Public Draft

ENVIRONMENTAL ASSESSMENT/ OVERSEAS ENVIRONMENTAL ASSESSMENT

Fiber Optic Communications Undersea System (FOCUS) Replacement NAVAIR Sea Range, Point Mugu, California

September 2016

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Acronyms and Abbreviations

ACHP	Advisory Council on Historic Preservation
ADI	Area of Direct Impact
AFB	Air Force Base
AICUZ	Air Installation Compatible Use Zone
APE	area of potential effect
ARPA	Archaeological Resources Protection Act
ASBS	Area of Special Biological Significance
AVR	aviation rescue vessel
BMP	best management practice
BP	before the present time
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standard
CARB	California Air Resources Board
CCA	Cowcod Conservation Area
CCC	California Coastal Commission
CCD	Coastal Consistency Determination
CCRWQCB	Central Coast Regional Water Quality Control Board
CDFG	California Department of Fish & Game
CDFW	California Department of Fish & Wildlife
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
C.F.R.	Code of Federal Regulations
CIB	Channel Island Barbed
CINMS	Channel Islands National Marine Sanctuary
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CO_2	carbon dioxide
CO_{2e}	carbon dioxide equivalent
CPS	coastal pelagic species
CPUC	California Public Utilities Commission
CRFS	California Recreational Fisheries Survey
CY	calendar year
CZMA	Coastal Zone Management Act
DoD	Department of Defense
DPR	California Department of Parks and Recreation
DS	Digital Signal Level
DWDM	Dense Wave Division Multiplexing
EA	environmental assessment
EFH	Essential Fish Habitat
EIS	environmental impact statement
EO	Executive Order
EPCRA	Emergency Planning and Community Right to Know Act
ESA	Endangered Species Act
FOCUS	Fiber Optic Communications Underwater System
FONSH	Finding of No Significant Harm
FONSI	Finding of No Significant Impact
GHG	greenhouse gas
H_2S	hydrogen sulfide
HAPC	habitat of particular concern
HARP	Historic and Archaeological Resources Management Plan
HDD	horizontal directional drilling
HF	high frequency
INRMP	Integrated Natural Resources Management Plan
LCU	landing craft utility
MBTA	Migratory Bird Treaty Act
MLPA	Marine Life Protection Act
MMPA	Marine Mammal Protection Act
MPA	Marine Protected Area
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
msl	mean sea level
NAAQS	National Ambient Air Quality Standard
NAVAIR	Naval Air Systems Command
NAWCWD	Naval Air Warfare Center Weapons Division
NBVC	Naval Base Ventura County
NEPA	National Environmental Policy Act
NHPA	National Historical Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NO_X	oxides of nitrogen
NPS	U.S. National Park Service
NRDC	National Resources Defense Council
NRHP	National Register of Historic Places
NRSW	Navy Region Southwest
O_3	ozone
OC	Optical Carrier
OEA	overseas environmental assessment
OEIS	overseas environmental impact statement
OEM	original equipment manufacturer
OPNAVINST	Chief of Naval Operations Instruction
Pb	lead
PLGR	pre-lay grapnel run
$PM_{2.5}$	particulate matter up to 2.5 micrometers in diameter
PM_{10}	particulate matter up to 10 micrometers in diameter
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RDAT&E	research, development, acquisition, test, and evaluation
RO	reverse osmosis
ROV	remotely operated vehicle
SCB	Southern California Bight
SCCAB	South Central Coast Air Basin
SCrI	Santa Cruz Island
SEL	Sound Exposure Level
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SLA	Submerged Lands Act
splice	splice joint
SMCA	State Marine Conservation Area
SME	subject matter expert
SMR	State Marine Reserve
SNI	San Nicolas Island
SO_2	sulfur dioxide
SO_X	oxides of sulfur
SPL	sound pressure level
SSI	sea-to-shore interface
TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy
TSD	treatment, storage, disposal
TSPI	Time-Space Position Information
UHF	ultrahigh frequency
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USEPA	U.S. Environmental Protection Agency
VCAPCD	Ventura County Air Pollution Control District
VHF	very high frequency

Abbreviations for Units of Measurement

°C	degrees Celsius
°F	degrees Fahrenheit
µg/m^3	micrograms per cubic meter
µPa	microPascals
ac	acre
cm	centimeter
cm^2	square centimeters
cm^3	cubic centimeters
dB	decibel
dBA	A-weighted decibel
ft	feet
ft^2	square feet
ft^3	cubic feet
gal	gallon
GB/s	gigabyte per second
gpd	gallons per day
ha	hectare
Hz	hertz
in	inch
in^2	square inches
in^3	cubic inches
kHz	kilohertz
km	kilometer
km^2	square kilometer
km/hr	kilometer per hour
kV	kilovolt
l	liter
Lpd	million liters per day
m	meter
m^2	square meters
m^3	cubic meters
MB/s	megabyte per second
mi	mile
mi^2	square mile
mph	miles per hour
nm	nanometer
NM	nautical mile
ppm	parts per million
ppt	parts per thousand
tpy	tons per year
yd^3	cubic yards

ENVIRONMENTAL ASSESSMENT/OVERSEAS ENVIRONMENTAL ASSESSMENT

Lead Agency for the EA/OEA: U.S. Department of the Navy

Title of Proposed Action: Fiber Optic Communications Undersea System Replacement, NAVAIR Sea Range, Point Mugu, California

Designation: **Environmental Assessment/Overseas Environmental Assessment**

ABSTRACT

The Naval Air Systems Command (NAVAIR) Sea Range is located in Ventura and Santa Barbara counties along the Pacific Coast of Southern California and includes onshore locations at Naval Base Ventura County (NBVC) Point Mugu, NBVC San Nicolas Island, and Santa Cruz Island, as well as 36,000 square miles (mi^2, 93,000 square kilometers [km^2]) of Pacific Ocean water surface. This Environmental Assessment/Overseas Environmental Assessment has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321, as amended); regulations implemented by the Council on Environmental Quality (Title 40 C.F.R. Parts 1500-1508); Executive Order (EO) 12114, *Environmental Effects Abroad of Major Federal Actions*; Navy Procedures for Implementing NEPA (32 C.F.R. Part 775); and Chief of Naval Operations Instruction 5090.1D, *Environmental Readiness Program*. The NEPA process ensures that environmental impacts of proposed federal actions are considered in the decision-making process. Potential environmental impacts have been analyzed for all relevant or otherwise required issue areas, with separate sections on air quality; biological resources; cultural resources; hazardous waste and materials management; infrastructure and utilities; land and water use; marine sediments and water quality; noise; safety; topography, geology, and soils; and visual resources. The proposed construction activities have the potential to temporarily disturb or cause behavioral reactions from local wildlife, including threatened and endangered species at Point Mugu, San Nicolas Island, and Santa Cruz Island. However, with implementation of proposed conservation measures, there would be no significant impacts to wildlife species at Point Mugu, San Nicolas Island, or Santa Cruz Island and no significant harm to the U.S. Economic Exclusive Zone as defined by EO 12114. No significant environmental impacts would occur to other resources from any of the action alternatives or from the No-Action Alternative.

Prepared By: Naval Air Warfare Center Weapons Division

Point of Contact: John Ugoretz
Range Sustainability Office, Building 53A
575 “I” Avenue, Suite 1
Point Mugu, CA 93042-5049
Email: john.ugoretz@navy.mil
Tel: (805) 989-4852

September 2016

EXECUTIVE SUMMARY

The Naval Air Systems Command (NAVAIR) Sea Range (Sea Range) is located in Ventura and Santa Barbara counties along the Pacific Coast of Southern California. The United States (U.S.) Navy proposes to replace the existing Fiber Optic Communications Undersea System-I (FOCUS-I) between Naval Base Ventura County (NBVC) Point Mugu and NBVC San Nicolas Island (SNI) and the microwave communications system link between NBVC Point Mugu and Santa Cruz Island (SCrI) with a single new system. This new FOCUS, FOCUS-II, will connect NBVC Point Mugu, NBVC SNI, and SCrI via new undersea fiber optic cables. Additionally, a new fresh water supply line will be installed to support operations on SCrI.

This environmental assessment/overseas environmental assessment (EA/OEA) addresses the potential environmental impacts of the cable installation activities and has been prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. § 4321, as amended); the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (Title 40 C.F.R. §§ 1500-1508, 1 July 1986); Executive Order (EO) 12114, *Environmental Effects Abroad of Major Federal Actions* ; Department of the Navy Procedures for Implementing NEPA (32 C.F.R. § 775); and Chief of Naval Operations Instruction (OPNAVINST) 5090.1D, *Environmental Readiness Program*. The NEPA process ensures that environmental impacts of proposed federal actions are considered in the decision-making process.

PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the proposed action is to provide continued reliable operation of the real-time intra-range and inter-range communications capability for the Sea Range with an effective increase in bandwidth required to satisfy operational requirements. This real-time capability includes all data communications between NBVC Point Mugu, NBVC SNI, and SCrI. In order to provide support on SCrI, a reliable long-term delivery system of fresh water to the Navy Site is also necessary.

The communications capability is used to support NAVAIR customers (e.g., U.S. military and allied forces with weapon systems testing needs) who require real-time support of research, development, acquisition, test, and evaluation (RDAT&E) and training data at the Sea Range. This support also requires staff on SCrI, who requires a supply of fresh water for basic needs.

The need for the proposed action is three-fold; 1) reliability of FOCUS-I is degrading; 2) there is a need for increased bandwidth in the SCrI microwave system; and 3) the existing water supply to the SCrI Navy site is aging and could fail.

ALTERNATIVES

The consideration of viable action alternatives focused on means to achieve the purpose and need. The action alternatives include the preferred alternative (Alternative 1) and three action alternatives. These alternatives include:

- <u>Alternative 1 – Preferred Alternative</u> This alternative includes the use of two landing sites at NBVC Point Mugu: one near Building 811 and one at Charlie Pad. Landing sites for NBVC SNI and SCrI would be located near the Coast Guard Jetty and in the Prisoners Harbor area,

respectively. Each landing site would be used as a horizontal directional drilling (HDD) pad and equipment staging area. FOCUS-II will be installed as a four-node ring connecting NBVC Point Mugu, NBVC SNI, and SCrI. This ring will be composed of two cables connecting Point Mugu to SNI utilizing mainland landing sites from the Point Mugu Charlie Pad site to the NBVC SNI Coast Guard Jetty site. The NBVC Point Mugu to SCrI cable will utilize mainland landing sites with the Point Mugu Building 811 site connecting to the SCrI Prisoners Harbor landing site. The NBVC SNI to SCrI cable will utilize the SNI Coast Guard Jetty and SCrI Prisoners Harbor landing sites. A new water line would be included with the onshore portion of the FOCUS-II cable at SCrI. On SCrI the onshore cable and water line alignment would be installed in a combination of trenches and an above-ground channel system. The above-ground channel system would follow the base of the hill to the east of the existing well site access road. This alternative would be implemented to the extent that funds are available and only if required approval for work on SCrI is obtained from the National Park Service and Nature Conservancy. If any portion of the implementation is delayed beyond five years after a Finding of No Significant Impact (FONSI)/ Finding of No Significant Harm (FONSH) is completed for this EA/OEA, the projected data would be reviewed and additional public notice issued.

- Alternative 2 – This alternative is the same as Alternative 1, but would use a route along the edge of the existing well site access road for the above-ground channel system on SCrI.
- Alternative 3 – This alternative includes the use of two landing sites at NBVC Point Mugu: one near Building 811 and one at Charlie Pad. Landing sites for NBVC SNI and SCrI would be located near the Coast Guard Jetty and in the Prisoners Harbor area, respectively. Each landing site would be used as a horizontal directional drilling (HDD) pad and equipment staging area. FOCUS-II will be installed as a four-node ring connecting NBVC Point Mugu, NBVC SNI, and SCrI. This ring will be composed of two cables connecting Point Mugu to SNI utilizing mainland landing sites from the Point Mugu Charlie Pad site to the NBVC SNI Coast Guard Jetty site. The NBVC Point Mugu to SCrI cable will utilize mainland landing sites with the Point Mugu Building 811 site connecting to the SCrI Prisoners Harbor landing site. The NBVC SNI to SCrI cable will utilize the SNI Coast Guard Jetty and SCrI Prisoners Harbor landing sites. A new water line would be included with the onshore portion of the FOCUS-II cable at SCrI. On SCrI the onshore cable and water line alignment would be installed entirely in a trenching corridor, with no elevated channel system.
- Alternative 4 – This alternative includes would be two cables installed connecting NBVC Point Mugu and NBVC SNI. Charlie Pad would be the NBVC Point Mugu landing site, and the Coast Guard Jetty site would serve as the NBVC SNI landing site. No FOCUS-II cables would be installed connecting SCrI to NBVC Point Mugu or NBVC SNI. Since no fiber optic cable would be installed at SCrI, no water line would be added.

In addition to the four action alternatives, Alternative 5 – The No-Action Alternative was analyzed as part of this EA/OEA.

Resources analyzed in this EA/OEA include: air quality; biological resources; cultural resources; hazardous materials and waste management; infrastructure and utilities; land and water use; marine sediments and water quality; noise; safety; topography, geology, and soils; and visual resources. The environmental consequences associated with implementation of the action alternatives and No-Action Alternative are presented in Table ES-1. As shown in the table, there are no anticipated significant

impacts associated with implementation of Alternative 1, Alternative 4, or the No-Action Alternative. Implementation of Alternative 2 could result in significant impacts to visual resources on SCrI. Implementation of Alternative 3 could result in adverse effects to cultural resources on SCrI. The No-Action Alternative and Alternative 4 would not meet the purpose and need for the proposed action.

For the purposes of this EA/OEA, the land and water use resource area includes the recreational, commercial, and military use of the land and water space of the Sea Range. The associated sections also consider impacts to the coastal zone, as defined by the Coastal Zone Management Act (16 U.S.C. § 1451 *et seq*.)

This EA/OEA does not fully analyze socioeconomics/environmental justice. The proposed action would temporarily bring new personnel to Ventura and Santa Barbara counties to support the installation of FOCUS-II. The individuals can be accommodated without impacts to socioeconomic indicators such as population, employment, income, housing, or schools. New facilities are not necessary to accommodate participants in the installation or operation of FOCUS-II. Therefore, no impacts on minority or low-income populations or populations of children would be expected. Accordingly, the Navy eliminated further detailed examination of environmental justice and socioeconomics in this EA/OEA.

Table ES-1 Environmental Consequences of Alternatives

Resource Area	Alternative 1 Preferred Alternative	Alternative 2	Alternative 3	Alternative 4	Alternative 5 No-Action Alternative
Air Quality & Greenhouse Gases	o	o	o	o	o
Biological Resources *Terrestrial* *Marine* *Threatened & Endangered Species*	 o o o	 o o o	 o o o	 o o o	 o o o
Cultural Resources	o	o	■	o	o
Hazardous Materials & Waste	o	o	o	o	o
Infrastructure & Utilities	o	o	o	o	o
Land & Water Use	o	o	o	o	o
Marine Sediments & Water Quality	o	o	o	o	o
Noise	o	o	o	o	o
Safety	o	o	o	o	o
Topography, Geology, & Soils	o	o	o	o	o
Visual Resources	o	■	o	o	o

Notes: **o** = No significant impact within U.S. territory, significant harm to the overseas environment, or adverse effect to cultural resources.

■ = potentially significant impact, harm to the environment, or adverse effect to cultural resources

TABLE OF CONTENTS

Acronyms and Abbreviations i
Abbreviations for Units of Measurement ii
Abstract iii
Executive Summary iv
Table of Contents vii

Chapter 1 Purpose and Need 1-1

1.1 Introduction 1-1
1.2 Current Capability 1-1
1.2.1 FOCUS-I 1-1
1.2.2 Santa Cruz Island Microwave System 1-2
1.2.3 Santa Cruz Island Water Supply 1-2
1.3 Purpose and Need For the Proposed Action 1-4
1.4 Decision to Be Made 1-5
1.5 NEPA Documents Incorporated by Reference 1-5
1.6 Scope of Analysis 1-5
1.7 Relevant Laws and Regulations 1-6
1.8 Intergovernmental Coordination and Public Participation 1-6

Chapter 2 Proposed Action and Alternatives 2-1

2.1 Description of the Proposed Action and Alternatives 2-1
2.1.1 Onshore Activities 2-1
2.1.1.1 HDD Activities 2-1
2.1.1.2 Fiber Optic Cable Conduit Installation 2-3
2.1.1.3 Water Line Installation 2-3
2.1.1.4 Onshore Maintenance 2-3
2.1.2 Offshore Activities 2-4
2.1.2.1 Installation Sequence 2-4
2.1.2.2 Underwater Splice Joint and Trunk Cable Installation 2-4
2.1.2.3 Cable Installation on the Seafloor 2-4
2.1.2.4 Post Cable Installation – Sea Floor Stabilization 2-6
2.1.2.5 Offshore Maintenance 2-7
2.1.3 Conservation Measures 2-7
2.1.4 Alternatives 2-9
2.1.4.1 Reasonable Alternative Development Factors 2-9
2.1.4.2 Alternatives Analyzed in this EA/OEA 2-10
2.1.4.3 Alternatives Considered but not Carried Forward 2-40

Chapter 3 Affected Environment and Environmental Consequences 3-1

3.1 Air Quality 3-1
3.1.1 Affected Environment 3-1
3.1.1.1 Definition of Resource 3-1
3.1.1.2 Regulatory Setting 3-2
3.1.1.3 Existing Conditions 3-5
3.1.2 Environmental Consequences 3-7
3.1.2.1 Assessment Criteria 3-7
3.1.2.2 Alternative 1 – Preferred Alternative 3-8
3.1.2.3 Alternative 2 3-10
3.1.2.4 Alternative 3 3-11
3.1.2.5 Alternative 4 3-14
3.1.2.6 Alternative 5 – The No-Action Alternative 3-15
3.2 Biological Resources 3-16
3.2.1 Affected Environment 3-16
3.2.1.1 Definition of Resource 3-16
3.2.1.2 Terrestrial Biological Resources 3-16
3.2.1.3 Marine Biological Resources 3-37
3.2.1.4 Marine Mammals and Special Status Species 3-56
3.2.2 Environmental Consequences 3-61
3.2.2.1 Assessment Criteria 3-61
3.2.2.2 Alternative 1 – Preferred Alternative 3-61
3.2.2.3 Alternative 2 3-71
3.2.2.4 Alternative 3 3-71
3.2.2.5 Alternative 4 3-71
3.2.2.6 Alternative 5 – The No-Action Alternative 3-71
3.3 Cultural Resources 3-73
3.3.1 Affected Environment 3-73
3.3.1.1 Definition of Resource 3-73
3.3.1.2 Regulatory Setting 3-73
3.3.1.3 Existing Conditions 3-74
3.3.2 Environmental Consequences 3-83
3.3.2.1 Assesment Criteria 3-83
3.3.2.2 Alternative 1 – Preferred Alternative 3-84
3.3.2.3 Alternative 2 3-86
3.3.2.4 Alternative 3 3-87

3.3.2.5 Alternative 4 3-88
3.3.2.6 Alternative 5 – The No-Action Alternative 3-89
3.4 Hazardous Materials and Waste 3-90
3.4.1 Affected Environment 3-90
3.4.1.1 Definition of Resource 3-90
3.4.1.2 Regulatory Setting 3-91
3.4.1.3 Existing Conditions 3-91
3.4.2 Environmental Consequences 3-92
3.4.2.1 Assessment Criteria 3-92
3.4.2.2 Alternative 1 – Preferred Alternative 3-93
3.4.2.3 Alternative 2 3-94
3.4.2.4 Alternative 3 3-94
3.4.2.5 Alternative 4 3-95
3.4.2.6 Alternative 5 – The No-Action Alternative 3-96
3.5 Infrastructure and Utilities 3-97
3.5.1 Affected Environment 3-97
3.5.1.1 Definition of Resource 3-97
3.5.1.2 Existing Conditions 3-97
3.5.2 Environmental Consequences 3-101
3.5.2.1 Assessment Criteria 3-101
3.5.2.2 Alternative 1 – Preferred Alternative 3-101
3.5.2.3 Alternative 2 3-103
3.5.2.4 Alternative 3 3-104
3.5.2.5 Alternative 4 3-104
3.5.2.6 Alternative 5 – The No-Action Alternative 3-105
3.6 Land and Water Use 3-106
3.6.1 Affected Environment 3-106
3.6.1.1 Definition of Resource 3-106
3.6.1.2 Existing Conditions 3-106
3.6.2 Environmental Consequences 3-115
3.6.2.1 Assessment Criteria 3-115
3.6.2.2 Alternative 1 – Preferred Alternative 3-115
3.6.2.3 Alternative 2 3-117
3.6.2.4 Alternative 3 3-117
3.6.2.5 Alternative 4 3-118

3.6.2.6 Alternative 5 – The No-Action Alternative 3-118
3.7 Marine Sediments and Water Quality 3-119
3.7.1 Affected Environment 3-119
3.7.1.1 Definition of Resource 3-119
3.7.1.2 Regulatory Setting 3-119
3.7.1.3 Existing Conditions 3-119
3.7.2 Environmental Consequences 3-128
3.7.2.1 Assessment Criteria 3-128
3.7.2.2 Alternative 1 – Preferred Alternative 3-128
3.7.2.3 Alternative 2 3-130
3.7.2.4 Alternative 3 3-130
3.7.2.5 Alternative 4 3-130
3.7.2.6 Alternative 5 – The No-Action Alternative 3-130
3.8 Noise 3-132
3.8.1 Affected Environment 3-132
3.8.1.1 Definition of Resource 3-132
3.8.1.2 Regulatory Setting 3-132
3.8.1.3 Existing Conditions 3-133
3.8.2 Environmental Consequences 3-134
3.8.2.1 Assessment Criteria 3-134
3.8.2.2 Alternative 1 – Preferred Alternative 3-134
3.8.2.3 Alternative 2 3-137
3.8.2.4 Alternative 3 3-137
3.8.2.5 Alternative 4 3-137
3.8.2.6 Alternative 5 – The No-Action Alternative 3-137
3.9 Safety 3-138
3.9.1 Affected Environment 3-138
3.9.1.1 Definition of Resource 3-138
3.9.1.2 Regulatory Setting 3-138
3.9.1.3 Existing Conditions 3-138
3.9.2 Environmental Consequences 3-139
3.9.2.1 Assessment Criteria 3-139
3.9.2.2 Alternative 1 – Preferred Alternative 3-139
3.9.2.3 Alternative 2 3-140
3.9.2.4 Alternative 3 3-140

