcstar.com/story/news/local/communities/port->

[hueneme/2022/12/08/temporary-parking-lot-south-oxnard-california-port-hueneme-project/69712525007/](https://www.dfg.ca.gov/mlpa/response/kelp.pdf).

- Watkins, W. A. 1981. Reaction of three species of whales *Balaenoptera physalus*, *Megaptera novaeangliae*, and *Balaenoptera edeni* to implanted radio tags. *Deep-Sea Research*, 28A(6), 589–599.
- Welch, H., and coauthors. 2019. Environmental indicators to reduce loggerhead turtle bycatch offshore of Southern California. *Ecological Indicators* 98:657-664.
- Williams, R., D. E. Bain, J. K. B. Ford, and A. W. Trites. 2002. Behavioural responses of male killer whales to a 'leapfrogging' vessel. *Journal of Cetacean Research and Management*, 4(3), 305–310.
- Wilson, C. 2002. Giant Kelp (*Macrocystis pyrifera*). <http://www.dfg.ca.gov/mlpa/response/kelp.pdf>.
- Wyllie-Echeverria, S., and J. D. Ackerman. 2003. The seagrasses of the Pacific coast of North America. In E. P. Green & F. T. Short (Eds.), *World Atlas of Seagrasses* (pp. 199–206). Berkeley, CA: University of California Press.

This page intentionally left blank.