3.9.2.5 Alternative 4 3-140
3.9.2.6 Alternative 5 – The No-Action Alternative 3-140
3.10 Topography, Geology, and Soils 3-141
3.10.1 Affected Environment 3-141
3.10.1.1 Definition of Resource 3-141
3.10.1.2 Existing Conditions 3-141
3.10.2 Environmental Consequences 3-142
3.10.2.1 Assessment Criteria 3-142
3.10.2.2 Alternative 1 – Preferred Alternative 3-143
3.10.2.3 Alternative 2 3-144
3.10.2.4 Alternative 3 3-145
3.10.2.5 Alternative 4 3-145
3.10.2.6 Alternative 5 – The No-Action Alternative 3-145
3.11 Visual Resources 3-146
3.11.1 Affected Environment 3-146
3.11.1.1 Definition of Resource 3-146
3.11.1.2 Affected Environment 3-147
3.11.2 Environmental Consequences 3-164
3.11.2.1 Assessment Criteria 3-164
3.11.2.2 Alternative 1 – Preferred Alternative 3-165
3.11.2.3 Alternative 2 3-166
3.11.2.4 Alternative 3 3-167
3.11.2.5 Alternative 4 3-167
3.11.2.6 Alternative 5 – The No-Action Alternative 3-168
Chapter 4 Cumulative Impacts 4-1
4.1.1 Air Quality 4-3
4.1.2 Biological Resources 4-4
4.1.3 Cultural Resources 4-4
4.1.4 Hazardous Materials and Waste Management 4-4
4.1.5 Infrastructure and Utilities 4-4
4.1.6 Land and Water Use 4-5
4.1.7 Marine Sediments and Water Quality 4-5
4.1.8 Noise 4-5
4.1.9 Safety 4-6
4.1.10 Topography, Geology, and Soils 4-6
4.1.11 Visual Resources 4-6
Chapter 5 Other Considerations Required by NEPA 5-1

5.1 Consistency with Other Federal, State, and Local Laws, Plans, and Regulations 5-1
5.2 Irreversible and Irretrievable Commitment of Resources 5-1
5.3 Unavoidable Adverse Impacts that Cannot be Avoided or Are Not Amenable to Mitigation...5-1
5.4 Relationship between Short-Term Use of the Environment and Long-Term Productivity 5-3
Chapter 6 References.....6-1
Chapter 7 List of Preparers 7-1
APPENDIX A Air Quality Calculations and Record of Non-Applicability A-1
APPENDIX B Agency communications.....B-1
APPENDIX C Public Comment C-1

List of Figures

Figure **Page**

Figure 1-1. Existing FOCUS-1 Alignment 1-3
Figure 2-1. Representative HDD Rig.....2-2
Figure 2-2. Point Mugu Landing Site Alternatives.....2-13
Figure 2-3. Building 811 Landing Site 2-14
Figure 2-4. Existing Point Mugu Manhole System.....2-15
Figure 2-5. Charlie Pad Landing Site.....2-16
Figure 2-6. Existing Fiber Optice Cable Alignment, San Nicolas Island 2-18
Figure 2-7. Coast Guard Jetty Landing Site.....2-19
Figure 2-8 Existing Concrete Vault SNI (currently buried).....2-20
Figure 2-9. Prisoners Harbor Landing Site 2-22
Figure 2-10. Equipment Staging Near the SCrI Well Site 2-23
Figure 2-11. Alternative 1, Trenching and Elevated Channel Alignments in the Vicinity of Prisoners Harbor 2-25
Figure 2-12. Example of Typical Elevated Channel System 2-26
Figure 2-13 Typical SCrI Trench Section.....2-27
Figure 2-14. Santa Cruz Island Onshore Cable Alignment.....2-28
Figure 2-15. FOCUS II Offshore Cable Alignments, Preferred Alternative 2-31
Figure 2-16. Alternative 2 Trenching and Elevated Channel Alignments in the Vicinity of Prisoners Harbor 2-33
Figure 2-17. Alternative 3 Trenching Alignments in the Vicinity of Prisoners Harbor 2-35
Figure 2-18. FOCUS II Offshore Cable Alignments, Alternative 4 2-38
Figure 3.2-1. Vegetative Communities, Point Mugu 3-19
Figure 3.2-2. Vegetative Communities in the Vicinity of the Coast Guard Jetty Landing Site.....3-20
Figure 3.2-3. Wetlands in the Vicinity of the Prisoners Harbor Landing Site.....3-23
Figure 3.2-4. Federally Listed Species at Point Mugu.....3-31
Figure 3.2-5. Snowy Plover and Brandt's Cormorant Habitat in the Vicinity of the Coast Guard Jetty Landing Site.....3-34
Figure 3.2-6. Eelgrass Beds and Island Bedstraw in the Prisoners Harbor Area.....3-36
Figure 3.2-7. California Department of Fish and Wildlife Commercial Fisheries Catch Blocks 3-42
Figure 3.2-8. Marine Mammal Haul Outs in the Vicinity of the Coast Guard Jetty Landing Site 3-58
Figure 3.2-9. Marine Protected Areas in the Vicinity of the FOCUS II Offshore Cable Alignments 3-69
Figure 3.5-1. Road Network in the Point Mugu Vicinity 3-98
Figure 3.6-1. San Nicolas Island Naval Restricted Areas.....3-109

Figure 3.6-2. Roads, Trails, and Recreation Areas of CINP Santa Cruz Island 3-110
Figure 3.6-3. Offshore Drilling Rigs and Pipelines within the Vicinity of FOCUS-II 3-113
Figure 3.7-1. Surface Water Resources of the Oxnard Plain 3-122
Figure 3.7-2. ASBS in the Vicinity of the FOCUS-II Cable Alignments.....3-127
Figure 3.11-1. Building 811 HDD Site Facing Southeast down Beach Road 3-147
Figure 3.11-2. Building 811 Site Facing Northeast towards Laguna Peak 3-148
Figure 3.11-3. View to the West near the Charlie Pad Site 3-149
Figure 3.11-4. View of Laguna Peak from the Charlie Pad Site.....3-149
Figure 3.11-5. View Southwest from Coast Guard Jetty Site Staging Area 3-150
Figure 3.11-6. View Northeast from Coast Guard Jetty Staging Area 3-151
Figure 3.11-7. NBVC SNI Tank Farm from Coast Guard Staging Area 3-151
Figure 3.11-8. View of the Coast Guard Jetty HDD Site Facing East.....3-152
Figure 3.11-9. Coast Guard Jetty HDD Site Facing Southeast 3-152
Figure 3.11-10. Road Connecting HDD Site to Staging Area Facing South 3-153
Figure 3.11-11. Elephant Seals Northeast of HDD Site.....3-153
Figure 3.11-12. Coreopsis Shrub North of HDD Site 3-154
Figure 3.11-13. Bluff Overlook Northwest of HDD Site.....3-154
Figure 3.11-14. Prisoners Harbor Pier from the HDD Site.....3-155
Figure 3.11-15. Prisoners Harbor HDD Site Facing West.....3-156
Figure 3.11-16. Prisoners Harbor HDD Site Facing Northwest 3-156
Figure 3.11-17. View East of Prisoners Harbor Pier 3-157
Figure 3.11-18. View South of Prisoners Harbor HDD Site.....3-157
Figure 3.11-19. The Well Site.....3-158
Figure 3.11-20. Storage Building and Solar Panel near the Well Site 3-158
Figure 3.11-21. View North along Navy Road.....3-159
Figure 3.11-22. View South along Unnamed Road Connecting to Well Site.....3-159
Figure 3.11-23. View from CV-2 Location 3-160
Figure 3.11-24. View North from Well Site towards Navy Road 3-160
Figure 3.11-25. Southwest View from Navy Road.....3-161
Figure 3.11-26. Typical View from Navy Road 3-161
Figure 3.11-27. Fennel near Navy Road Shoulder.....3-162
Figure 3.11-28. Pacific Ocean Vista from Navy Road 3-162
Figure 3.11-29. Navy Site from Navy Road 3-163
Figure 3.11-30. Building 4 at Navy Site 3-163
Figure 3.11-31. View South from Navy Site 3-164

List of Tables

Table **Page**

Table ES-1 Environmental Consequences of Alternatives vi
Table 2-1 FOCUS-II Landing Site Selection Comparison Matrix 2-39
Table 2.2 Comparison of Installation Activities by Alternative 2-40
Table 3.1-1 California and National Ambient Air Quality Standards 3-3
Table 3.1-2 Point Mugu Sites Emissions (within 3 NM) - Alternative 1 and 2 3-8
Table 3.1-3 San Nicolas Island Emissions (within 3 NM) - Alternative 1 and 2 3-9
Table 3.1-4 Santa Cruz Island Emissions (within 3 NM) - Alternative 1 and 2.....3-9
Table 3.1-5 Alternative 1 and 2 Emissions (3 < x < 12 NM) 3-9
Table 3.1-6 Alternative 1 and 2 Emissions (> 12 NM) 3-9
Table 3.1-7 Point Mugu Sites Emissions (within 3 NM) - Alternative 3 3-12
Table 3.1-8 San Nicolas Island Emissions (within 3 NM) - Alternative 3.....3-12

Table 3.1-9 Santa Cruz Island Emissions (within 3 NM) - Alternative 3 3-12
Table 3.1-10 Alternative 3 Emissions (3 < x < 12 NM)....3-13
Table 3.1-11 Alternative 3 Emissions (> 12 NM)....3-13
Table 3.1-12 Point Mugu Emissions (within 3 NM) – Alternative 4 3-14
Table 3.1-13 San Nicolas Island Emissions (within 3 NM) - Alternative 4....3-14
Table 3.1-14 Alternative 4 Emissions (3 < x < 12 NM)....3-15
Table 3.1-15 Alternative 4 Emissions (> 12 NM)....3-15
Table 3.2-1 Habitat Types at Point Mugu 3-16
Table 3.2-2 Habitat Types on San Nicolas Island 3-17
Table 3.2-3 Summary of Threatened and Endangered Species Known to Occur or Potentially Occurring at Point Mugu, San Nicolas Island, and Santa Cruz Island....3-27
Table 3.2-4 Adult Snowy Plovers Observed on SNI during Winter and Breeding Season Surveys[1], 2005 – 2011....3-33
Table 3.2-5 Total Catch and Value for Fish Landed in CDFW Commercial Catch Blocks within Point Mugu Landing Sites, 2008-2013 3-40
Table 3.2-6 Top 10 Recreational Fish Species (Number of Fish) Landed by Recreational Anglers in Nearshore Waters around Point Mugu and Santa Cruz Island, 2008-2013 3-43
Table 3.2-7 Total Catch and Value for Fish Landed in CDFW Commercial Catch Blocks within vicinity of SNI Landing Sites, 2008-2013 3-45
Table 3.2-8 Top 10 Recreational Fish Species (Number of Fish) Landed by Recreational Anglers in Nearshore Waters Surrounding San Nicolas Island, 2008-2013 3-46
Table 3.2-9 Total Catch and Value for Fish Landed in CDFW Commercial Catch Blocks within vicinity of the SCrI Landing Site, 2008-2013....3-48
Table 3.2-10 EFH Species Potentially Located within the Proposed Landing Sites and Along the Offshore Route....3-52
Table 3.2-11 Total Catch and Value for Fish Landed in CDFW Commercial Catch Blocks along the Offshore Routes, 2008-2013 3-55
Table 3.2-12 Top 10 Recreational Fish Species (Number of Fish) Landed by Recreational Anglers in CRFS South Sampling District Offshore Waters, 2008-2013....3-56
Table 3.2-13 Top 10 Recreational Fish Species (Number of Fish) Landed by Recreational Anglers in CRFS Channel Sampling District Offshore Waters, 2008-2013....3-56
Table 3.2-14 Seasonal Use Patterns of Pinnipeds on SNI....3-57
Table 3.3-1 Previous Cultural Resource Investigation – SCrI ADI 3-80
Table 3.3-2 Documented Archaeological Sites Sectioned by SCrI ADI....3-81
Table 3.8-1 Typical Vibration Levels for Construction Equipment....3-134
Table 3.8-2 Typical Noise Levels of Construction Equipment 3-135
Table 4.1 Reasonably Foreseeable Actions on the Sea Range....4-2
Table 5-1 Summary of Environmental Compliance for the Proposed Action....5-2

CHAPTER 1 PURPOSE AND NEED

1.1 INTRODUCTION

The proposed action would take place at Naval Base Ventura County (NBVC) Point Mugu, NBVC San Nicolas Island (SNI), U.S. National Park Service (NPS) and The Nature Conservancy (TNC) owned Santa Cruz Island (SCrI), and the water space and submerged lands connecting the three sites. SNI is a 22.7-square mile (mi^2) (58.9 square kilometer [km^2]) U.S. Navy-owned island, 57 nautical miles (NM) (106 kilometers [km]) southwest of NBVC Point Mugu.

SCrI is located approximately 20 NM (37 km) west of NBVC Point Mugu. The island has a total area of 96.5 mi^2 (250 km^2). The eastern 26 percent of the island is owned by the NPS, and the western side is TNC. A small inholding, within NPS land, is retained by TNC and leased to the Navy (the Navy Site).

The U.S. Navy proposes to replace the existing Fiber Optic Communications Undersea System-I (FOCUS-I) between NBVC Point Mugu and NBVC SNI and the microwave communications system link between NBVC Point Mugu and SCrI with a single new system. This new system, FOCUS-II, will connect NBVC Point Mugu, NBVC SNI, and SCrI via new undersea fiber optic cables. Additionally, a new water line would be placed on SCrI between Prisoners Harbor and the Navy Site. Figure 1-1 provides a regional overview of the project area and the existing FOCUS-I cable alignment. Chapter 2 of this environmental assessment/overseas environmental assessment (EA/OEA) provides detailed description of the project sites and elements associated with the proposed cable installation.

This EA/OEA addresses the potential environmental impacts of the cable and waterline installation activities and subsequent maintenance and has been prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. § 4321, as amended); the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (Title 40 C.F.R. §§ 1500-1508, 1 July 1986); Executive Order (EO) 12114, *Environmental Effects Abroad of Major Federal Actions*; Department of the Navy Procedures for Implementing NEPA (32 C.F.R. § 775); and Chief of Naval Operations Instruction (OPNAVINST) 5090.1D, *Environmental Readiness Program*. The NEPA process ensures that environmental impacts of proposed federal actions are considered in the decision-making process.

1.2 CURRENT CAPABILITY

1.2.1 FOCUS-I

FOCUS-I is comprised of two 80-mile (mi) (130-kilometer [km]) undersea 12-strand fiber optic cables, labeled as FOCUS A and FOCUS B. These cables were installed in 1993 and 1994 and are spliced to 48-fiber cables between the sea-to-shore interface (SSI) manholes and the Communication Buildings at Point Mugu and SNI. FOCUS-I was repaired near the NBVC SNI shore in 2006, involving the installation of a new landing site and onshore buried cable. These repairs are described in the Final Environmental Assessment FOCUS Cable Repair San Nicolas Island EA (Navy 2003). FOCUS-I carries all data between Point Mugu and SNI including:

- Secure high frequency (HF)/very high frequency (VHF)/ultrahigh frequency (UHF) radio circuits
- Telemetry

- Surveillance
- Remote control
- Video
- Technical networks
- Radar
- Time-Space Position Information (TSPI)
- Telephone

The SNI Terminal System utilizes two terminals that operate at 1553 nanometer (nm) and 1560 nm wavelengths, with a capacity of 24 Digital Signal Level 3 (DS-3) (45 MB/s) and 24 OC-3 (155 MB/s) data links between SNI and Point Mugu.

1.2.2 Santa Cruz Island Microwave System

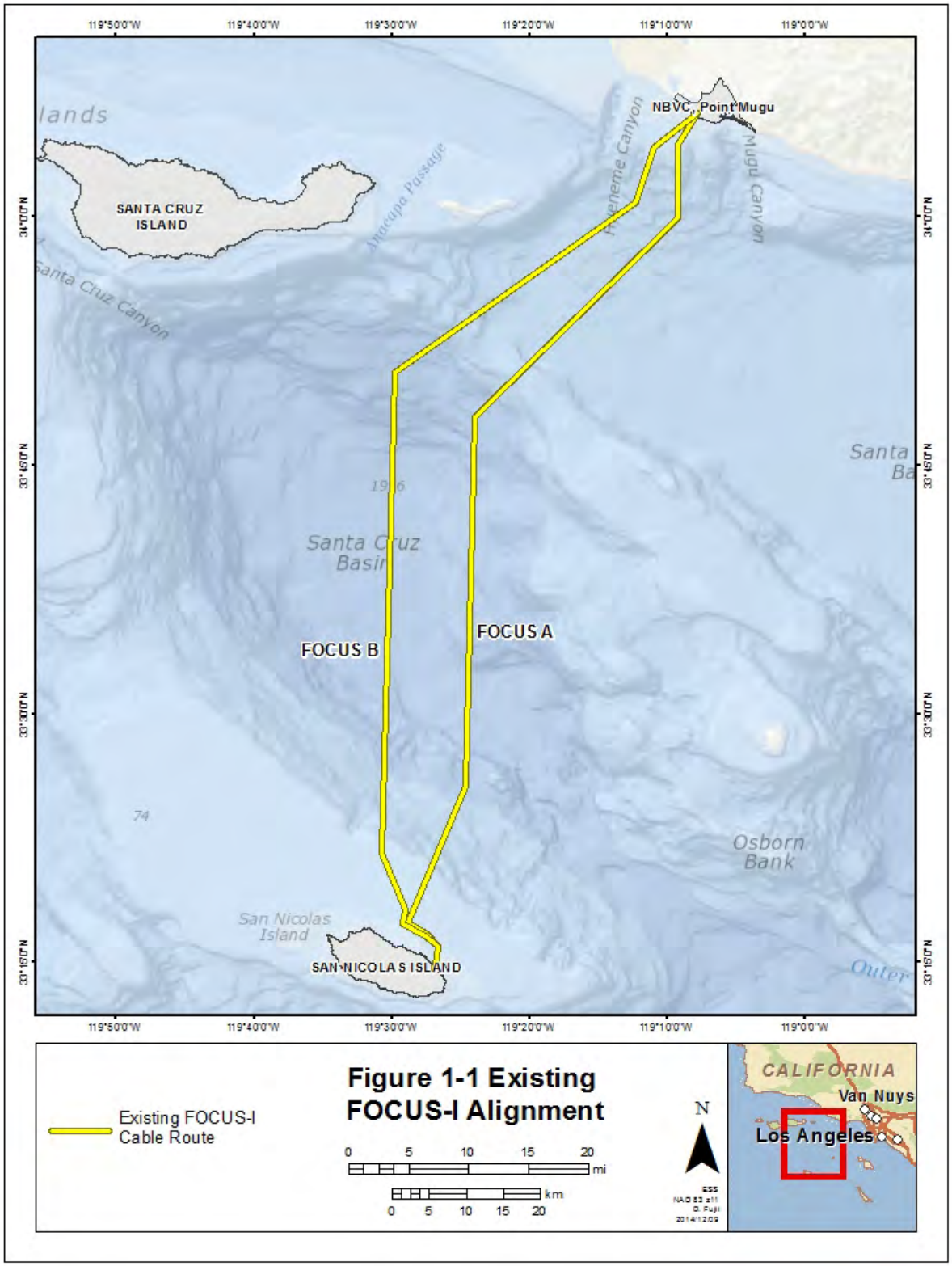
Communications between NBVC Point Mugu and SCrI are conducted via a microwave system. The NBVC Point Mugu and SCrI Navy Site radios are located at the Range Communications Buildings (Building 531 and Building 4, respectively). This system carries all data between NBVC Point Mugu and SCrI including:

- Voice communications
- Telemetry
- Remote control
- Video
- Technical networks
- Surveillance
- Radar
- TSPI
- Telephone

The SCrI Navy Site Terminal System uses two terminals with a capacity of 140 Mb/s for Ethernet and up to 16 T-1 trunks between SCrI and NBVC Point Mugu.

1.2.3 Santa Cruz Island Water Supply

The current water line connecting the well near Prisoners Harbor to the Navy Site is a metal pipeline laid overland. It was originally installed in 1951. This water line leaks in many locations, leading to significant water losses.


119°50'0"W
119°40'0"W
119°30'0"W
119°20'0"W
119°10'0"W
119°0'0"W
34°0'0"N
33°45'0"N
33°30'0"N
33°15'0"N
lands
SANTA CRUZ ISLAND
Anacapa Passage
Santa Cruz Canyon
Hueneme Canyon
Mugu Canyon
NBVC Point Mugu
Santa Ba
Santa Cruz Basin
FOCUS B
FOCUS A
Osborn Bank
San Nicolas Island
SAN NICOLAS ISLAND
Outer
Existing FOCUS-I Cable Route
Figure 1-1 Existing FOCUS-I Alignment
0 5 10 15 20 mi
0 5 10 15 20 km
N
CALIFORNIA
Van Nuys
Los Angeles

1.3 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the proposed action is to provide continued reliable operation of the real-time intra-range and inter-range communications capability for the Sea Range with an effective increase in bandwidth required to satisfy operational requirements. This real-time capability includes all data communications between NBVC Point Mugu, NBVC SNI, and SCrI.

The communications capability is used to support Naval Air Warfare Center Weapons Division (NAWCWD) customers (e.g., U.S. military and allied forces with weapon systems testing needs) who require real-time support of research, development, acquisition, test, and evaluation (RDAT&E) and training data at the Naval Air Systems Command (NAVAIR) Sea Range. In order to provide support for Navy personnel on SCrI, a reliable long-term source of fresh water is also required.

The need for the proposed action is three-fold: 1) reliability of FOCUS-I is degrading; 2) there is a need for increased bandwidth in the SCrI microwave system; and 3) the existing water supply to the SCrI Navy site is aging and could fail.

The FOCUS-I cables were installed in 1993 and 1994, with a design life of 20 years. Signal degradation has been observed on FOCUS-I Cable A, and the signal is expected to further degrade without repair or replacement. Failure of FOCUS-I Cable A would lead to loss of system redundancy and could lead to catastrophic failure of FOCUS-I in the instance of interruption of FOCUS-I Cable B capability. Such failure would prevent NAWCWD and the U.S. Navy from completing mission-essential RDAT&E and training operations on the Sea Range. The 2006 FOCUS-I repairs at NBVC SNI provide extended life of a small portion of the system in the vicinity directly adjacent to the island, but the remainder of the system is beyond its design life.

Bandwidth requirements for SCrI have been increasing for telemetry, TSPI, and video. Upgrading the current microwave system is not feasible as the original equipment manufacturer (OEM) does not provide support for the equipment and third-party vendors cannot guarantee the availability of necessary parts. Further, data provided over FOCUS, as opposed to the current microwave system, does not need to be packaged and shipped for processing allowing data availability within required project timeframes.

The existing FOCUS-I and SCrI microwave systems are used to transmit and receive data signals between NBVC Point Mugu, NBVC SNI, and SCrI. Radar and telemetry data signals are collected and transmitted to NBVC Point Mugu where activities throughout the Sea Range are coordinated. Some of these signals are used to track, control, and communicate with air traffic and ship traffic (including military and commercial vessels) in the Sea Range. Loss of these data signals could lead to mishaps resulting in death or injury to personnel or loss of equipment. Consequently, communications facilitated by the existing systems are critical to the daily safe operation of the Sea Range. A loss of communications would result in the shutdown of most, if not all, Sea Range operations until the systems are repaired.

The existing water line provides drinking water to the Navy Site on SCrI. Failure of the water line would require water to be driven from the well at Prisoners Harbor to the Navy Site and could result in the inability to adequately supply water for personnel and equipment. This would lead to an inability to provide continuous support for the systems at SCrI Navy Site.

1.4 DECISION TO BE MADE

As a result of the analysis in this EA/OEA, the Navy will determine if an environmental impact statement/overseas environmental impact statement (EIS/OEIS) is required. An EIS/OEIS must be prepared if significant impacts on the human or natural environment are anticipated as a result of the proposed action. Should an EIS/OEIS be deemed unnecessary, based on the effects analysis of the alternative selected for implementation, the selection would be documented in a Finding of No Significant Impact (FONSI)/ Finding of No Significant Harm (FONSH). The project will be implemented only to the extent that funds are available and if required approval for work on Santa Cruz Island is obtained from the National Park Service and Nature Conservancy.

1.5 NEPA DOCUMENTS INCORPORATED BY REFERENCE

Material relevant to an EA may be incorporated by reference in accordance with CEQ regulations (40 CFR 1502.21) and with the intent of reducing the document's size. The documents listed below are incorporated by reference due to their relevance to the actions addressed in this EA. A brief description of the contents of each NEPA document is also included.

- Point Mugu Sea Range EIS/OEIS (Navy 2002). This document addresses all activities and their associated environmental impacts within the Point Mugu Sea Range as of 2002. The proposed action included Theater Missile Defense testing and training, accommodating an increase in the level of both Fleet training exercises and special warfare training, and modernizing facilities at Point Mugu and SNI to enhance the Sea Range's capability to support existing and future operations. No significant, unmitigable environmental impacts of the Preferred Alternative were identified.
- Final Environmental Assessment FOCUS Cable Repair San Nicolas Island (Navy 2003). This document addresses the repair of the FOCUS cable system by providing a stable environment for the cable segments off the coast of San Nicolas Island by placing the nearshore component of the FOCUS cable beneath the ocean floor to minimize damage caused by the dynamic ocean environment including: Increase training and RDAT&E activities from current levels in order to support the Fleet Response Training Plan; Accommodate mission requirements associated with force structure changes and introduction of new weapons and systems to the Fleet; and Implement enhanced Range Complex capabilities.

1.6 SCOPE OF ANALYSIS

This EA/OEA includes an analysis of the proposed action, three action alternatives, and the No-Action Alternative. NEPA, CEQ regulations, and Navy procedures for implementing NEPA specify that an EA/OEA should address only those resource areas potentially subject to impacts. In addition, the level of analysis should be commensurate with the anticipated level of environmental impact. Resources analyzed in this EA/OEA include air quality; biological resources; cultural resources; hazardous materials and waste; infrastructure and utilities; land and water use; marine sediments and water quality; noise; safety; topography, geology, and soils; and visual resources.

One resource area has not been analyzed in detail in this EA/OEA as the potential impacts are nonexistent or negligible:

- Socioeconomics. The proposed action would temporarily bring new personnel to Ventura and Santa Barbara counties to support the installation of FOCUS-II. The individuals can be accommodated without impacts to socioeconomic indicators such as population, employment, income, housing, or schools. New facilities are not necessary to accommodate participants in the installation or operation of FOCUS-II. For these same reasons, there would be no impact on minority or economically disadvantaged segments of the population, and hence no impacts related to environmental justice (Executive Order [EO] 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*).

1.7 RELEVANT LAWS AND REGULATIONS

The Navy has prepared this EA/OEA based upon federal and state laws, statutes, regulations, and policies that are pertinent to the implementation of the proposed action including, but not limited to:

- NEPA (42 U.S.C. §§ 4321-4370h), which requires an environmental analysis for federal actions that have the potential to significantly impact the quality of the human environment;
- CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 C.F.R. 1500-1508);
- Navy regulations for implementing NEPA (32 C.F.R. § 775), which provides Navy policy for implementing CEQ regulations and NEPA;
- Clean Air Act (CAA) (42 U.S.C. § 7401 *et seq*.);
- Clean Water Act (CWA) (33 U.S.C. § 1251 *et seq*.);
- Coastal Zone Management Act (CZMA) (16 U.S.C. § 1451 *et seq*.);
- National Historic Preservation Act (NHPA) (16 U.S.C. § 470 *et seq*.);
- Endangered Species Act (ESA) (16 U.S.C. § 1531 *et seq*.);
- Marine Mammal Protection Act (MMPA) (16 U.S.C. § 1361 *et seq*.)
- Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) (16 U.S.C. §§ 1801-1884);
- Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§ 703-712);
- Bald and Golden Eagle Protection Act (16 U.S.C. § 668-668d);
- EO 12088, *Federal Compliance with Pollution Control Standards*;
- EO 12114, *Environmental Effects Abroad of Major Federal Actions*;
- EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-income Populations*;
- EO 13112, *Invasive Species*;
- EO 13148, *Greening the Government through Leadership in Environmental Management*, and
- EO 13653, *Preparing the U.S. for Impacts of Climate Change*; and
- EO 13693, *Planning for Federal Sustainability in the Next Decade*.

Each of the above regulatory requirements is addressed within the context of the relevant section of the EA/OEA.

1.8 INTERGOVERNMENTAL COORDINATION AND PUBLIC PARTICIPATION

NBVC is the host command at Point Mugu and SNI and is the lease-holder for the Navy Site on SCrI, with NAWCWD as a tenant organization. The waters of the Sea Range are managed by NAWCWD. This EA/OEA was prepared by the NAVAIR Ranges Sustainability Office and did not involve any cooperating

agencies. The Navy site, an 8-acre (3.2-hectare) inholding, surrounded by National Park Service (NPS) land, is retained by the Nature Conservancy (TNC) and leased to the Navy. Once complete, the EA/OEA will be submitted to NAVAIR Commander for a potential FONSI/FONSH.

Permits and formal consultations include:

- U.S. Army Corps of Engineers (USACE) Section 10 & 404 permits;
- Essential Fish Habitat (EFH) consultation with the National Marine Fisheries Service (NMFS), as required by the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act;
- Native American tribal consultation;
- Federal Consistency Determination with the California Coastal Commission (CCC);
- Section 106 consultation with the California Office of Historic Preservation (OHP);
- Section 401 Certification for Discharge into State Waters through consultation with the Los Angeles Regional Water Quality Control Board (LARWQCB) and the Central Coast Regional Water Quality Control Board (CCRWQCB); and
- Stormwater Pollution Prevention Plans and permitting from the State Water Resources Control Board (SWRCB).
- Application for Transportation and Utility Systems and Facilities on Federal Lands (SF-299) with the NPS, Channel Islands National Park;

Informal regulatory consultations include:

- Real estate agreements needed for Facility Work on Land from TNC, which owns the Navy Site on SCrI;
- Coordination with the Naval Seafloor Protection Office;
- Consultation with the U.S. Department of Interior Bureau of Ocean Energy Management (BOEM) regarding location of the offshore cable routes, existing oil rigs, and pipelines;
- Consultation with NOAA's National Marine Sanctuary Program; and
- Coordination with the California Department of Fish and Wildlife (CDFW) to determine if a Lake or Streambed Alteration Agreement is required.

Additionally, coordination with the NPS will be conducted to minimize the effects of any temporary modification or restriction of recreational uses of NPS resources on SCrI.

Public participation for this EA/OEA will include the publication of the Notice of Availability for the draft EA/OEA in area newspapers, including the *Ventura County Star* and *Santa Barbara News-Press*, for three consecutive days, with the draft EA/OEA placed in local libraries and on the Navy Region Southwest public website for a 30-calendar-day public comment period. The libraries will include the Oxnard Public Library, Santa Barbara Public Library, E.P. Foster Library, and Ray D. Prueter Library. The Notice of Availability will also be mailed to NPS stakeholders and the Navy will request that the NPS post the draft EA/OEA on the NPS website. The final EA/OEA will provide all public comments received.

CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES

The proposed FOCUS-II would be comprised of interlinked fiber optic cables connecting NBVC Point Mugu to other locations on the Sea Range.

FOCUS-I would be operated and maintained until FOCUS-II is completely installed and its operational status is verified. Following FOCUS-II installation, FOCUS-I would continue to operate and would provide a second level of redundancy until it has degraded beyond the level of service required. Removal of non-functional equipment and evaluation of how to best remove this equipment would be conducted, if required, in the future and is not part of the proposed action of this EA/OEA.

This chapter provides an in-depth discussion of the proposed action and its alternatives. The chapter also discusses the requirements necessary to achieve each of the onshore and offshore alignment alternatives.

2.1 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1.1 Onshore Activities

For the purposes of this EA/OEA, onshore construction would involve three main activities: 1) HDD including drill pad installation, 2) installation of onshore cable conduits, and 3) installation of the water line on SCrI.

2.1.1.1 HDD Activities

HDD Pad Requirements

Each HDD site would temporarily host a drill rig, a portable crane, one 1,000-gallon (gal) (3,785-liter [l]) reservoir for mixing and storing drilling fluid, a mud pump unit, a mud filtering system, a catch basin for drilling mud with approximate dimensions of 13 feet (ft) (4 meters [m])long, 13 ft (4 m) wide, and 3 ft (1 m) deep, a hydraulic power unit, a drill rig control station, a pipe rack for cable conduits, and a tool van. HDD equipment would be delivered to each site on flatbed trailers. Equipment staging areas would be adjacent to or within the vicinity of the drilling pad. Drilling equipment and facilities would be removed upon completion of HDD. All HDD pads will be returned to their original condition. Figure 2-1 provides an image of a typical HDD rig to be used for the proposed action.

HDD Process

The HDD process would involve drilling and horizontal placement of piping into the ground, ultimately an 8-inch (in) (20-centimeter [cm]) HDD bore hole. The placement of the drill rig would require level ground, so some site grading would be required prior to commencement of HDD. The work area would require some special preparations to excavate and place an in-ground buried anchoring system. It would be for two purposes—anchoring the drill rig while drilling to ensure the stability of the equipment with the forces required during the drilling procedure, and hold back for the post laid cables. The area excavated for the anchor system would be approximately 35 ft by 1.5 ft by 3.3 ft (10.7 m by 0.46 m by 1 m) deep. Additionally, a small (approximately 6.6 by 6.6 by 3.3 ft [2 by 2 by 1 m]) sump pit would be

excavated at the bore entry to allow for the recovery of the drilling fluid coming from the borehole back to the surface.

Figure 2-1. Representative HDD Rig

The fluid is picked up by a sump pump and transferred to the solids control unit where the solids contained in the drilling fluid are mechanically separated, allowing the mud to be re-circulated down hole and used again. Most of the erosion control would be installed after all equipment is in place so that any necessary movement during the set-up process would not be impeded. The sump pit would be backfilled with the original soil following completion of the drilling process.

Drilling mud would be injected under pressure into the interior of the drill pipe. Drilling mud consists of a mixture of water and bentonite clay (a substance derived from naturally occurring clay). The drilling fluid (mud and drilling cuttings) would transfer energy to rotate the drill head which would make contact with the soil. Drilling fluid would return back through the HDD bore hole, which would be 1 in (2.5 cm) larger than the diameter of the pipe. The drilling fluid is pumped down the center of the drill pipe, and fluid (mud and cuttings) travel back up along the outside of the drill pipe. Onshore HDD activity would occur for approximately four weeks. It is most likely that a messenger line would be installed within the pipe at the end of the HDD process.

Fresh Water Requirements

For planning purposes, it is estimated that approximately 25,000 gal (94,600 l) of water would be required for each day of drilling, with a minimum daily requirement of 10,000 gal (37,900 l) and a maximum of 50,000 gal (189,000 l). If a steady supply of water (i.e., a fire hydrant) is not located nearby, water would be stored near the drilling site in storage bladders. A minimum of 250,000 gal (946,000 l) of fresh water should be present onsite and available for use prior to initiating drilling operations. There are adequate fresh water resources at NBVC Point Mugu to accommodate the proposed operations. Water would be transported to NBVC SNI in the volumes needed to accommodate the proposed drilling operations. Water will be stored in existing water bladders approximately 1,500 ft (457 m) from the proposed HDD site or within bladders transported to NBVC SNI and laid within the footprint of the existing bladders. As salt water will be used for drilling on SCrI, no freshwater will be required.

2.1.1.2 Fiber Optic Cable Conduit Installation

The seashore interface HDD sites would be connected to communications buildings or existing manhole systems via conduits (i.e., casing for fiber optic cable protection). Conduits can be buried, laid upon the ground surface, or supported in above-ground channels. These conduits may include existing fiber optic cable conduits, water lines, or fuel pipelines that are no longer in use. Where needed, trenches would be dug along existing roads and within previously disturbed or developed areas, with widths ranging from four to 20 in (10 to 51 cm) and depths up to 40 in (102 cm). Conduits would then be laid in the trenches and buried. Once the conduit installation is complete, the fiber optic cable would be pulled through the conduit. This cable installation would involve equipment trucks stationed at the terminal location and would be completed within two days for each landing site location. In other areas, conduit would be placed inside protective above-ground channels supported by posts. Section 2.1.4 provides descriptions of the onshore conduit alignments (including the length of new trenching) at NBVC Point Mugu, NBVC SNI, and SCrI.

Manholes and vaults will be placed at intervals of between 100 ft (30.5 m) and 2,500 ft (762 m) to provide for cable pulling stations, strain relief, backflow preventers, and air vacuum release stations. The total number of manholes and vaults will be between 20 and 80, depending on the engineering needs yet to be determined. Trenching will take approximately three months. Trenching equipment and other materials would be staged at turnout locations and parking areas along Navy Road.

2.1.1.3 Water Line Installation

A 3-in (8-cm) polyvinyl chloride (PVC) water line will be installed in trenches or above-ground channels between the SCrI Well Site and the Navy Site. A trench and/or above-ground channels originating at the Well Site will run down the road 930 ft (283 m) connecting to the same 7-mi (11.3-km) trench carrying the fiber optic cable along the Navy Road. The trenches would be installed with widths ranging from 4 to 20 in (10 to 51 cm) and depth up to 40 in (102 cm).

2.1.1.4 Onshore Maintenance

Routine maintenance of the onshore components will include visual inspection and accessing of vaults and manholes. The water line may be pressure tested and the fiber optic cable tested for continuity and integrity using remote sensors. Any digging, if required, for regular maintenance would be limited to areas previously disturbed during the installation process.

2.1.2 Offshore Activities

2.1.2.1 Installation Sequence

The installation would commence at the shore end of the cable lay, with the installation vessel positioned at the bore tube exit point. An ocean construction dive team would assist in feeding the end of the cable into the bore tube. A messenger line would be attached to draw the cable through the tube to the land-side manhole using a winch. The installation vessel would navigate a defined route slowly while laying out the cable, typically at 0.5 to 3 knots (0.93 to 5.6 km/hour).

2.1.2.2 Underwater Splice Joint and Trunk Cable Installation

Each cable landing location will contain an HDD pipe with a previously installed messenger line inside it. The messenger line connected to a winch on shore will pull two trunk cables simultaneously through the pipe from a ship. The ship would be located slightly seaward of the HDD pipe's seafloor exit point. The trunk cable is defined as the segment from the in-water splice joint (splice) to a dry termination mounted on the inside wall of the onshore cable vault. One underwater splice will connect one trunk cable to one undersea cable.

The pulling would require emptying the pipe of non-toxic anti-corrosive fluid previously installed during the HDD work. The mix of fresh water and anti-corrosive (1,300 gal [5,000 l]) would be emptied into the sea during the trunk cable installation. Small amounts of lubricant would be added during the pulling process to ensure the cable does not bind or stick during the pulling process. Beyond the splice (towards sea) cable would lie loose on the sea bed or be plowed into sand (section 2.1.2.3).

The splices and trunk cables would be deployed prior to the long haul undersea cable deployment. Each splice at the seaward end is sealed with a lifting pad eye for recovery during the cable deployment. The splice joints are lowered into the water by cable deployment machinery. Divers may use an anchored platform around the breakout to install the splice and its associated cable. The platform would be anchored on the seafloor minimizing placement on corals. Divers will assist in the placement as much as possible.

At each site, two trunk cables exit the directional drilled pipe in a maximum depth of about 85 ft (25.9 m). If the punch-out is short of this depth, the cable will be protected with (9.76-in [24.8 cm]) outer diameter split pipe between the bore exit and the splice joint to a water depth of 100 ft (30.5 m). The splice is a titanium cylinder approximately 6.6 in (16.8 cm) in diameter and 9 in (22.9 cm) long in-line with the cable.

2.1.2.3 Cable Installation on the Seafloor

Fiber optic cables would be laid on the seafloor between the HDD exit sites. These offshore cable alignments would be composed primarily of sandy bottom, with the uncommon occurrence of rock outcroppings along each of the routes. The cable would be plowed into a sandy bottom using a seaplow to a subsurface depth of up to 3 ft (1 m). Due to the technical specification of the seaplow, burial will occur to a water depth of 3,280 ft (1,000 m). Beyond that water depth, the cable would lie directly on the seafloor.

The seaplow, which will be towed by the cable-laying vessel, uses an approximately 12-in-wide (0.3-m-wide), modified hollow-share blade that penetrates the seabed and places cable. Sediments then settle back over the cable, burying it. The seaplow has skids that are raised to allow the share blade to dig into the seabed to the desired burial depth. Although the share blade is the only portion of the seaplow that penetrates the sediments, the temporary construction area will be 19 ft (5.8 m) wide, encompassing the full width of the seaplow.

Cable tension will be measured aboard the vessel and at the seaplow. During cable burial operations, the vessel will proceed at speeds of approximately 0.62 mi/hr (1 km/hr). Where the cable is laid directly on the seafloor without burial, the vessel can proceed at approximately 6.8 m/hr (11 km/hr). The actual vessels that will perform the work are not known at this time. The deployment of the cables would utilize conventional cable laying machinery. The machinery provides a gradual, controlled rate of descent to minimize the risk of damage as it lands on the seabed.

It is estimated that 234 NM (433 km) of cable would be needed to fulfill the requirements. Of this, approximately 175.5 NM (325 km) of the cable would be plowed into the seafloor. Internode cable is defined as the cable sections between splices and all subsequent sections between cable landings. The design of the internode cable would be similar to standard submarine telecommunication cables. The cable would be over-armored for protection from the splice to a maximum water depth of 4,920 ft (1,500 m). Over-armor is a sheath of one or more additional layers of steel wires wrapped around the cable. The cable diameter decreases from 1.41 in (3.59 cm) at the splice joint to less than 0.88 in (2.24 cm) in deep water.

The cable routes were determined based on data collected during a high resolution multi-beam hydrographic survey of the FOCUS-II area conducted for each of the proposed routes. The cable routes were selected to avoid steep bathymetry; the spreading out or turning of cables is planned to occur at a constant depth, to avoid placing any cables at angles to the downward slope. The installation of cables parallel to the steep slope of canyons is also avoided. Where cable crossings are necessary, the new cables would lie perpendicular across existing cables to the maximum extent possible. The cable will be deployed to within the greater of ten percent water depth or 164 ft (50 m) of the planned route position lists (documented routes for each alignment) for the cable alignment.

As a means of clearing seabed debris in advance of the towed seaplow operations, pre-lay grapnel run (PLGR) operations will be performed prior to the start of burial operations. The purpose of a pre-lay grapnel run is to clear debris, such as discarded fishing gear, from the seafloor along the corridors where the cables will be buried. To accomplish this, a grapnel, typically of the “flatfish” type, will be dragged along the cable routes before cable installation. The grapnel will be attached to a length of chain to ensure contact with the bottom and towed at a speed of approximately 1 mph (1.6 km/hr). The arms of the grapnel are designed to hook debris lying on the surface or shallowly buried to approximately 1.3 ft (0.4 m) on the seafloor. If debris is hooked and towing tension increases as a result, towing ceases and the grapnel is retrieved by winch. Any debris recovered to the deck during the PLGR operation will be disposed of in compliance with local laws and regulations.

Route clearance operations are typically performed prior to the start of burial operations as a means of clearing any out of service cables in advance of the towed sea plow. Route clearance operations include the cutting and removal of out-of-service cables along the intended burial route to provide a working

corridor for installation and maintenance operations. At the time of this writing no out-of-service cables have been discovered on the burial route. In the event that out-of-service cables are discovered on the route, the cables will be cut and cleared aside to leave a corridor (330 ft) 100 m wide, or less. Bitter ends will be weighted in a manner to reduce the possibility of future entanglements with other seabed users.

Post-lay inspection and burial will take place during or very soon after the main lay operation and is performed to attempt retro-burial of any cable that could not be buried with the seaplow, or to inspect select cable sections. Post-lay inspection and burial is typically performed with a remotely operated vehicle (ROV). Where the plow cannot achieve the targeted burial depth because of bottom conditions, a ROV will be used to attempt to bury the cable. These sections of cable will be laid temporarily on the ocean floor by the cable ship awaiting post-lay burial attempt at a later date by the ROV.

An ROV is a robotic device operated from the vessel. The ROV will be deployed and operated from the main cable ship or a similar vessel. The ROV moves under its own power and is tethered to and guided from the cable ship. ROV jets will loosen the seafloor sediments beneath the cable, allowing it to settle to the desired depth. The disturbed sediments then settle back over the area to their original grade, leaving the cable buried. The cable typically is buried to a depth of 3 to 4 ft (1 to 1.2 m) using this method. The ROV has a nominal speed of 0.35 mph (0.56 km/hr) when jetting. However, the overall rate of forward progress depends on the number of passes needed to attain target burial depths, which in turn is a function of sediment stiffness.

While the post-lay burial of cable by ROV will temporarily disturb the seafloor, this burial will only occur in soft sediment areas where the jets can be used to bury the cable and disturbance is limited to the seafloor, not the water column. The typical width of disturbance associated with this activity is 15 feet (4.6 meters).

2.1.2.4 Post Cable Installation – Sea Floor Stabilization

Stabilization protects not only the equipment but the surrounding environment by eliminating current-induced movement of the cables, which could otherwise cause abrasion of the cables and the substrate. In the sandy bottom portions, the cable segments would be buried in the sediments to a water depth of 3,280 ft (1,000 m) and therefore would not need to be stabilized. In the atypical instances where rocky bottom areas are encountered shallower than 98.4 ft (30 m) water depth, the cable segments would be anchored to the seafloor.

While rocky substrate will be avoided to the maximum extent possible, in cases where hard substrate is unavoidable, all system components, including cables and splices would be secured to the sea floor using conventional stabilization methods and the experience gained with other cable stabilization efforts. These methods generally involve a diver using handheld hydraulic drills, to drill a 1-in (2.5-cm) hole to a depth of 20 in (51 cm). Loose material is cleared from the hole using compressed air or water jet. A 0.75-in (2-cm) threaded rod is then placed into the hole and secured using a two-part acrylic epoxy.

The epoxy is a rapidly hardening resin/grit compound that is much denser than water and immediately sticks to the substrate upon application by a diver using a handheld applicator gun. The material does not disperse into the surrounding water and is non-toxic. The volume of epoxy required would be

approximately 7 cubic inches (in^3) (113 cm^3) per hole. After checking to verify the pull-out strength of the rods, steel clamps are secured to the threaded rods which reduce the movement of the pipes and cables.

2.1.2.5 Offshore Maintenance

Following completion of the FOCUS-II installation, periodic maintenance activities would occur on the new and existing offshore cable segments to ensure uninterrupted operation of the system. This maintenance would be conducted by divers, most likely annually, and would consist of visual inspections with occasional repairs, as needed. Typical activities would occur in the waters in proximity of the HDD exit sites and would be similar to those currently conducted for the existing FOCUS-I cables. In some instances, the periodic maintenance would include pulling the cable to a surface vessel, repairing and/or splicing the cable, and returning the cable to the seafloor. Following repair, the cable may be buried using divers or a ROV.

It is estimated that every other year divers must inspect and re-stabilize any dislodged split pipe. This would occur from the drill exit to a water depth of 85 ft (27 m). A small diver support boat might have to anchor in the area, and the cable may be buried using divers or a ROV. These activities would be similar to activities described for the original construction and would have equivalent temporary impacts.

2.1.3 Conservation Measures

Construction activities associated with the proposed action would be implemented near concentrations of sensitive wildlife species. Western snowy plovers (*Charadrius alexandrinus nivosus*), Ridgway's rails (*Rallus obsoletus*), California least terns (*Sterna antillarum browni*), and salt marsh bird's beak (*Chloropyron maritimum* ssp. *maritimum*, originally listed as *Cordylanthus maritimus* ssp. *maritimus*) are present at NBVC Point Mugu on the beaches and marsh adjacent to the Building 811 and Charlie Pad project sites. However, the terns will be avoided due to the seasonal restrictions described below. Western snowy plovers and San Nicolas Island fox (*Urocyon littoralis dickey*) are located on the beach adjacent to the drilling site on SNI. At the SCrI project sites, the Santa Cruz Island fox (*U. littoralis santacruzae*) is present, and bald eagles are, at times, found in the Prisoners Harbor area. Marine mammals [northern elephant seals (*Mirounga angustirostris*), Pacific harbor seals (*Phoca vitulina richardsi*), and California sea lions (*Zalophus californianus*)] are present on the beaches and/or in the nearshore waters adjacent to the SNI drilling site. A harbor seal haulout location is located within the estuary at Point Mugu, west of the mouth of Mugu Lagoon. In order to protect these species, wildlife conservation measures would be required during construction activities depending on the type of activity, location of the activity, and the time of year. Personnel would be required to stay off sites when construction activities are not being conducted.

The following conservation measures are proposed to protect air quality and sensitive terrestrial and marine species, including federally-listed terrestrial species and preclude economic impacts:

1) Dependent upon the dryness of soil and wind conditions, ground disturbance areas may be watered to minimize fugitive dust generation.
2) Internal combustion engines will be turned off when not in use to minimize emissions of criteria air pollutants.

3) To avoid marine mammal and listed bird breeding seasons, HDD and construction activities will only occur between September 15 and January 31 at Point Mugu and between September 15 and December 15 at SNI and SCrI.
4) Project vehicles and equipment will be restricted to existing concrete pads, leveled surfaces, HDD areas, and paved or dirt access roads.
5) NBVC Environmental Division will be made aware of any aircraft or barge shipments of equipment to SNI or SCrI to allow for needed biosecurity inspections, as specified in NBVC Instruction 5090.14.
6) All heavy equipment, vehicles, and waste containers will be power-washed prior to delivery to SNI or SCrI. Waste containers and dumpsters will be treated with disinfectant before leaving the mainland.
7) All materials being shipped to SNI and SCrI will be closely inspected and monitored to ensure that no soil, other seed-carrying matrix, insects, or other animals are delivered to the islands.
8) Pre-construction surveys and treatments for invasive weeds will be conducted at the Point Mugu, SNI, and SCrI project sites.
9) Once onshore FOCUS-II installation activities are completed, invasive weed surveys and treatments will be conducted at Point Mugu, SNI, and SCrI. These surveys and treatments will be applied after three weeks following the first rain event of the post-construction rainy season.
10) Shipments to SCrI will adhere to protocols described in the Channel Islands National Park (CINP) Biosecurity Protocols (CINP 2014a).
11) All personnel working on SNI or SCrI and people involved in delivery of project cargo will review biosecurity instructions and will adhere to all biosecurity measures.
12) Vessels delivering equipment and personnel to SNI and SCrI shall have armed bait boxes that are checked monthly. Also, sticky traps should be deployed on every boat and changed monthly.
13) Vessel decks will be washed clean between cargo runs. No soil or other debris should remain on a vessel.
14) If night-time operations are necessary, outdoor lighting will include shielding designs to ensure light entering adjacent nesting habitat is minimized.
15) Trash collection containers will be closed and tightly sealed to reduce attracting island fox and other wildlife.
16) Prior to commencing work on SCrI, a waste management and disposal plan will be developed by the construction contractor and submitted to the Navy and NPS for review.
17) Construction personnel will receive training regarding wildlife conservation measures to be applied at the project sites, including the importance of not feeding wildlife such as the island fox.
18) Open pits deep enough to trap island fox will be covered whenever construction operations are not underway.
19) Pipe ends between 2 and 6 in (5 and 15 cm) in diameter will be capped to ensure that island fox cannot be unintentionally trapped.
20) A Spill Prevention, Control, and Countermeasure Plan, developed by the construction contractor, will be in place to minimize the potential for an oil or hazardous substance spill, to prevent any spill from leaving the confines of the area and impacting listed species habitat, and to ensure that the cause of any spill is corrected.
21) Unless operationally necessary, personnel will not occupy the Charlie Pad, Coast Guard Jetty, or Prisoners Harbor construction areas between dusk and dawn and the area will remain dark (no

artificial lighting) to reduce the potential for adverse impacts to listed species in adjacent natural habitat.

22) Erosion control best management practices (BMPs) (e.g., silt screens or other barriers) will be placed along Navy Road and offroad work areas on SCrI to protect sensitive biological resources including the island bedstraw (*Galium buxifolium*), the island manzanita (*Artostaphylos insularis*), and the Channel Island sweat bee (*Lasioglossum channelense*).
23) Prior to construction on SCrI, biologists will survey along Navy Road and offroad work areas for the island bedstraw, the island manzanita, and the Channel Island sweat bee and mark any known populations to ensure there is no take.
24) A qualified biologist will be required to monitor construction areas that have listed species with potential to be adversely affected in the immediate vicinity to ensure no impacts occur. If listed species are encountered, work will cease until it is ensured that no effect will result.
25) The Navy will coordinate with NPS to develop a plan to help avoid limitations on public pedestrian access to the Navy road during installation of the buried cable.

2.1.4 Alternatives

This section includes a description of the criteria used in developing alternatives, lists the onshore and offshore alignment alternatives analyzed in this EA/OEA, describes the No-Action Alternative, and briefly describes alternatives that were considered but not carried forward for analysis.

2.1.4.1 Reasonable Alternative Development Factors

<u>HDD Drill Site Alternative Development Factors</u>

HDD operational requirements and environmental siting limitations have been identified to develop feasible location options for the FOCUS-II cable segments, to minimize potential environmental effects, and to minimize potential impacts from vessel anchors and bottom fishing operations. Siting options were developed based on the following operational requirements and environmental factors:

- Drilling sites should be placed as close as possible to the shoreline to minimize the length of drilling required;
- Elevation of the drill entry should be as low as possible to minimize the angle of drilling;
- Depth of drill exit points should be maximized to as close to 85 ft (26 m) water depth as possible so that cable segment exposure to nearshore currents and wave actions is minimized and divers using conventional air diving methods can install and maintain cable;
- There should be a relatively level cleared area for the HDD pad, particularly for the bentonite recycling system;
- The drilling site should, to the extent possible, be located in a previously disturbed area to minimize environmental disruption;
- The drilling site, to the extent possible, should be situated on level compacted soil; and
- NBVC Point Mugu landing sites should be at least 1 mile (1.6 km) apart to avoid both cables being damaged by a single event (e.g., anchor drag of bottom fishing activities).

<u>Onshore Cable Alignment Development Factors</u>

The following factors were considered in developing onshore cable alignment alternatives between the seashore interface sites and the communication buildings:

- The onshore cable alignment should use existing infrastructure to the maximum extent possible to minimize costs and potential environmental impacts; and,
- Trenching alignments should be designed in a manner that avoids impacts to natural and cultural resources to the maximum extent possible.
- Where necessary, above-ground cable alignments will be designed to minimize impacts to cultural and visual resources and provide continued access to land areas to the extent possible.

Offshore Cable Alignment Development Factors

The following factors were considered in developing offshore cable alignment alternatives:

- Offshore cable alignments should to the extent possible avoid rocky bottom areas that provide habitat to sensitive fish and invertebrates and increase potential wear and tear on the cables;
- Offshore cable alignments should avoid known underwater cultural resources;
- Offshore cable alignments should avoid areas with steep offshore slope or large rocky outcroppings that increase stress on the fiber optic cable;
- Offshore cable alignments should be parallel to the prevailing wave and current direction wherever possible to reduce the stress from strong ocean currents and wave action; and,
- Offshore FOCUS-II cable alignments should avoid crossing FOCUS-I cables in the nearshore environment.

2.1.4.2 Alternatives Analyzed in this EA/OEA

Alternative 1 - Preferred Alternative

Alternative 1 would be comprised of four interlinked fiber optic cables connecting:

1. NBVC Point Mugu and NBVC SNI (two cables)
2. NBVC SNI and SCrI
3. SCrI and NBVC Point Mugu

These three alignments would be interlinked as a four-node ring and FOCUS-II would provide redundant connections between the three sites, should one of the cables be disabled. Under Alternative 1, the installation of FOCUS-II would involve the following action:

- Installation of new seashore interface landings at each of the three sites, utilizing HDD technology. New HDD exit sites would be offshore at depths of approximately 85 ft (27 m).
- Use of existing underground infrastructure and installation of new buried cable at NBVC Point Mugu, connecting the nearshore HDD sites to The Range Communications Building.
- Installation of approximately 500 ft (152 m) of new buried cable at NBVC SNI connecting the nearshore HDD site to an existing concrete bunker. From the bunker, existing underground infrastructure will be used connecting to Building 127.
- Installation of approximately 1,150 ft (350 m) of elevated cable channel, connecting the well site to Navy Road.
- Installation of approximately 7.28 mi (11.7 km) of new buried cable connecting the nearshore HDD site to Building 4 at Navy Site on SCrI.
- Installation of approximately 7.30 mi (11.7 km) of new water line connecting an existing well to Building 4 at the Navy Site.

- Installation of between 20 and 80 new buried concrete vaults along the SCrI alignment with dimensions of 5 ft x 5 ft x 4 ft (1.5 m x 1.5 m x 1.2 m).
- Installation of four new underwater cable alignments (up to 234 NM [433 km]), creating the interlinked communications system between NBVC Point Mugu, NBVC SNI, and SCrI.
- Periodic maintenance and inspection of the onshore and offshore cable alignments to ensure uninterrupted operation of FOCUS-II and to ensure that biological resources are not adversely impacted by the communications system.

If any portion of the above described implementation is delayed beyond five years after a Finding of No Significant Impact (FONSI)/ Finding of No Significant Harm (FONSH) is completed for this EA/OEA, the projected data would be reviewed and supplemental analysis will be performed as needed.

The cable landing sites for Point Mugu under Alternative 1 are the Building 811 and Charlie Pad landing sites. The SCrI cable would come ashore at Building 811 and the SNI cables would come ashore at Charlie Pad. These cables would be routed through an existing conduit housed in a manhole system that runs underground at Point Mugu, terminating at the Range Communications Building (Building 531). Figure 2-2 provides an overview of landing sites, HDD routes, and HDD exit sites at NBVC Point Mugu. For each landing site, equipment staging areas are broken out from the drilling site (Figures 2-3 and 2-5). However equipment may be staged within the drilling area, avoiding wetlands and other sensitive areas.

Point Mugu Building 811 Landing Site

The Building 811 site would be used as the landing site for the Point Mugu-SCrI cable. There would be no nearshore crossing of FOCUS-I cables at this landing site. Construction crews would utilize existing parking areas and previously disturbed areas to stage equipment. The drilling location on this site would be installed on the unpaved area east of the paved parking area (see Figure 2-2). Minor ground disturbance will occur in previously graded areas to create a flat surface for drilling. No road traffic would be disrupted by drilling operations at this site.

The nearest water source for the Building 811 landing site is a hydrant situated near the end of the NBVC Point Mugu airstrip runway, approximately 1,200 ft (366 m) from the drill site which would be connected to the drilling pad by a 5-in (13-cm) fire hose. Drilling at this location would likely involve installation of an 8-in (20-cm) metal casing for the first 300 ft (91 m) of drilling due to the sandy soils in the vicinity of the drill site. Drilling to a site approximately 7,300 ft (2,225 m) from the HDD site at a water depth of 79 ft (24 m) would take approximately 30 days, including mobilization and demobilization.

This site would require approximately 45 ft (14 m) of trenching to connect to an existing manhole system, terminating at The Range Communications Building. Figure 2-4 provides an overview of the existing manhole system utilized by the proposed action. Trenching would occur on the edges of existing roads and would not affect the adjacent wetlands. The trenching and cable installation operations would take approximately two days.

Point Mugu Charlie Pad Landing Site

The Charlie Pad site would be used as the landing site for the Point Mugu-SNI cables. There would be no near shore crossing of FOCUS-I cables at the Charlie Pad landing site. This landing site alternative would

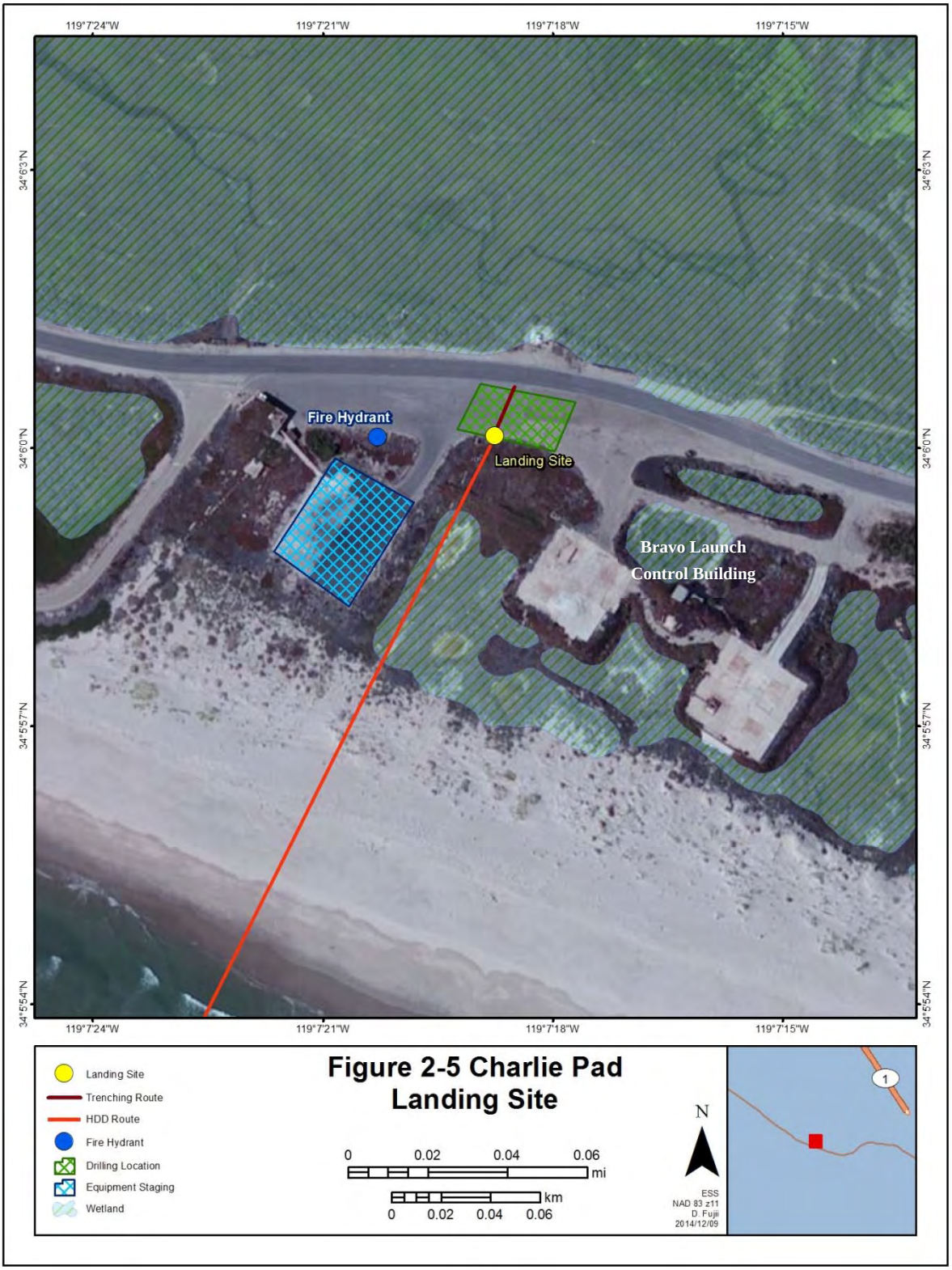
utilize paved launch pad surfaces to stage equipment. The drilling location would be within the Beach Road corridor east of Charlie Pad (see Figure 2-5).

Beach Road would be limited to one lane of traffic during the drilling operations at Charlie Pad. There is a fire hydrant on the launch pad, which would be connected to the drilling pad by a 5-in (13-cm) fire hose. Drilling to a site approximately 4,990 ft (1,520 m) from the HDD site at a water depth of 79 ft (24 m) would take 30 days, including mobilization and demobilization. This site would require approximately 48 ft (14.6 m) of trenching to connect to an existing manhole system, tying into the Manhole 52 link to The Range Communications Building (Figure 2-4). The trenching would be installed with widths ranging from 12 to 20 in (30 to 51 cm) and depth up to 40 in (102 cm) and would take approximately two days.

119°10'0"W
119°9'10"W
119°8'20"W
119°7'30"W
119°6'40"W
119°5'50"W
34°2'8"N
34°1'30"N
34°0'48"N
34°0'5"N
34°5'0"N
Casper Rd
Airstrip Runway
Perimeter Rd
Communications Building
Landing Site
Building 811
M St
L Ave
Beach Rd
Manhole 52
Landing Site
Charlie Pad
Laguna Rd
The Point
Exit Site
Exit Site
Exit Site
Landing Site
Landing Site Alternative
HDD Route
Figure 2-2 Point Mugu
Landing Site Alternatives
0 0.25 0.5 0.75 1
mi
0 0.5 1 1.5 2
km
N
CALIFORNIA
Van Nuys
Los Angeles
Long Beach

Figure 2-3 Building 811 Landing Site

Figure 2-4 Existing Point Mugu Manhole System to be Utilized by FOCUS-II


119°7'24"W
119°7'21"W
119°7'18"W
119°7'15"W
34°6'3"N
34°6'0"N
34°5'57"N
34°5'54"N
Fire Hydrant
Landing Site
Bravo Launch
Control Building
Landing Site
Trenching Route
HDD Route
Fire Hydrant
Drilling Location
Equipment Staging
Wetland
Figure 2-5 Charlie Pad
Landing Site
0 0.02 0.04 0.06 mi
0 0.02 0.04 0.06 km
N
ESS
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D. Fujii
2014/12/09
1

San Nicolas Island Coast Guard Jetty Landing Site

The FOCUS-I cable currently comes ashore on SNI approximately 1,350 ft (411 m) northwest of the Coast Guard Jetty, with a junction box situated offshore, approximately 3,600 ft (1,100 m) northeast of this landing site. A conduit system runs from a manhole near the landing site, under the SNI airstrip, and then connects to the onshore interface site to Building 312. From there, a combination of aboveground and buried conduit connects to Building 127. At this time, an unused 24-fiber land cable runs through the conduit system, connecting the Coast Guard Jetty landing site to Building 127 (Figure 2-6).

Under Alternative 1, a new drilling site would be located directly adjancent to the FOCUS-I landing site (Figure 2-7). The new transition would be drilled in a manner that avoids the FOCUS-I route. The drilling location on this site would be located on the lower parking area, nearer to the shoreline. Equipment would be staged on the higher ground near the roadway. Minor ground disturbance will occur in previously graded areas to create a flat surface for drilling. No road traffic would be disrupted by drilling operations at this site.

Water would be brought to NBVC SNI via barge transport using the existing offloading infrastructure and pump system. Water would be stored in bladders at an existing site located approximately 1,500 ft (457 m) from the drilling site (Figure 2-7). The bladders and drilling equipment would be connected by 5-in (13-cm) fire hose. Drilling to a site approximately 2,960 ft (903 m) from the HDD site at a water depth of 76 ft (23 m) would take 30 days, including mobilization and demobilization.

The Point Mugu-SNI and SCrI-SNI cables would be pulled through a single casing to the Coast Guard Jetty drill site. From there, the cables would run through a conduit connecting to an existing concrete vault currently housing the FOCUS-I transition between the land and sea cables (Figure 2-8), requiring approximately 500 ft (152 m) of trenching. The trenching would be installed with widths ranging from 12 to 20 in (30 to 51 cm) and depth up to 40 in (102 cm). No new concrete vault or manholes would be installed on SNI under this alternative. Trenching would take approximately three days. At the vault, the two FOCUS-II cables (one from NBVC Point Mugu and one from SCrI) would be spliced into the existing 24-fiber land cable.

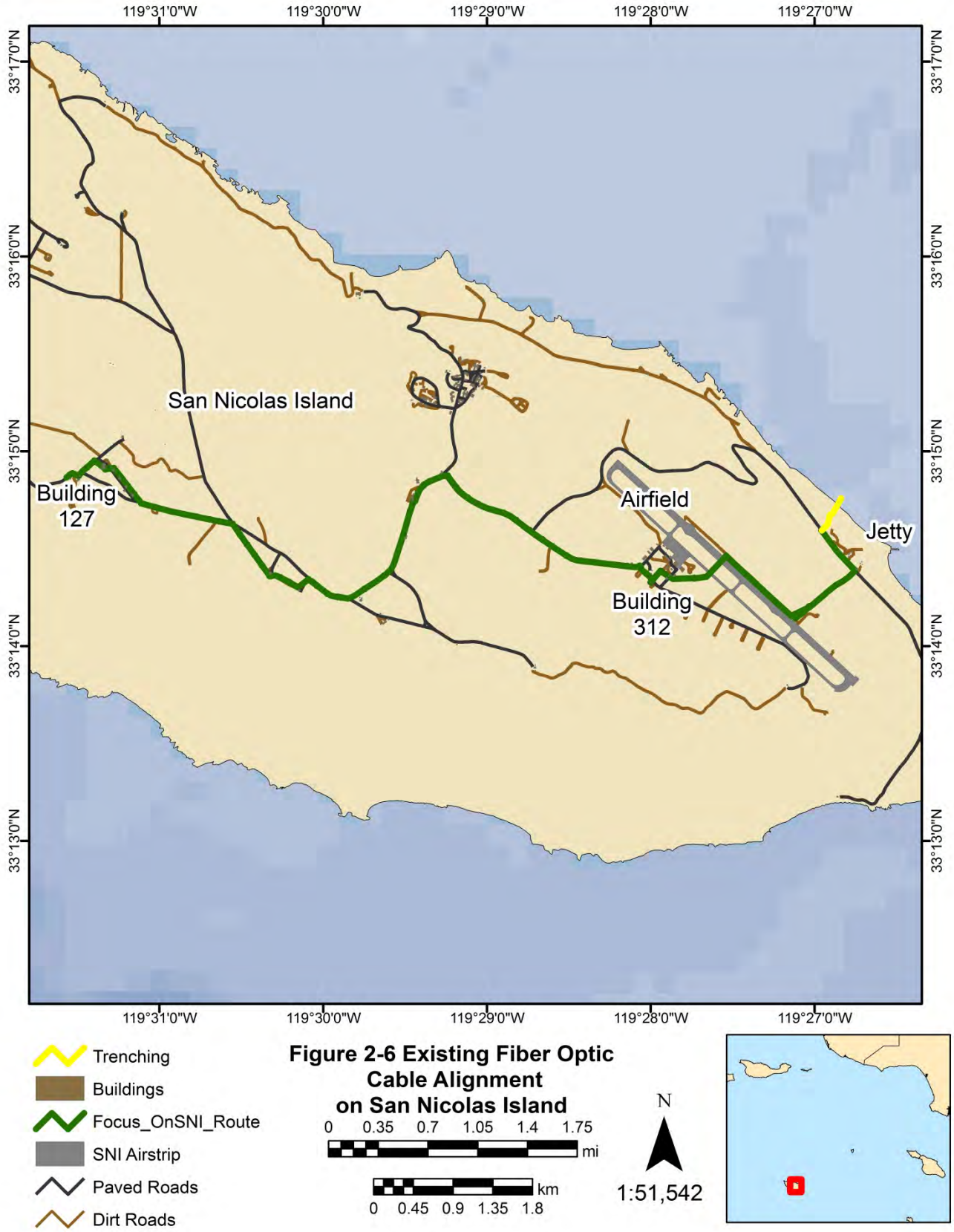

Figure 2-6 Existing Fiber Optic Cable Alignment on San Nicolas Island

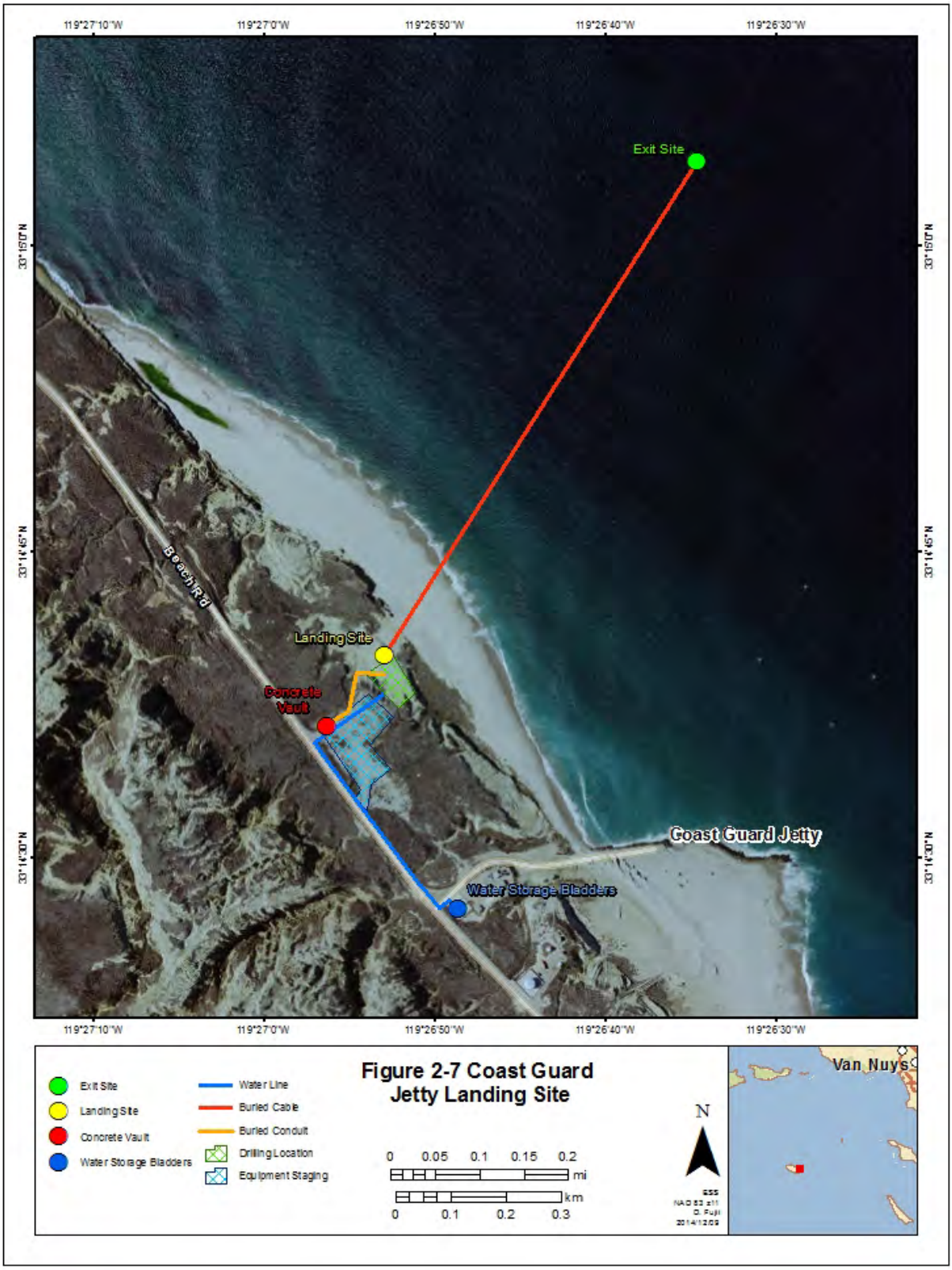

Figure 2-7 Coast Guard Jetty Landing Site

Figure 2-8 Existing Concrete Vault SNI (currently buried)

Santa Cruz Island Prisoners Harbor Landing Site

Santa Cruz Island is not currently connected to FOCUS-I via fiber optic cable. Further, there is no existing buried cable or water lines connecting the Navy Site to the SCrI shore. The current water line connecting the well near Prisoners Harbor to the Navy Site is a metal pipeline laid overland. This water line leaks in many locations, leading to significant water losses.

Under Alternative 1, a landing site would be installed at a location approximately 80 ft (24 m) west of the Prisoners Harbor Pier. Equipment would be staged on previously disturbed areas near the pier and the well site (see Figure 2-9 and Figure 2-10, respectively). Some grading would be required to create a flat surface for drilling. Road traffic would not be disrupted by drilling operations at this site; however, recreational access to the Prisoners Harbor Pier may be temporarily affected during the drilling operations. Disruption of access to the Prisoners Harbor Pier would only be for the duration of a single vessel landing. Efforts will be made to schedule such operations outside normal public access schedules and at no time will the pier be closed to public access while other NPS piers are closed.

In addition to the staging and drilling areas, adequate space is needed for semi-truck turning in the vicinity of the drilling area. Additional grading may be required east of the drilling area to accommodate the approximately 45-ft (14-m) turning radius area.

The water supply on SCrI does not have the production or storage capacities to accommodate the drilling operations, and it would be very difficult to bring in fresh water by barge in the quantities needed, as existing offloading and storage facilities and infrastructure do not exist. Considering this, the drilling fluid used on SCrI would be generated using seawater. This seawater would be pumped through a 5-inch (12.7 cm) fire hose running from approximately 50 ft (15 m) offshore to a mixing unit used to mix the drilling fluid. Consistent with NMFS recommendations to limit impacts to EFH, the fire hose end would be equipped with a screen grate to prevent uptake of marine organisms. A velocity cap that reduces horizontal intake/discharge currents will be employed and intake velocities across the intake screen will not exceed 0.5 foot per second.

Drilling to a site approximately 1,240 ft (379 m) from the HDD site at a water depth of 79 ft (24 m) would take 30 days, including mobilization and demobilization. The Point Mugu-SCrI and SNI-SCrI sea cables would be pulled through a single casing to the Prisoners Harbor drill site. The two sea cables would be installed in a trench approximately 525 ft (160 m) in length running from the drill site to a NPS-owned warehouse. At the warehouse, a concrete vault ([CV-1], 5 ft x 5 ft x 4 ft [1.5 m x 1.5 m x 1.2 m]) would be constructed in which the two sea cables will be spliced into a single 48-fiber land cable.

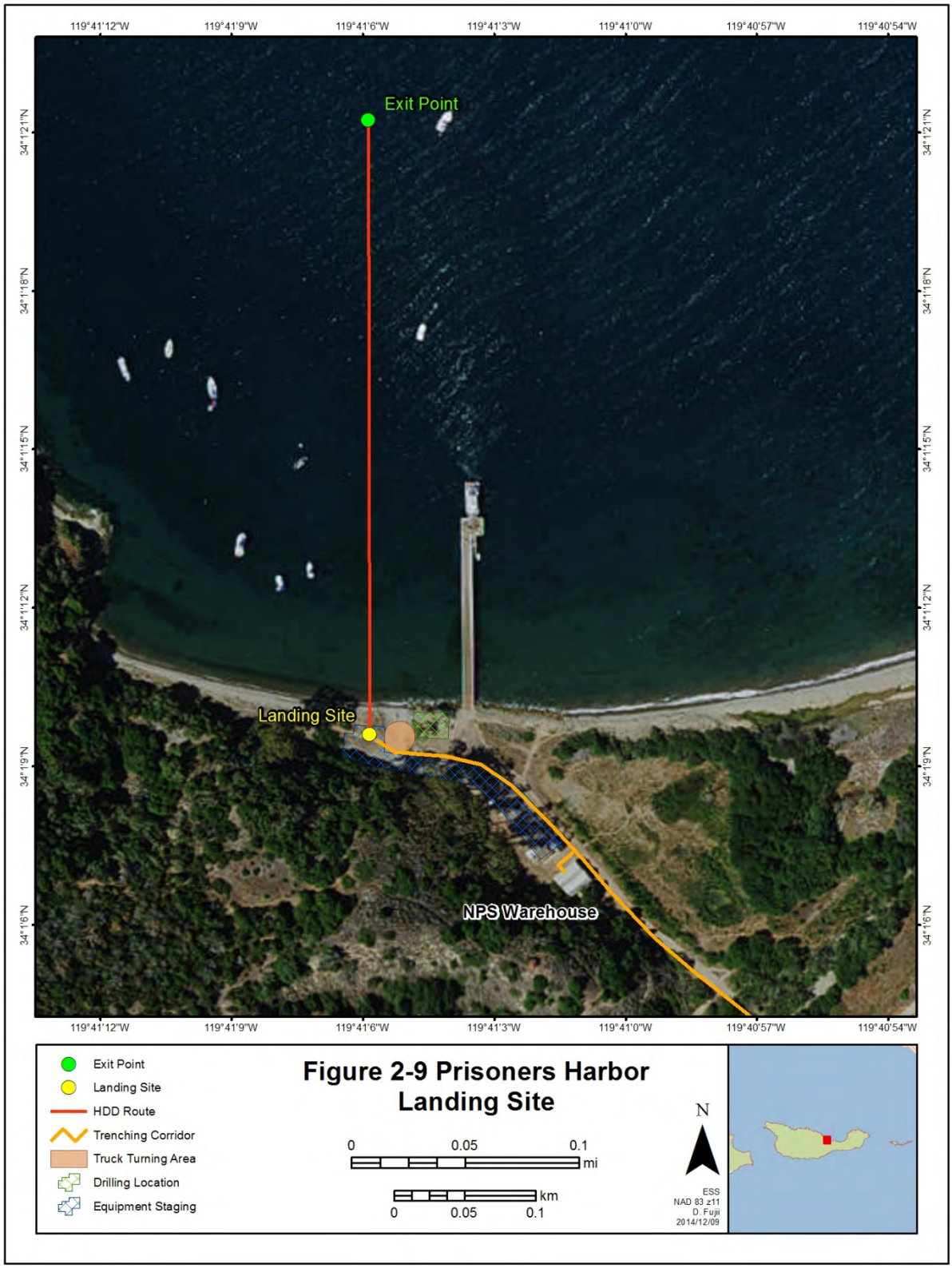
119°41'12"W
119°41'9"W
119°41'6"W
119°41'3"W
119°41'0"W
119°40'57"W
119°40'54"W
34°1'21"N
34°1'18"N
34°1'15"N
34°1'12"N
34°1'9"N
34°1'6"N
Exit Point
Landing Site
NPS Warehouse
Exit Point
Landing Site
HDD Route
Trenching Corridor
Truck Turning Area
Drilling Location
Equipment Staging
Figure 2-9 Prisoners Harbor Landing Site
0
0.05
0.1
mi
km
0
0.05
0.1
N
ESS
NAD 83 z11
D. Fujii
2014/12/09

Figure 2-10 Equipment Staging Near the SCrl Well Site

Santa Cruz Island Land Cable and Water Line Trenching and Elevated Channel System

From the concrete vault, CV-1, at the NPS-owned warehouse, the FOCUS-II cable would be installed in a trench along Navy Road and an unnamed road connecting the well site (Figure 2-11). The trench would be installed with widths ranging from 12 to 20 in (30 to 51 cm) and depth up to 40 in (102 cm). This trenching corridor would be approximately 1,970 ft (600 m) long and would terminate near the well site, where a concrete vault ([CV-2], 5 ft x 5 ft x 4 ft [1.5 m x 1.5 m x 1.2 m]) would be installed, wherein the trenched cable would transition to an above-ground elevated channel system. The channel would be composed of glass fiber-reinforced concrete and would be suspended approximately 1.6 ft (0.5 m) above-ground between galvanized steel stakes placed 6.6 ft (2 m) apart (Figure 2-12). This elevated channel would carry the FOCUS-II cable and a 3-in (8-cm) water line from the well site along the base of the hillside to the east of the access road to a newly installed concrete vault ([CV-3], 5 ft x 5 ft x 4 ft [1.5 m x 1.5 m x 1.2 m]) in the Navy Road shoulder (approximately 1,150 ft [350 m] of elevated channel, Figure 2-11).

Figure 2-11 Trenching and Elevated Channel Alignments in the Prisoners Harbor Area

Figure 2-12. Example of Typical Elevated Channel System

Between CV-3 and the Navy Site, the FOCUS-II cable and 3-in (8-cm) water line would be installed in a trench with widths ranging from 12 to 20 in (30 to 51 cm) and depth up to 40 in (102 cm). This trench would extend approximately 6.9 mi (11.1 km) to the Navy Site, running through the middle of Navy Road. Manholes and vaults will be placed at intervals of between 100 ft (30.5 m) and 2,500 ft (762 m) to provide for cable pulling stations, strain relief, backflow preventers, and air vacuum release stations. The total number of manholes and vaults will be between 20 and 80, depending on the engineering needs yet to be determined. Trenching will take approximately three months. Trenching equipment and other materials would be staged at turnout locations and parking areas along Navy Road. Portions of the road would be closed to vehicle traffic during trenching operations, with the trenches excavated and covered in segments to maximize road availability. Vehicles will be allowed to pass through the construction areas when active work is not underway. Figure 2-13 provides an overview of the typical SCrI trench cross section. Figure 2-14 provides an overview of the entire SCrI onshore alignment.

To accommodate the mobilization to the Prisoners Harbor, a barge with 4,000 ft^2 (372 m^2) deck space (triple stack capability) will be used to deliver the equipment and supplies needed to initiate the drilling and trenching operations. Subsequent shipments to and from SCrI will be conducted via barge shipments and a landing craft utility (LCU) vehicle operated by the NPS. This vessel has a capacity of approximately one semi-truck load with dimensions of 14 ft x 40 ft (4.3 m x 12.2 m). Upon completion of drilling and trenching operations, construction equipment and materials will be taken off SCrI via the LCU and barge shipments for the large equipment such as a crane and a semi-truck.

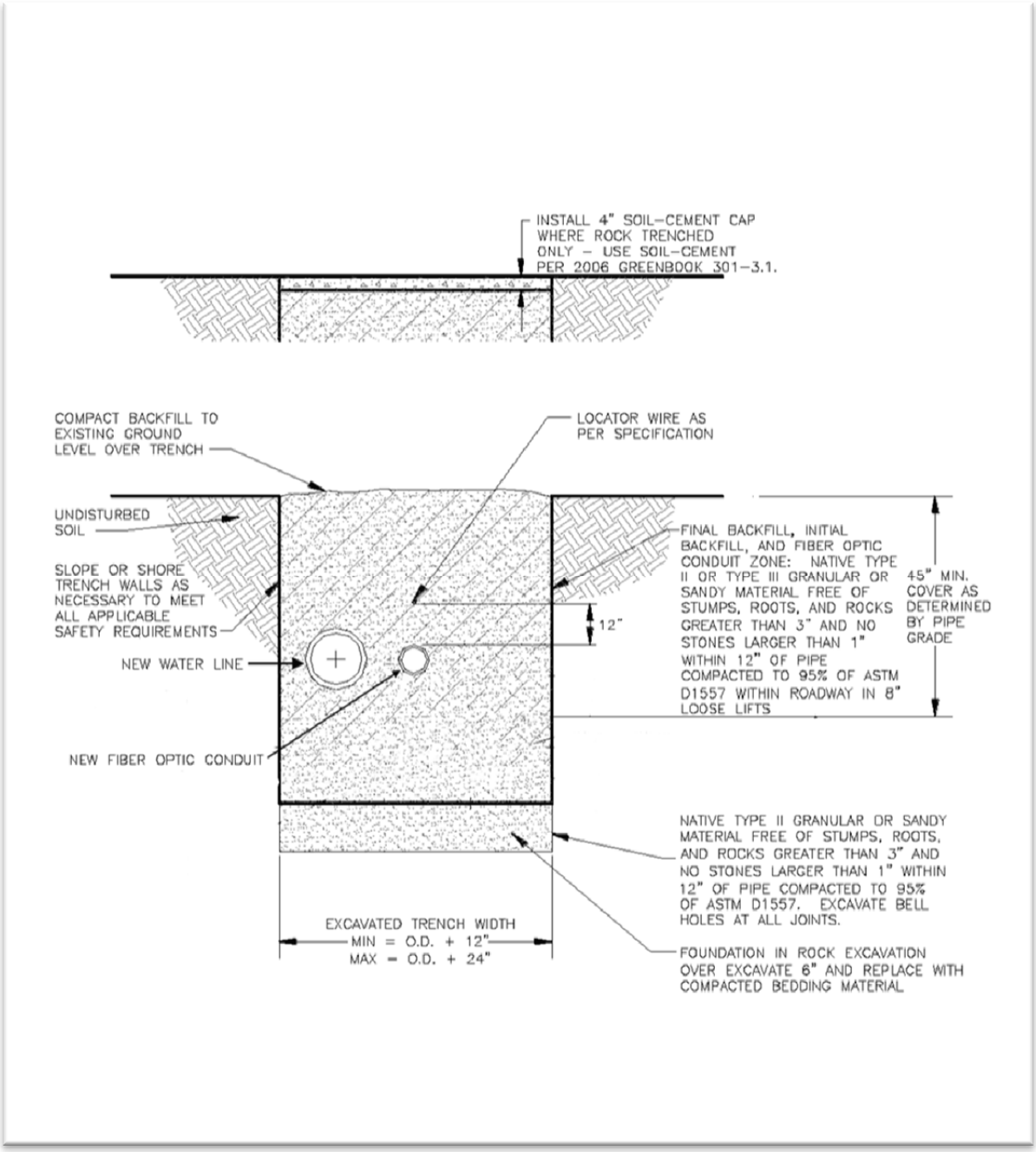

Figure 2-13 Typical SCrI Trench Section

Figure 2-14 Santa Cruz Island Onshore Cable Alignment

Offshore Routes

As described above, FOCUS-II will be installed as a four-node ring connecting NBVC Point Mugu, NBVC SNI, and SCrI. This ring will be composed of two underwater cables connecting NBVC Point Mugu to NBVC SNI utilizing mainland landing sites from the Charlie Pad site to the Coast Guard Jetty site. The NBVC single Point Mugu to SCrI cable will utilize mainland landing sites with the Building 811 site connecting to the SCrI Prisoners Harbor landing site. The NBVC SNI to SCrI cable will utilize the Coast Guard Jetty and Prisoners Harbor landing sites.

Figure 2-15 provides an overview of the Alternative 1 offshore cable routes. Near the NBVC Point Mugu shore, FOCUS-II cables will be laid in a manner avoiding the steep slopes of Mugu Canyon and Hueneme Canyon.

The routes to and from SCrI minimize the distance traveled across the Channel Islands National Marine Sanctuary (CINMS) to the extent possible. The SCrI routes will transit soft bottom habitat north around Anacapa Island, eliminating the need to transit through the rocky, high-relief and high current Anacapa Passage.

Point Mugu Nearshore Characteristics

The HDD exit site for the Building 811 location would be situated approximately 7,150 ft (2,179 m) offshore at a water depth of approximately 79 ft (24 m). Down to a water depth of approximately 3,280 ft (1,000 m), the FOCUS-II cable would be plowed into the soft sediment at least 3.3 ft (1 m) below the sediment surface to protect the cable against damage from anchor dragging. The seafloor in the vicinity of the exit site is characterized as sandy substrate with no rocky bottom habitat.

The HDD exit site for the Charlie Pad location would be situated approximately 4,410 ft (1,340 m) offshore at a water depth of approximately 79 ft (24 m). Down to a water depth of approximately 3,280 ft (1,000 m), the FOCUS-II cable would be plowed into the soft sediment at least 3.3 ft (1 m) below the sediment surface to protect it against damage from anchor dragging. The seafloor in the vicinity of the exit site is characterized as sandy substrate with no rocky bottom habitat.

San Nicolas Island Nearshore Characteristics

The HDD exit for the Coast Guard Jetty location would be situated approximately 2,500 ft (762 m) offshore at a water depth of approximately 76 ft (23 m). The exit site is located approximately 500 ft (152 m) west of the FOCUS-I exit site. The Point Mugu-SNI and SCrI-SNI cables will be laid in a manner that avoids crossing over the FOCUS-I cables in the nearshore environment (out to a water depth of approximately 2,000 ft [610 m]). The seafloor in the vicinity of the exit site is sandy bottom with intermittent rock outcrops. Down to a water depth of approximately 3,280 ft (1,000 m), the FOCUS-II cable would be plowed into the soft sediment at least 3.3 ft (1 m) below the sediment surface to protect it against damage from anchor dragging. The cable route will be laid in a manner to avoid the rock outcrops to the fullest extent possible.

Santa Cruz Island Nearshore Characteristics

The HDD exit for the Prisoners Harbor location would be situated approximately 1,160 ft (354 m) offshore at a water depth of 79 ft (24 m). Down to a water depth of approximately 3,280 ft (1,000 m), the FOCUS-II cable would be plowed into the soft sediment at least 3.3 ft (1 m) below the sediment surface to protect it against damage from anchor dragging.

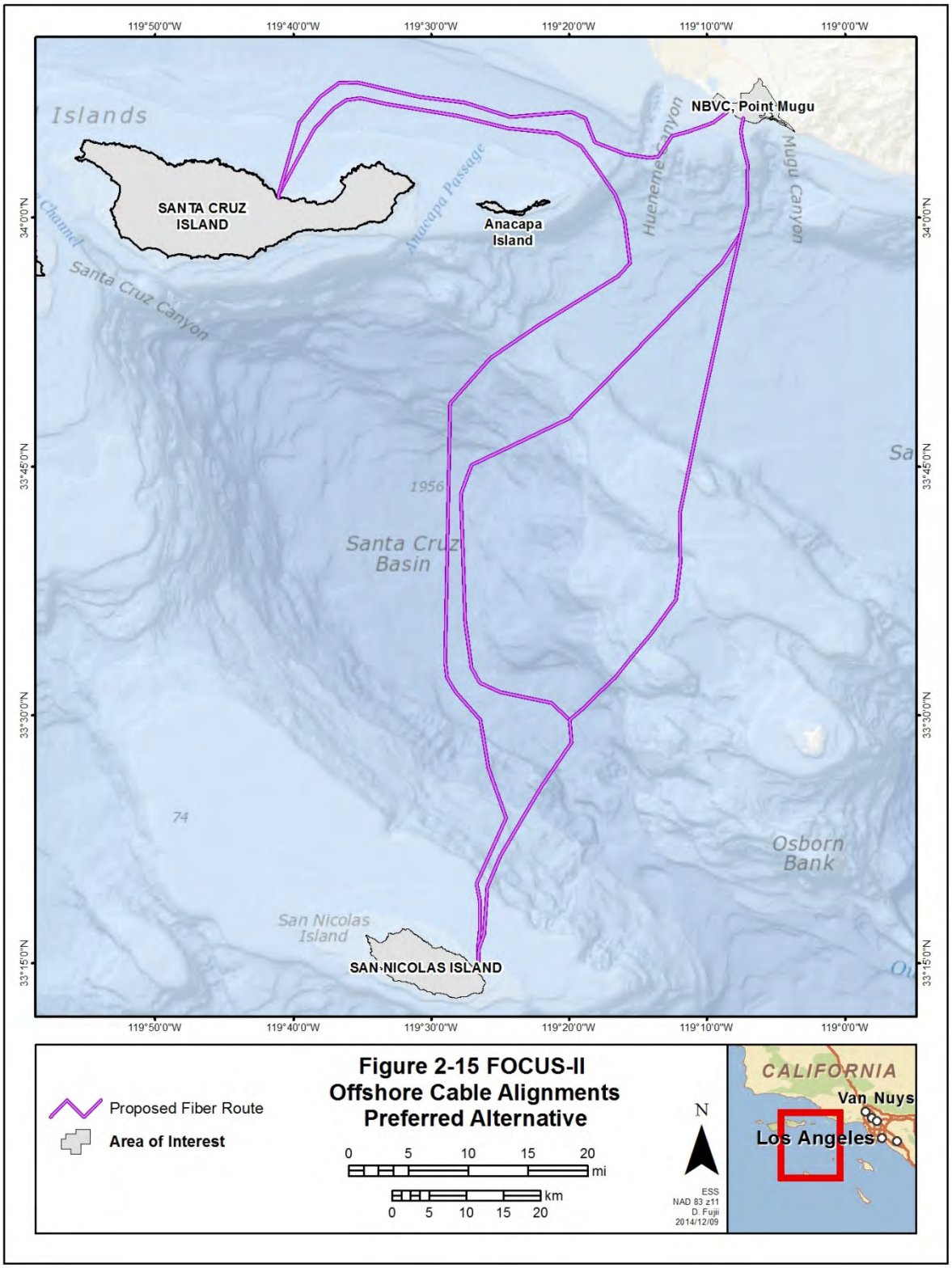

Figure 2-15 FOCUS-II Offshore Cable Alignments Preferred Alternative

Alternative 2

Under this alternative, as in Alternative 1, FOCUS-II would be constructed as a four-node ring and would provide redundant connections between the three sites, should one of the cables be disabled. Under Alternative 2, the installation of FOCUS-II would involve the same actions as Alternative 1, with one exception described below.

Santa Cruz Island Land Cable and Water Line Trenching and Elevated Channel System – Alternative 2

As in Alternative 1, from the concrete vault, CV-1, at the NPS-owned warehouse, the FOCUS-II cable would be installed in a trench along Navy Road and an unnamed road connecting the well site (Figure 2-16). Under Alternative 2, however, the elevated channel would carry the FOCUS-II cable and a 3-in (8-cm) water line from the well site along the roadside of the access road to the newly installed CV-3 (approximately 1,275 ft [388 m] of elevated channel, Figure 2-16).

Figure 2-16 Alternative 2 Trenching and Elevated Channel Alignments in the Prisoners Harbor Area

Alternative 3

Under this alternative, similar to Alternative 1, FOCUS-II would be constructed as a four-node ring and would provide redundant connections between the three sites, should one of the cables be disabled. Under Alternative 3, the installation of FOCUS-II would involve the same actions as Alternative 1, with one exception described below.

Santa Cruz Island Landing Site – Alternative 3

Unlike Alternative 1, all cable and water line would be buried in conduit, with no elevated channel. From CV-1 at the warehouse, the land cable will be installed in buried conduit running under Navy Road (Figure 2-17) to Building 4 on the Navy Site, requiring approximately 7 mi (11 km) of trenching. The trenches would be installed with widths ranging from 4 to 20 in (10 to 51 cm) and depth up to 40 in (102 cm). In addition to the FOCUS-II cable, a water line will be installed inside the trench. This 3-in (8-cm) polyvinyl chloride (PVC) water line will originate at the well site and will run down the road 930 ft (283 m) connecting to the trench at Navy Road. There would be a total of approximately 7.78 mi (12.5 km) of trenching under this alternative. Manholes and vaults will be placed at intervals of between 100 ft (30.5 m) and 2,500 ft (762 m) to provide for cable pulling stations, strain relief, backflow preventers, and air vacuum release stations. The total number of manholes and vaults will be between 20 and 80, depending on the engineering needs yet to be determined. Trenching will take approximately three months. Trenching equipment and other materials would be staged at turnout locations and parking areas along Navy Road. The road would be closed to traffic during trenching operations, with the trenches excavated and covered in segments to maximize road availability.

Figure 2-17 Alternative 3 Trenching Alignments in the Prisoners Harbor Area

Alternative 4

Under Alternative 4, the FOCUS-II cable would not connect to SCrI, and communications support between the Sea Range and SCrI would continue to be conducted via microwave radios. Two FOCUS-II cables would be installed between Point Mugu and SNI to provide redundancy between the two sites. No new water line would be installed at SCrI. Alternative 4 does not fulfill the purpose and need of the proposed action, as it relies upon other upgrades or replacement of the SCrI microwave system and water line at a later date. However, this alternative is carried forward to demonstrate the full range of potential environmental impacts should the Navy choose not to improve the communications infrastructure on SCrI.

Under Alternative 4, the installation of FOCUS-II would involve the following actions and differences from Alternative 1:

- Installation of new seashore interface landings at each of the two sites, utilizing HDD technology. New HDD exit sites would be offshore at depths of approximately 79 ft (24 m).
- Use of existing underground infrastructure and installation of new buried cable at NBVC Point Mugu, connecting the nearshore HDD sites to The Range Communications Building.
- Installation of approximately 500 ft (152 m) of new buried cable at NBVC SNI connecting the nearshore HDD site to an existing concrete bunker. From the bunker, existing underground infrastructure will be used connecting to Building 127.
- Installation of two new underwater cable alignments (approximately 138.8 mi [223.4 km]), creating the interlinked communications system between NBVC Point Mugu and NBVC SNI.
- Periodic maintenance and inspection of the onshore and offshore cable alignments to ensure uninterrupted operation of FOCUS-II and to ensure that biological resources are not adversely impacted by the communications system.

Point Mugu Landing Site – Alternative 4

Under Alternative 4, only the Charlie Pad Site would be utilized as the onshore landing site for the FOCUS-II cables. The HDD site would involve the same Charlie Pad location described in Alternative 1. The two cables would be linked at a new junction box approximately 4,990 ft (1,521 m) from the HDD site at a water depth of 79 ft (24 m) and pulled ashore via a single conduit. This site would require approximately 48 ft (14.6 m) of trenching to connect to an existing manhole system, tying into the Manhole 52 link to The Range Communications Building. The trenching and cable installation operations would take approximately two days.

Offshore Routes – Alternative 4

Figure 2-18 provides an overview of the offshore cable routes associated with Alternative 4. Under this alternative, the two FOCUS-II cables connecting Point Mugu to SNI would parallel each other in the nearshore areas with an average distance of 1 mile (1.6 km) between the cables. As the cables approach the Santa Cruz Basin, the cables would diverge with one cable following the east side of the basin and the second following a route around the west side of the basin. Off the Point Mugu shore, the two cables would be linked at a new junction box approximately 4,410 ft (1,340 m) offshore at a water depth of approximately 79 ft (24 m) and pulled through a single casing to the onshore landing site at Charlie Pad. Off the SNI shore, the cables would be linked at a new junction box approximately 2,455 ft (748 m)

offshore at a water depth of approximately 76 ft (23 m) and pulled through a single casing to the onshore landing site at the Coast Guard Jetty Site.

Point Mugu Nearshore Characteristics – Alternative 4

The HDD exit site for the Charlie Pad location would be situated approximately 4,410 ft (1,340 m) offshore at a water depth of approximately 79 ft (24 m). Down to a water depth of approximately 3,280 ft (1,000 m), the FOCUS-II cable would be plowed into the soft sediment at least 3.3 ft (1 m) below the sediment surface to protect it against damage from anchor dragging. The seafloor in the vicinity of the exit site is characterized as sandy substrate with no rocky bottom habitat.

San Nicolas Island Nearshore Characteristics – Alternative 4

As in Alternative 1, the HDD exit for the Coast Guard Jetty location would be situated approximately 2,500 ft (762 m) offshore at a water depth of approximately 76 ft (23 m). The exit site is located approximately 500 ft (152 m) west of the FOCUS-I exit site. The Point Mugu-SNI and SCrI-SNI cables will be laid in a manner that avoids crossing over the FOCUS-I cables in the nearshore environment (out to a water depth of approximately 2,000 ft [610 m]). The seafloor in the vicinity of the exit site is sandy bottom with intermittent rock outcrops. Down to a water depth of approximately 3,280 ft (1,000 m), the FOCUS-II cable would be plowed into the soft sediment at least 3.3 ft (1 m) below the sediment surface to protect it against damage from anchor dragging. The cable route will be laid in a manner to avoid the rock outcrops to the fullest extent possible.

Alternative 5 – The No-Action Alternative

Under the No-Action Alternative, the existing FOCUS-I cables and SCrI microwave systems would continue to be used. The FOCUS-I cable A signal would continue to degrade, and FOCUS-I cables A and B would continue to be utilized past their design lifetimes. Repair of FOCUS-I would not be sufficient due to the extent of the degradation, and the increasing bandwidth requirements for SCrI would eventually not be met. The risk for failure of these systems, and thus communication failure between NBVC Point Mugu, SNI, and SCrI Navy Site, would remain high, potentially resulting in months of down time, significant costs, and loss of military readiness. Should SCrI microwave system failure occur, the downtime could be greatly increased as the OEM does not provide maintenance support, and third party vendors cannot guarantee availability of necessary replacement parts. The No-Action Alternative would not meet the purpose and need of the proposed action. However, the No-Action Alternative is carried forward for analysis in this EA/OEA in accordance with NEPA requirements and represents a baseline for comparison of the effects of the other options.

Table 2-1 provides a summary of the site selection criteria used to determine the preferred HDD locations analyzed in this EA/OEA. For each criterion, each site was graded on a scale of 0 to 2, with 0 not meeting the criterion needs and 2 fully meeting the selection criterion.

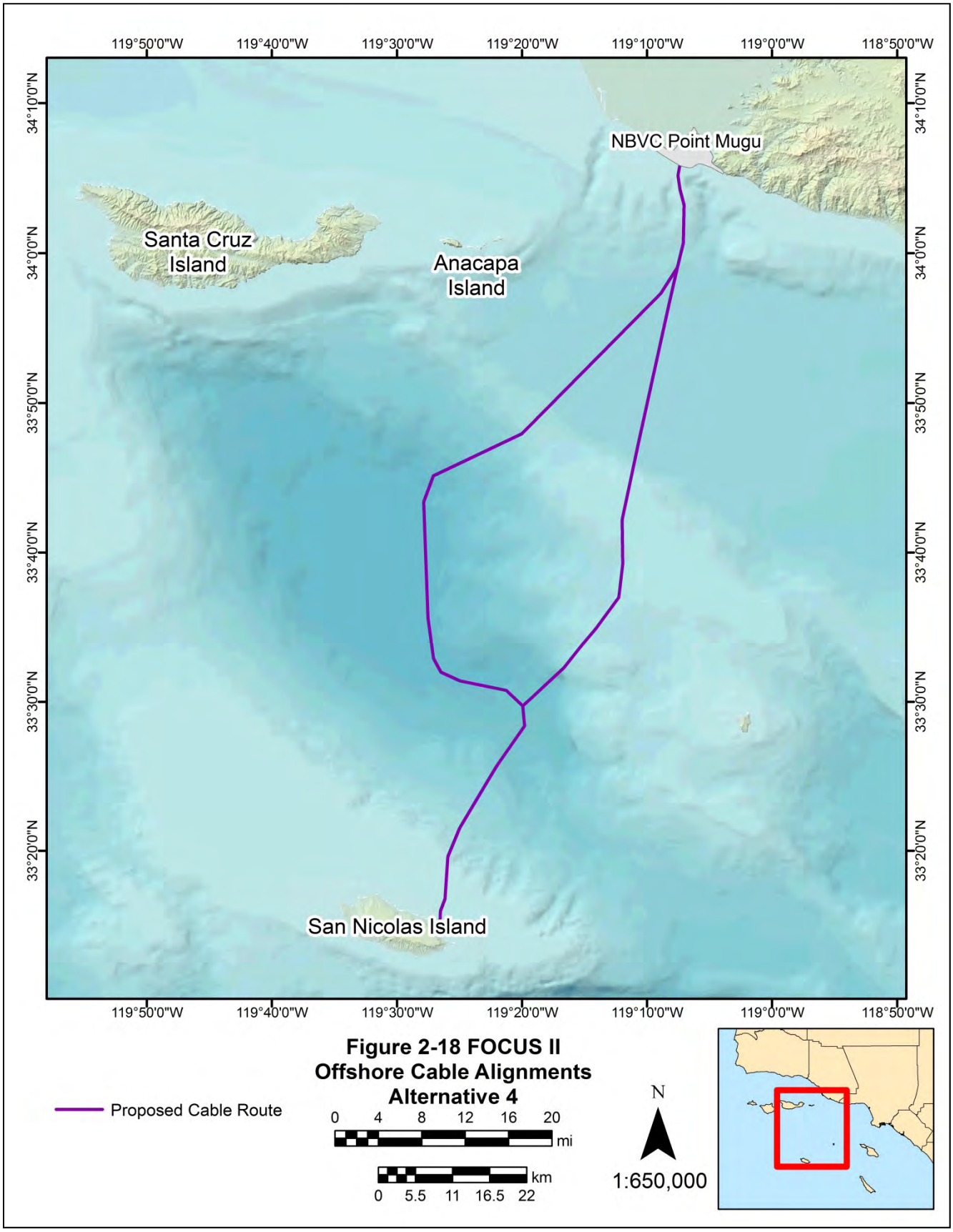

Figure 2-18 FOCUS II Offshore Cable Alignments Alternative 4

Table 2-1 FOCUS-II Landing Site Selection Comparison Matrix

	Site Alternative								
	Point Mugu Sites				SNI Sites		SCrI Sites		
	Bldg. 811	Charlie Pad	Manhole 52	The Point	CG Jetty	Bldg. 127†	Prisoners Harbor	Bend Site†	Navy Site†
Drill Site Selection Criteria									
Onshore site close to shoreline	2	2	2	2	2	0	2	1	0
Low elevation w/minimum angle of onshore drilling	2	2	2	2	2	0	2	0	0
Avoids steep slope between shoreline and offshore exit point	2	2	2	2	2	1	2	0	0
Level cleared area for drill site	2	2	2	2	2	2	2	1	2
Drill site on previously disturbed area	2	2	1	2	2	2	2	0	1
Drilling site not on sandy soil	1	2	2	2	1	2	1	2	2
One mile distant from other landing sites	2	2	0	2	2	2	2	2	2
Road traffic would not be disrupted	2	1	0	2	2	1	1	2	2
Drill Site Selection Total	**15**	**15**	**11**	**16**	**15**	**10**	**14**	**8**	**9**
Onshore Cable Alignment Selection Criteria									
Uses existing infrastructure	2	2	2	1	2	2	0	0	0
Minimizes length of new trenching	2	2	2	0	2	2	0	0	2
Avoids areas of high erosion	2	2	2	0	1	2	1	2	2
Onshore Cable Selection Total	**6**	**6**	**6**	**1**	**5**	**6**	**1**	**2**	**4**

2 = selection criterion fully met; 1 = selection criterion partially met; 0 = selection criterion not met.
Notes:
† Alternatives not carried forward for further consideration.

As the table reflects, The Point scored highest for NBVC Point Mugu drilling site criteria. The Point, however, would require significant trenching compared to the other sites and is in a high-erosion area. Cable installation at The Point would be at risk of a catastrophic failure in a large storm event. Considering all factors, the Building 811 and Charlie Pad sites were determined to be the best-fit locations for landing sites.

The Coast Guard Jetty and Prisoners Harbor sites on NBVC SNI and SCrI; respectively, were found to be the preferred landing sites due to onshore slope conditions. Drilling at the Building 127, Navy Road Bend Site, or Navy Site locations would be difficult and would pose high risk of spillage due to the high angle of drilling.

Table 2-2 summarizes the alternatives analyzed in this EA/OEA and provides a description of the onshore and offshore installation activities to be taken under each of the alternatives.

Table 2.2 Comparison of Installation Activities by Alternative

Component	Location	Preferred Alternative	Alternative 2	Alternative 3	Alternative 4	The No-Action Alternative
HDD Length	PM Bldg. 811 Site	7,300 ft	7,300 ft	7,300 ft	N/A	No drilling under this alternative
	PM Charlie Pad	4,990 ft	4,990 ft	4,990 ft	4,990 ft	
	SNI Coast Guard Jetty	2,960 ft	2,960 ft	2,960 ft	2,960 ft	
	SCrI Prisoners Harbor	1,240 ft	1,240 ft	1,240 ft	N/A	
Water Source	PM Bldg. 811 Site	Hydrant approx. 1,200 ft away	Hydrant approx. 1,200 ft away	Hydrant approx. 1,200 ft away	N/A	No water consumed as no drilling conducted
	PM Charlie Pad	Hydrant less than 50 ft from drilling site	Hydrant less than 50 ft from drilling site	Hydrant less than 50 ft from drilling site	Hydrant less than 50 ft from drilling site	
	SNI Coast Guard Jetty	Water storage bladders approx. 1,500 away	Water storage bladders approx. 1,500 away	Water storage bladders approx. 1,500 away	Water storage bladders approx. 1,500 away	
	SCrI Prisoners Harbor	Saltwater from harbor	Saltwater from harbor	Saltwater from harbor	N/A	
Trenching and Elevated Tray	PM Bldg. 811 Site	45 ft	45 ft	45 ft	N/A	No trenching required
	PM Charlie Pad	48 ft	48 ft	48 ft	48 ft	
	SNI Coast Guard Jetty	500 ft	500 ft	500 ft	500 ft	
	SCrI Prisoners Harbor	38,900 ft trenching 1,150 ft elevated channel	38,900 ft trenching 1,275 ft elevated channel	41,080 ft	N/A	
Offshore Routes	PM-SNI	55.8 NM and 64.8 NM	55.8 NM and 64.8 NM	55.8 NM and 64.8 NM	55.8 NM and 64.8 NM	No offshore cable installed
	PM-SCrI	34.1 NM	34.1 NM	34.1 NM	N/A	
	SNI-SCrI	79.1 NM	79.1 NM	79.1 NM	N/A	
Redundancy Provided by:		Four-node connection between PM, SNI, and SCrI	Four-node connection between PM, SNI, and SCrI	Four-node connection between PM, SNI, and SCrI	Two separate fiber optic cables connecting PM and SNI	Redundancy not guaranteed as signal degrades
Meets Purpose and Need?		**Yes**	**Yes**	**Yes**	**No**	**No**

2.1.4.3 Alternatives Considered but not Carried Forward

Point Mugu Onshore Landing Site – Manhole 52

Under this alternative, a site near Manhole 52 would be used as a landing site for either the Point Mugu-SCrI or Point Mugu-SNI cables. FOCUS-I cables would be crossed nearshore using this site as a FOCUS-II landing site. The location is in the vicinity of the existing FOCUS-I landings, which could feasibly lead to an event (e.g., anchor dragging or bottom fishing) that would disrupt both FOCUS-I and FOCUS-II. There is no adequate storage area in the vicinity of the site. Approximately 1,000 ft^2 (93 m^2) would need to be graded and 800 ft^2 (74 m^2) of vegetation would need to be removed to create a flat drilling surface. Traffic on Beach Road would be closed in both directions during HDD activities. For these reasons, this site was eliminated from further consideration in this EA/OEA.

Point Mugu Onshore Landing Site – The Point

Under this alternative, a landing site would be constructed at the Point, a location of recreational uses near the mouth of Mugu Lagoon. This site is previously disturbed and relatively leveled and would require minimal grading to create a level drilling service. The site has adequate space for staging equipment, and

no road traffic would be impacted during drilling operations. However, the site is not near existing manhole systems and would require approximately 1.8 mi (2.9 km) of trenching to connect the existing infrastructure. The Point site is also subject to extreme erosion during storm events, which would likely affect the FOCUS-II cable both on and offshore. For these reasons, this alternative was eliminated from further consideration.

San Nicolas Island Onshore Landing Site – Building 127

Under this alternative, an HDD site would be set up near Building 127, directionally drilling down the southern slope of SNI to a location near a beach on the southern side of SNI. The Building 127 alternative would require approximately 6,500 ft (1,980 m) of near vertical drilling down to the beach site where the directional drilling would then take a near horizontal turn. This alternative was eliminated from further consideration because it was found to be infeasible and would create a significant spillage risk due to the steep angle of the HDD drilling down the SNI slope.

Santa Cruz Island Onshore Landing – Navy Road Bend

This alternative would involve installation of an HDD site on a clearance near a bend in Navy Road, approximately 2,200 ft east of the Prisoners Harbor Pier. This site is situated on a ledge 220 ft (67 m) above sea level. Use of this site would require HDD drilling down the slope of the island with a near horizontal turn at sea level. This would create a significant spillage hazard due to the steep slope. This site would also require clearing of vegetation and grading of an area of approximately 30,000 ft^2 (2,790 m^2) for drilling and equipment staging. The Navy Road Bend site does not have adequate space for water storage, and it would not be possible to pump seawater to the drilling site due to its elevation. For these reasons, this site was eliminated from further consideration in this EA/OEA.

Santa Cruz Island Onshore Landing Site – The Navy Site

Under this alternative, an HDD site would be installed on the Navy-leased land on SCrI. This alternative was removed from further consideration because the HDD drilling would be technically infeasible due to the undulating terrain between the Navy Site and the offshore exit site. This would create a significant spillage hazard due to the steep slope. Additionally the site does not have adequate area for storage of the water needed to complete the drilling, nor is there an adequate water source present. This alternative would require between 10 and 20 daily water shipments via water tank trailer trucks, assuming a maximum capacity of 3,000 gal (11,400 l) per shipment.

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CHAPTER 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter includes a description of the existing environmental conditions and analyzes the potential impacts associated with the proposed action and its alternatives within the Sea Range, NBVC Point Mugu, NBVC SNI, and SCrI. Affected environment information provided in this chapter serves as baseline data to identify and evaluate any potential impacts that could result from the various action alternatives and the No-Action Alternative. Unless otherwise stated, each resource description in this chapter is divided into four distinct areas to facilitate the consistency with the proposed project components. These four areas are:

- NBVC Point Mugu
- NBVC SNI
- SCrI
- Offshore areas within the Sea Range

Background and site-specific information presented for each resource section have been focused to describe only those resource components addressed in the analysis of potential impacts.

3.1 AIR QUALITY

3.1.1 Affected Environment

3.1.1.1 Definition of Resource

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. Impacts would occur if the action alternatives would directly or indirectly produce emissions that would be the primary cause of, or would significantly contribute to, a violation of state or federal ambient air quality standards. Emission thresholds associated with CAA conformity requirements are another means of assessing the significance of air quality impacts. A formal conformity determination is required for federal actions occurring in nonattainment or maintenance areas when the total direct and indirect stationary and mobile source emissions of nonattainment pollutants or their precursors exceed *de minimis* thresholds.

Air quality in a given location is defined by pollutant concentrations in the atmosphere and is generally expressed in units of parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). One aspect of significance is a pollutant's concentration in comparison to a national and/or state ambient air quality standard. These standards represent the maximum allowable atmospheric concentrations that may occur and still protect public health and welfare with a reasonable margin of safety. The national standards, established by the United States Environmental Protection Agency (USEPA), are termed the National Ambient Air Quality Standards (NAAQS) (Table 3.1-1). The NAAQS represent maximum acceptable concentrations that generally may not be exceeded more than once per year; the annual standards are never allowed to be exceeded. State standards, established by the California Air Resources Board (CARB), are termed the California Ambient Air Quality Standards (CAAQS). The CAAQS are at least as restrictive as the NAAQS and include pollutants for which national standards do not exist.

Areas that violate ambient air quality standards are designated as nonattainment areas. Nonattainment designations for ozone (O_3) and carbon monoxide (CO) include subcategories indicating the severity of the air quality problem (e.g., the classifications range from *basic* to *extreme* for O_3). Areas that comply with federal air quality standards are designated as attainment areas. Areas that have been redesignated from nonattainment to attainment are designated as maintenance areas. Areas that lack monitoring data to demonstrate attainment or nonattainment status are designated as unclassified and are considered to be in attainment for regulatory purposes.

The air pollutants that are considered in this analysis include volatile organic compounds (VOCs), O_3, CO, nitrogen oxides (NO_X), particulate matter less than or equal to 10 microns in diameter (PM_{10}), and particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$). Emissions are often characterized as being "primary" or "secondary" pollutants. Primary pollutants are those emitted directly into the atmosphere such as CO, sulfur dioxide (SO_2), PM_{10} and $PM_{2.5}$. Secondary pollutants are those formed through chemical reactions in the atmosphere such as O_3 and nitrogen dioxide (NO_2). SO_2 and NO_2 are commonly referred to and reported as generic oxides of sulfur (SO_X) and NO_X, respectively, as SO_2 and NO_2 constitute the majority of their respective oxides. Although VOCs (also referred to as hydrocarbons or reactive organic gases) and NO_X (other than nitrogen dioxide) have no established ambient standards, they are important as precursors to O_3 formation.

3.1.1.2 Regulatory Setting

The General Conformity Rule, as established in Section 176(c) of the CAA (as amended), requires federal agencies to ensure that actions undertaken in nonattainment or maintenance areas are consistent with the CAA and with federally enforceable air quality management plans. The 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 emission thresholds that trigger requirements for a conformity analysis are called *de minimis* levels. *De minimis* levels (in tons per year) vary by pollutant and are also subject to the severity of the nonattainment status.

The General Conformity Rule establishes a process that is intended to demonstrate that a proposed federal action would not: 1) cause or contribute to new violations of federal air quality standards; 2) increase the frequency or severity of existing violations of federal air quality standards; and, 3) delay the timely attainment of federal air quality standards. Compliance is presumed if the net increase in direct and indirect emissions from a federal action would be less than the relevant *de minimis* level for the region in which the action is proposed. However, if the increase in emissions for a nonattainment pollutant exceeds *de minimis* levels, a formal conformity determination process must be implemented. For the purposes of this air quality analysis, project emissions would be potentially significant if they exceed federal *de minimis* levels. If emissions exceed their respective *de minimis* levels, further analysis of the emissions and their consequences would be performed to assess whether there is a likelihood of a significant impact to air quality.

<u>State and Local Requirements</u>

The CAA requires each state to develop, adopt, and implement a State Implementation Plan (SIP) to achieve, maintain, and enforce federal air quality standards throughout the state. SIP documents are developed on a pollutant-by-pollutant basis whenever one or more air quality standards are being

violated. In California (NBVC Point Mugu included), the SIP consists of separate elements for each air basin, depending on the attainment status of that air basin. Local governments and air pollution control districts have had the primary responsibility for developing and adopting the regional elements of the California SIP.

Table 3.1-1 California and National Ambient Air Quality Standards

POLLUTANT	AVERAGING TIME	CAAQS[1]	NAAQS[2]	
			Primary	Secondary
Ozone (O_3)	8 hour	0.07 ppm (137 µg/m^3)	0.075 ppm (147 µg/m^3)	Same as primary standard
	1 hour	0.09 ppm (180 µg/m^3)	†	
Carbon Monoxide (CO)	8 hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	†
	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	
Nitrogen Dioxide (NO_2)	Annual arithmetic mean	0.03 ppm (57µg/m^3)	0.053 ppm (100 µg/m^3)	Same as primary standard
	1 hour	0.18 ppm (339 µg/m^3)	0.100 ppm (188 µg/m^3)	†
Sulfur Dioxide (SO_2)	Annual arithmetic mean	†	0.03 ppm (80 µg/m^3)	†
	24 hour	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)	†
	3 hour	†	†	0.5 ppm (1,300 µg/m^3)
	1 hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3)	†
PM_{10}	Annual arithmetic mean	20 µg/m^3	†	Same as primary standard
	24 hour	50 µg/m^3	150 µg/m^3	
$PM_{2.5}$	Annual arithmetic mean	12 µg/m^3	15 µg/m^3	Same as primary standard
	24 hour	No separate standard	35 µg/m^3	
Sulfates	24 hour	25 µg/m^3	†	†
Lead (Pb)	30 day average	1.5 µg/m^3	†	†
	Calendar quarter	†	1.5 µg/m^3	Same as primary standard
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm (42 µg/m^3)	†	†
Vinyl Chloride (chloroethene)	24 hour	0.01 ppm (26 µg/m^3)	†	†

Notes: [1] CAAQS for CO, SO_2, NO_2, O^3, and PM_{10} are not to be exceeded. All other CAAQS are not to be equaled or exceeded.
[2] NAAQS are not to be exceeded more than once per year except for annual standards.
ppm = parts per million; µg/m^3 = micrograms per cubic meter; mg/m3 = milligram per cubic meter; † = no standard established
Sources: CARB 2013a; USEPA 2013a.

The table includes NAAQS and CAAQS for sulfates, Pb, H_2S, and vinyl chloride. The anthropogenic sources of these criteria pollutants are attributed to processes not associated with the proposed action. As an example, the primary industry sources of H_2S include manure handling, oil refineries, pulp and paper mills, and waste water treatment plants. Emissions for these pollutants are not estimated in the analysis provided in Section 3.1.2.

Greenhouse Gas Emissions

Greenhouse gases (GHGs) are pollutants of concern for air quality and climate change. GHGs include water vapor, carbon dioxide (CO_2), methane, NO_X, O_3, and several chlorofluorocarbons. Water vapor is a

naturally occurring GHG and accounts for the largest percentage of the greenhouse effect. Next to water vapor, CO_2 is the second-most abundant GHG and is typically produced from human-related activities. The largest source of CO_2 emissions globally is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. Additionally, a number of specialized industrial production processes and product uses such as mineral production, metal production and the use of petroleum-based products can also lead to CO_2 emissions.

Although regulatory agencies are taking actions to address GHG effects, there are currently no state or federal standards or regulations limiting CO_2 emissions and concentrations in the ambient air. In response to the *FY2008 Consolidated Appropriations Act* (H.R. 2764; Public Law 110–161), the USEPA issued the *Final Mandatory Reporting of Greenhouse Gases Rule* (GHG Reporting Rule), which became effective on December 29, 2009. The GHG Reporting Rule requires annual reporting of GHG emissions to USEPA from large sources and suppliers in the U.S., including suppliers of fossil fuels or industrial GHG; manufacturers of vehicles and engines; and facilities that emit greater than 25,000 metric tons per year (27,558 tons per year) each of CO_2 and other GHGs. The intent of the rule is to collect accurate and timely emissions data to inform future policy decisions and programs to reduce emissions, as well as to fight against the effects of climate change.

In a draft guidance document, the CEQ proposes that federal agencies consider, in scoping their NEPA analyses, whether analysis of the direct and indirect GHG emissions from their proposed actions may provide meaningful information to decision makers and the public. Specifically, if a proposed action would be reasonably anticipated to cause direct emissions of 25,000 metric tons per year or more of CO_2-equivalent (CO_{2e}) GHG emissions, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public. For long-term actions that have annual direct emissions of less than 25,000 metric tons of CO_{2e}, CEQ encourages federal agencies to consider whether the action's long-term emissions should receive similar analysis. Furthermore, CEQ does not propose this as an indicator of a threshold of significant effects, but rather as an indicator of a minimum level of GHG emissions that may warrant some description in the appropriate NEPA analysis for agency actions involving direct emissions of GHGs (CEQ 2010).

Several states have promulgated laws as a means to reduce statewide levels of GHG emissions. In particular, the California Global Warming Solutions Act of 2006 directs the State of California to reduce statewide GHG emissions to 1990 levels by the year 2020. In addition, groups of states formed regional collectives to jointly address GHG pollutants.

In an effort to reduce energy consumption and dependence on petroleum, and increase the use of renewable energy resources in accordance with the goals set by EO 13123, *Greening the Government through Efficient Energy Management*, and the Energy Policy Act of 2005, the Navy has implemented a number of renewable energy projects. Navy Region Southwest (NRSW) provides environmental sustainability support over a complex of 10 naval installations, 64 fleet ships, 556 aircraft, personnel housing, and other activities across California, Nevada, Arizona, Utah, Colorado, and New Mexico. Across the 10 installations, power plant replacement for 12,000 structures and 13,000 housing units has been conducted. These replacement actions have reduced GHG emissions, generated materials and markets for recycled products. Other GHG reduction measures implemented include employee

teleworking, transportation incentives, reduction in air travel, and conversion to low and zero emission plug-in and all-electric fleet vehicles (Navy 2014).

GHG emissions for an action can be inventoried, based on methods prescribed by state and federal agencies. However, the specific contributions of a particular project to global or regional climate change generally cannot be identified based on existing scientific knowledge, because individual projects typically have a negligible effect.

EO 13653, *Preparing the United States for the Impacts of Climate Change*, mandates that the federal government, as well as stakeholders, must manage these risks with deliberate preparation, cooperation, and coordination in order to effectively improve climate preparedness and resilience. With preparedness and resilience come a safer economy, infrastructure, environment, and supply of natural resources – allowing the continuation of department and agency operations, services, and programs. Agencies are called on to promote open lines of sharing and communication throughout all levels of government, make both informed and strategic decisions, quickly adapt and adjust future plans when needed, and to effectively prepare for the future by planning.

To maintain Federal leadership in sustainability and greenhouse gas emission reductions, EO 13693, *Planning for Federal Sustainability in the Next Decade*, set new efficiency and conservation goals. Federal Agencies shall, where life-cycle cost-effective, beginning in fiscal year 2016, unless otherwise specified, promote building energy conservation, efficiency, and management by reducing agency building energy intensity measured in British thermal units per gross square foot by 2.5 percent annually through the end of fiscal year 2025, relative to the baseline of the agency's building energy use in fiscal year 2015 and taking into account agency progress to date.

3.1.1.3 Existing Conditions

<u>Climate and Meteorology</u>

Coastal southern California and the adjacent valleys, mountains, and basins experience a “Mediterranean climate” characterized by generally warm, dry summers and cool winters interspersed with wet storms from the Pacific Ocean and dry winds from the interior. During the summer months, a semi-permanent region of high pressure over the Pacific is responsible for creating cooling sea breezes, which tend to keep the coastal strip generally comfortable, while inland areas become very warm. Temperature inversions that occur in the stable air may trap pollutants that become photo-chemically modified in the abundant sunshine. During the winter months, the moderating influences of the ocean together with a protective ring of mountains inland insulate much of southern California from very cold air except far inland and over higher terrain. Most of the precipitation that occurs during the year falls from winter-season storms that traverse the Pacific when the region of high pressure is displaced.

The average annual temperature in the coastal and inland valleys of southern Ventura County ranges from 57ºF (14ºC) at the coast near NBVC Point Mugu to 65ºF (18ºC) in Simi Valley. The average minimum and maximum temperatures are 49°F (9.4ºC) and 70°F (21ºC), respectively. The highest average temperature, 74.3°F (23.5ºC), occurs in August and September. The lowest average temperature, 49.1°F (9.5ºC), occurs in February. Point Mugu receives 14.7 in (37.3 cm) of precipitation per year, with the greatest rainfall occurring in January and February. The dry season occurs between June and August

(Western Regional Climate Center [WRCC] 2013a). Prevailing winds are westerly, with an average speed of 7.7 knots (8.8 mph or 14.2 km/hr) (Windfinder 2013a).

On average, the Sea Range surrounding SNI experiences frequent northwesterly surface winds. However, such conditions are interrupted by: 1) seasonal storms (with southerly winds) and periods of dry offshore northeast winds (Santa Ana winds); 2) mainly warm season coastal eddies with southeast winds over the inner waters; and 3) alternating land/sea breeze circulations as one approaches the mainland coast. Due to the influence of the continent on the overall wind flow, in addition to the eddies and other complicating factors nearshore, there is a strong tendency for the relatively persistent northwesterly winds in the outer Sea Range to become more westerly as the air approaches the mainland.

SNI is arid; total precipitation averages 5.23 in (13.3 cm) per year. The dry season occurs between May and September. The rainy season occurs between November and March when SNI receives 77 percent of its total annual rainfall. The month of highest average precipitation is typically December, and the average mean monthly temperature on land is 59 °F (15°C), with a seasonal variation (January to July) of approximately 9°F (5°C). Temperatures during the coolest month average 54.7°F (13°C) and during the warmest month average 65.4°F (19°C) (WRCC 2013b). Prevailing winds are northwesterly, with an average speed from that direction of 11.3 knots (13 mph or 20.9 km/hr). (Windfinder 2013b)

SCrI receives an annual average precipitation of 11.5 in (29.2 cm). The dry season occurs between May and October, with the rainy season occurring between November and January. The month with the highest average precipitation is January. The average maximum temperature is 66.2°F (19.0°C), and the average low temperature is 54.1°F (12.3°C). July has the greatest high temperature average of 71.8°F (22.1°C), and February has the lowest average temperature of 49.6°F (9.8°C) (WRCC 2013c). Prevailing winds are northwesterly, with an average speed from that direction of 5.0 knots (5.7 mph or 9.2 km/hr) (Windfinder 2013c).

Attainment Status and *de minimis* Thresholds

Activities associated with the proposed action would be conducted at NBVC Point Mugu and NBVC SNI, both in Ventura County, and on SCrI in Santa Barbara County. Effective 19 June 2008, Ventura County has been reclassified as a “serious” nonattainment area for the federal 8-hour O_3 standard (*de minimis* thresholds are 50 tons/year for VOCs and NO_X) and is in attainment of all other criteria pollutants (USEPA 2013b, USEPA 2008). Ventura County is classified as a nonattainment area for the state O_3, $PM_{2.5}$, and PM_{10} standards (CARB 2013b).

Although NBVC SNI is part of Ventura County, the USEPA has determined that SNI is separate and distinct from the South Central Coast Air Basin (SCCAB) which includes the Ventura County Air Pollution Control District (VCAPCD). SNI is in attainment/unclassified of the NAAQS for all criteria pollutants (USEPA 2013b); therefore, the provisions of the General Conformity Rule and *de minimis* thresholds do not apply to proposed activities conducted on SNI (VCAPCD 2008). Due to the lack of major emitting sources on SNI in conjunction with predominantly strong winds from the northwest, the likelihood of pollutants remaining in the ambient air of the island is very low.

SCrI is located within Santa Barbara County, which is part of the SCCAB. Santa Barbara County is in attainment or unclassifiable/attainment status of the NAAQS for all criteria pollutants (USEPA 2013b).

As such, the provisions of the General Conformity Rule and *de minimis* thresholds do not apply to proposed activities conducted at SCrI.

Emissions from Stationary Sources

NBVC Point Mugu has a variety of stationary emissions sources including aircraft engine test cells, stationary electric generators, compressors, fuel storage and handling facilities, and gasoline fueling stations. Non-exempt emitting sources at NBVC Point Mugu are permitted under Title V Part 70 Permit 00997 (VCAPCD 2014). This permit limits the total hourly and monthly emissions of criteria pollutants by the listed sources, as well as total fuel use and total power produced (VCAPCD 2014).

Stationary sources on SNI consist of a power plant, a gasoline refueling station, small boilers, several internal combustion engines, and various adhesive and sealant operations. All non-exempt emitting sources on SNI are permitted under Title V Part 70 Permit, Number 1207 (VCAPCD 2007). The permit limits the total hourly and monthly emissions of criteria pollutants by these sources, as well as total fuel use, total power produced, and amount of sealant and adhesive product used (VCAPCD 2007).

Navy-owned stationary sources at SCrI include a power plant, a boiler, and a 15,000-gal (57,000-liter) above-ground fuel storage tank. The equipment is permitted under Santa Barbara County APCD Permits to Operate Numbers 12151-R2, 12153-R2 and 13634. The permits limit the hourly and yearly emissions of criteria pollutants by these sources, as well as pounds of waste incinerated and type of fuel used.

Emissions from Mobile Sources

Mobile sources of emissions at NBVC Point Mugu and NBVC SNI consist of aircraft operations and combustion emissions from vehicles. In addition, test and training operations involve launching missiles and/or targets from both NBVC Point Mugu and NBVC SNI. Emissions are associated with combustion of propellants and/or fuels used to propel the missiles and targets. Emissions from vehicles comprise the mobile sources on SCrI.

3.1.2 Environmental Consequences

3.1.2.1 Assessment Criteria

Criteria pollutant emissions resulting from the proposed construction activities have been evaluated for the proposed action. Air quality impacts would be significant if emissions associated with the proposed action would: 1) increase ambient air pollution concentrations above the NAAQS; 2) contribute to an existing violation of the NAAQS; 3) interfere with, or delay timely attainment of the NAAQS; or, 4) impair visibility within federally-mandated Prevention of Significant Deterioration Class I areas. Additionally, a conformity analysis would be required before initiating any action that may lead to nonconformance with a SIP, an exceedance of *de minimis* criteria pollutant thresholds, or contribution to a violation of the NAAQS.

The evaluation of air quality includes the Conformity and NEPA Air Quality Analysis which addresses the assessment of the air pollutant emissions from activities within U.S. territories and territorial waters. This includes emissions on the mainland and SNI, emissions within the 3-NM (5.6-km) limit of U.S. territorial waters (subject to the General Conformity Rule), and emissions within the 12-NM (22-km) limit of U.S. territorial waters (subject to NEPA).

De minimis levels apply for conformity purposes, which relate to emissions within 3 NM (5.6 km) of the air basin. Since SNI, SCrI, and the offshore regions proposed for FOCUS-II installation are considered in attainment/unclassified for the NAAQS, the provisions of the General Conformity Rule do not apply. Offshore emissions do not follow the *de minimis* and General Conformity Rule significance criteria; project emissions greater than 3 NM (5.6 km) from the continental U.S shore were analyzed as subject to NEPA. The primary sources of project emissions arise from combustion of fossil fuels for heavy equipment use, motorized vehicles, and marine vessels. Fugitive dust emissions generated by heavy equipment and vehicle use were also calculated.

3.1.2.2 Alternative 1 – Preferred Alternative

Table 3.1-2 provides a summary of the emissions generated by the FOCUS-II installation operations at the Building 811 and Charlie Pad sites at NBVC Point Mugu. These operations include the site preparation, drilling, and trenching activities, as well as motor vehicle use associated with this alternative. For the sake of analysis, it is assumed that all operations would be conducted within the same reporting year. Emissions for operations out to 3 NM (5.6 km) are provided, as this area is within the SCCAB.

Table 3.1-3 provides a summary of the emissions of operations on NBVC SNI under Alternative 1. The SNI operations include site preparation, motor vehicle usage, and drilling operations plus emissions associated with supply barge transport and the loading and unloading of the barges. Table 3.1-4 provides an overview of the Alternative 1 emissions at SCrI.

Table 3.1-5 provides a summary of the project emissions within U.S. waters between 3 and 12 NM (5.6 to 22.2 km) from the shores of NBVC Point Mugu, NBVC SNI, and SCrI. Table 3.1-6 provides emissions estimates for operations in international waters greater than 12 NM (22.2 km) from shore.

Table 3.1-2 Point Mugu Sites Emissions (within 3 NM) - Alternative 1 and 2

Component	Pollutant (tons/year)					
	VOCs	CO	NO_X	SO_X	PM_{10}	CO_{2e}
Building 811 Site						
Site preparation	0.00223	0.00833	0.0163	0.00003	0.00104	3.02
Drilling operations	0.0559	0.182	0.347	0.00059	0.0197	51.4
Trenching/cable installation	0.00144	0.00945	0.00961	0.00002	0.00602	1.69
On-road vehicles	0.00335	0.0240	0.0179	0.00007	0.00102	7.14
Offshore cable installation	0.824	19.6	2.31	--	0.0165	223
Subtotal	**0.887**	**19.8**	**2.70**	**0.00071**	**0.0443**	**286**
Charlie Pad Site						
Site preparation	0.00891	0.0329	0.0652	0.00012	0.00372	12.0
Drilling operations	0.0559	0.182	0.347	0.00059	0.0197	51.4
Trenching/cable installation	0.00361	0.0236	0.0240	0.00004	0.00690	3.96
On-road vehicles	0.00335	0.0240	0.0179	0.00007	0.00102	7.14
Offshore cable installation	0.824	19.6	2.31	--	0.0165	223
Subtotal	**0.896**	**19.9**	**2.76**	**0.00082**	**0.0478**	**298**
Total for Point Mugu Operations	**1.78**	**39.7**	**5.46**	**0.0015**	**0.0921**	**584**

Table 3.1-3 San Nicolas Island Emissions (within 3 NM) - Alternative 1 and 2

Component	Pollutant (tons/year)					
	VOCs	CO	NO_X	SO_X	PM_{10}	CO_{2e}
Site preparation	0.00297	0.0110	0.0217	0.00004	0.00138	4.02
Drilling operations	0.0559	0.182	0.347	0.00059	0.0197	51.4
Trenching/cable installation	0.00144	0.00945	0.00961	0.00002	0.00602	1.69
On-road vehicles	0.00112	0.00800	0.00597	0.00002	0.00034	2.38
Supply barge	0.00098	0.00583	0.0181	0.00090	0.00004	0.875
Offshore cable installation	1.01	23.9	2.83	--	0.0201	273
Total	**1.07**	**24.1**	**3.23**	**0.0016**	**0.0476**	**333**

Table 3.1-4 Santa Cruz Island Emissions (within 3 NM) - Alternative 1 and 2

Component	Pollutant (tons/year)					
	VOCs	CO	NO_X	SO_X	PM_{10}	CO_{2e}
Site preparation	0.0297	0.0110	0.0217	0.00004	0.00138	4.02
Drilling operations	0.105	0.457	0.956	0.00193	0.0346	106
Trenching/cable installation	0.0571	0.372	0.377	0.00068	0.116	59.2
On-road vehicles	0.00323	0.0279	0.00526	0.00006	3.77	6.11
Supply barge	0.00086	0.0109	0.0163	0.00190	0.00005	0.159
Offshore cable installation	1.01	23.9	2.83	--	0.0201	273
Total	**1.21**	**24.8**	**4.21**	**0.00461**	**3.94**	**448**

Table 3.1-5 Alternative 1 and 2 Emissions (3 < x < 12 NM)

Component	Pollutant (tons/year)					
	VOCs	CO	NO_X	SO_X	PM_{10}	CO_{2e}
SNI supply barge	0.00294	0.0175	0.0544	0.00270	0.00012	0.262
SCrI supply barge	0.00203	0.0109	0.0380	0.00443	0.00011	0.371
Offshore cable installation	3.30	78.2	9.26	--	0.0658	893
Total	**3.30**	**78.2**	**9.35**	**0.0071**	**0.0660**	**894**

Table 3.1-6 Alternative 1 and 2 Emissions (> 12 NM)

Component	Pollutant (tons/year)					
	VOCs	CO	NO_X	SO_X	PM_{10}	CO_{2e}
SNI supply barge	0.00587	0.0350	0.109	0.00540	0.00024	0.525
Offshore cable installation	5.49	130	15.4	--	0.110	1,490
Total	**5.50**	**130**	**15.5**	**0.0054**	**0.110**	**1,490**

General Conformity Analysis

The estimated emissions associated with Alternative 1 would be below *de minimis* threshold levels of 50 tons per year (tpy) VOCs or NO_X for conformity for the SCCAB (Ventura County, excluding SNI). Therefore, Alternative 1 would conform to the VCAPCD SIP and would not trigger a conformity determination under Section 176(c) of the CAA. In addition, since SNI and SCrI have been categorized as an attainment/unclassified area by the USEPA, they are not subject to the General Conformity Rule.

However, estimated emissions for the proposed undertaking would be below *de minimis* levels; therefore, even if either island was considered a nonattainment or maintenance area, a formal conformity determination would not be necessary. Also, air quality conservation measures would be implemented as needed. These measures would include watering ground disturbance areas, dependent upon dryness of the soil and intensity of winds, as well as turning off internal combustion engines not in use (see section 2.1.3). Accordingly, a Record of Non-Applicability (RONA) has been prepared by the U.S. Navy (Appendix A).

Greenhouse Gases

Appendix A presents calculations estimating GHG emissions generated by the actions associated with Alternative 1, and Tables 3.1-2 thru 3.1-6 provide the results of these calculations. Implementation of Alternative 1 would lead to emissions of approximately 3,349 metric tons (3,692 tons) of CO_{2e}. These data show that the CO_{2e} emissions associated with Alternative 1 would amount to approximately 0.000052 percent of the total CO_{2e} emissions generated by the U.S (6,526 million metric tons) (USEPA 2014). Emissions under Alternative 1 are also below the 25,000 metric tons of CO_{2e} level proposed in the draft NEPA guidance provided by the CEQ.

Therefore, implementation of Alternative 1 would have no significant impact on air quality at or near NBVC Point Mugu, NBVC SNI, or SCrI and would not significantly harm the U.S. exclusive economic zone (EEZ) as defined by EO 12114.

Mitigation Measures

Implementation of Alternative 1 would not result in significant air quality impacts; therefore, no mitigation measures are proposed or required.

3.1.2.3 Alternative 2

Alternative 2 would have the same impacts as Alternative 1 (Tables 3.1-2 through 3.1-6).

General Conformity Analysis

The estimated emissions associated with Alternative 2 are the same as Alternative 1 and would be below *de minimis* threshold levels of 50 tons per year (tpy) VOCs or NO_X for conformity for the SCCAB (Ventura County, excluding SNI). Therefore, Alternative 2 would conform to the VCAPCD SIP and would not trigger a conformity determination under Section 176(c) of the CAA. In addition, since SNI and SCrI have been categorized as an attainment/unclassified area by the USEPA, they are not subject to the General Conformity Rule. However, estimated emissions for the proposed undertaking would be below *de minimis* levels; therefore, even if either island was considered a nonattainment or maintenance area, a formal conformity determination would not be necessary. Also, air quality conservation measures would be implemented as needed. These measures would include watering ground disturbance areas, dependent upon dryness of the soil and intensity of winds, as well as turning off internal combustion engines not in use (see section 2.1.3).

Greenhouse Gases

Tables 3.1-2 thru 3.1-6 provide the results of these calculations. Implementation of Alternative 2 would lead to emissions of approximately 3,349 metric tons (3,692 tons) of CO_{2e}. These data show that the CO_{2e}

emissions associated with Alternative 2 would amount to approximately 0.000052 percent of the total CO_{2e} emissions generated by the U.S (6,526 million metric tons) (USEPA 2014). Emissions under Alternative 2 are also below the 25,000 metric tons of CO_{2e} level proposed in the draft NEPA guidance provided by the CEQ.

Therefore, implementation of Alternative 2 would have no significant impact on air quality at or near NBVC Point Mugu, NBVC SNI, or SCrI and would not significantly harm the U.S. exclusive economic zone (EEZ) as defined by EO 12114.

Mitigation Measures

Implementation of Alternative 2 would not result in significant air quality impacts; therefore, no mitigation measures are proposed or required.

3.1.2.4 Alternative 3

Table 3.1-7 provides a summary of the Alternative 3 emissions generated by the FOCUS-II installation operations at the Building 811 and Charlie Pad sites at NBVC Point Mugu. These operations include the site preparation, drilling, and trenching activities, as well as motor vehicle use associated with this alternative. For the sake of analysis, it is assumed that all operations would be conducted within the same reporting year. Emissions for operations out to 3 NM (5.6 km) are provided, as this area is within the SCCAB.

Table 3.1-8 provides a summary of the emissions of operations on NBVC SNI under Alternative 3. The SNI operations include site preparation, motor vehicle usage, and drilling operations plus emissions associated with supply barge transport and the loading and unloading of the barges. Table 3.1-9 provides an overview of the Alternative 1 emissions at SCrI.

Table 3.1-10 provides a summary of the project emissions within U.S. waters between 3 and 12 NM (5.6 to 22.2 km) from the shores of NBVC Point Mugu, NBVC SNI, and SCrI. Table 3.1-11 provides emissions estimates for operations in international waters greater than 12 NM (22.2 km) from shore.

Table 3.1-7 Point Mugu Sites Emissions (within 3 NM) - Alternative 3

Component	Pollutant (tons/year)					
	VOCs	CO	NO_X	SO_X	PM_{10}	CO_{2e}
Building 811 Site						
Site preparation	0.00223	0.00833	0.0163	0.00003	0.00104	3.02
Drilling operations	0.0559	0.182	0.347	0.00059	0.0197	51.4
Trenching/cable installation	0.00144	0.00945	0.00961	0.00002	0.00602	1.69
On-road vehicles	0.00335	0.0240	0.0179	0.00007	0.00102	7.14
Offshore cable installation	0.824	19.6	2.31	--	0.0165	223
Subtotal	**0.887**	**19.8**	**2.70**	**0.00071**	**0.0443**	**286**
Charlie Pad Site						
Site preparation	0.00891	0.0329	0.0652	0.00012	0.00372	12.0
Drilling operations	0.0559	0.182	0.347	0.00059	0.0197	51.4
Trenching/cable installation	0.00361	0.0236	0.0240	0.00004	0.00690	3.96
On-road vehicles	0.00335	0.0240	0.0179	0.00007	0.00102	7.14
Offshore cable installation	0.824	19.6	2.31	--	0.0165	223
Subtotal	**0.896**	**19.9**	**2.76**	**0.00082**	**0.0478**	**298**
Total for Point Mugu Operations	**1.78**	**39.7**	**5.46**	**0.0015**	**0.0921**	**584**

Table 3.1-8 San Nicolas Island Emissions (within 3 NM) - Alternative 3

Component	Pollutant (tons/year)					
	VOCs	CO	NO_X	SO_X	PM_{10}	CO_{2e}
Site preparation	0.00297	0.0110	0.0217	0.00004	0.00138	4.02
Drilling operations	0.0559	0.182	0.347	0.00059	0.0197	51.4
Trenching/cable installation	0.00144	0.00945	0.00961	0.00002	0.00602	1.69
On-road vehicles	0.00112	0.00800	0.00597	0.00002	0.00034	2.38
Supply barge	0.00098	0.00583	0.0181	0.00090	0.00004	0.875
Offshore cable installation	1.01	23.9	2.83	--	0.0201	273
Total	**1.07**	**24.1**	**3.23**	**0.0016**	**0.0476**	**333**

Table 3.1-9 Santa Cruz Island Emissions (within 3 NM) - Alternative 3

Component	Pollutant (tons/year)					
	VOCs	CO	NO_X	SO_X	PM_{10}	CO_{2e}
Site preparation	0.0297	0.0110	0.0217	0.00004	0.00138	4.02
Drilling operations	0.105	0.457	0.956	0.00193	0.0346	106
Trenching/cable installation	0.0603	0.393	0.398	0.00072	0.122	62.5
On-road vehicles	0.00323	0.0279	0.00526	0.00006	3.77	6.11
Supply barge	0.00086	0.0109	0.0163	0.00190	0.00005	0.159
Offshore cable installation	1.01	23.9	2.83	--	0.0201	273
Total	**1.21**	**24.8**	**4.23**	**0.0046**	**3.95**	**452**

Table 3.1-10 Alternative 3 Emissions (3 < x < 12 NM)

Component	Pollutant (tons/year)					
	VOCs	CO	NO_X	SO_X	PM_{10}	CO_{2e}
SNI supply barge	0.00294	0.0175	0.0544	0.00270	0.00012	0.262
SCrI supply barge	0.00203	0.0109	0.0380	0.00443	0.00011	0.371
Offshore cable installation	3.30	78.2	9.26	--	0.0658	893
Total	**3.30**	**78.2**	**9.35**	**0.0071**	**0.0660**	**894**

Table 3.1-11 Alternative 3 Emissions (> 12 NM)

Component	Pollutant (tons/year)					
	VOCs	CO	NO_X	SO_X	PM_{10}	CO_{2e}
SNI supply barge	0.00587	0.0350	0.109	0.00540	0.00024	0.525
Offshore cable installation	5.49	130	15.4	--	0.110	1,490
Total	**5.50**	**130**	**15.5**	**0.0054**	**0.110**	**1,490**

General Conformity Analysis

The estimated emissions associated with Alternative 3 would be below *de minimis* threshold levels of 50 tons per year (tpy) VOCs or NO_X for conformity for the SCCAB (Ventura County, excluding SNI). Therefore, Alternative 3 would conform to the VCAPCD SIP and would not trigger a conformity determination under Section 176(c) of the CAA. In addition, since SNI and SCrI have been categorized as an attainment/unclassified area by the USEPA, they are not subject to the General Conformity Rule. However, estimated emissions for the proposed undertaking would be below *de minimis* levels; therefore, even if either island was considered a nonattainment or maintenance area, a formal conformity determination would not be necessary. Also, air quality conservation measures would be implemented as needed. These measures would include watering ground disturbance areas, dependent upon dryness of the soil and intensity of winds, as well as turning off internal combustion engines not in use (see section 2.1.3).

Greenhouse Gases

Tables 3.1-7 thru 3.1-11 provide the results of these calculations. Implementation of Alternative 1 would lead to emissions of approximately 3,349 metric tons (3,692 tons) of CO_{2e}. These data show that the CO_{2e} emissions associated with Alternative 3 would amount to approximately 0.000052 percent of the total CO_{2e} emissions generated by the U.S (6,526 million metric tons) (USEPA 2014). Emissions under Alternative 3 are also below the 25,000 metric tons of CO_{2e} level proposed in the draft NEPA guidance provided by the CEQ.

Therefore, implementation of Alternative 3 would have no significant impact on air quality at or near NBVC Point Mugu, NBVC SNI, or SCrI and would not significantly harm the U.S. exclusive economic zone (EEZ) as defined by EO 12114.

Mitigation Measures

Implementation of Alternative 3 would not result in significant air quality impacts; therefore, no mitigation measures are proposed or required.

3.1.2.5 Alternative 4

Implementation of Alternative 4 would involve only one construction site at NBVC Point Mugu (Charlie Pad). Construction activities at NBVC SNI would be identical to Alternative 4 and no construction impacts would be generated at SCrI. Table 3.1-12 provides a summary of the Alternative 4 criteria pollutant emissions within 3 NM (5.6 km) of the NBVC Point Mugu shoreline.

Table 3.1-12 Point Mugu Emissions (within 3 NM) – Alternative 4

Component	Pollutant (tons/year)					
	VOCs	CO	NO_X	SO_X	PM_{10}	CO_{2e}
Site preparation	0.00891	0.0329	0.0652	0.00012	0.00372	12.0
Drilling operations	0.0559	0.182	0.347	0.00059	0.0197	51.4
Trenching/cable installation	0.00361	0.0236	0.0240	0.00004	0.00690	3.96
On-road vehicles	0.00335	0.0240	0.0179	0.00007	0.00102	7.14
Offshore cable installation	0.824	19.6	2.31	--	0.0165	223
Total	**0.896**	**19.9**	**2.76**	**0.00082**	**0.0478**	**298**

Table 3.1-13 provides a summary of the emissions of operations on NBVC SNI under Alternative 4. The SNI operations include site preparation, motor vehicle usage, and drilling operations, plus emissions associated with supply barge transport and the loading and unloading of the barges.

Table 3.1-13 San Nicolas Island Emissions (within 3 NM) - Alternative 4

Component	Pollutant (tons/year)					
	VOCs	CO	NO_X	SO_X	PM_{10}	CO_{2e}
Site preparation	0.00297	0.0110	0.0217	0.00004	0.00138	4.02
Drilling operations	0.0559	0.182	0.347	0.00059	0.0197	51.4
Trenching/cable installation	0.00144	0.00945	0.00961	0.00002	0.00602	1.69
On-road vehicles	0.00112	0.00800	0.00597	0.00002	0.00034	2.38
Supply barge	0.00098	0.00583	0.0181	0.00090	0.00004	0.875
Offshore cable installation	1.01	23.9	2.83	--	0.0201	273
Total	**1.07**	**24.1**	**3.23**	**0.0016**	**0.0476**	**333**

Table 3.1-14 provides a summary of the project emissions within U.S. waters between 3 and 12 NM (5.6 to 22.2 km) from the shores of NBVC Point Mugu and NBVC SNI. Table 3.1-15 provides emissions estimates for operations in international waters greater than 12 NM (22.2 km) from shore.

Table 3.1-14 Alternative 4 Emissions (3 < x < 12 NM)

Component	Pollutant (tons/year)					
	VOCs	CO	NO_X	SO_X	PM_{10}	CO_{2e}
SNI supply barge	0.00294	0.0175	0.0544	0.00270	0.00012	0.262
Offshore cable installation	2.56	60.8	7.20	--	0.0512	694
Total	**2.56**	**60.8**	**7.25**	**0.0027**	**0.0513**	**694**

Table 3.1-15 Alternative 4 Emissions (> 12 NM)

Component	Pollutant (tons/year)					
	VOCs	CO	NO_X	SO_X	PM_{10}	CO_{2e}
SNI supply barge	0.00587	0.0350	0.109	0.00540	0.00024	0.525
Offshore cable installation	4.03	95.6	11.3	--	0.0804	1,090
Total	**4.04**	**95.6**	**11.4**	**0.0054**	**0.806**	**1,090**

Therefore, implementation of Alternative 4 would have no significant impact on air quality at or near NBVC Point Mugu, NBVC SNI and would not significantly harm the U.S. EEZ as defined by EO 12114.

Mitigation Measures

Under Alternative 4, there would be no significant impacts to air quality. Therefore, no mitigation measures are proposed or required.

3.1.2.6 Alternative 5 – The No-Action Alternative

Under the No-Action Alternative, the proposed installation of FOCUS-II would not occur and existing conditions would remain unchanged.

Mitigation Measures

Implementation of the No-Action Alternative would not result in significant air quality impacts; therefore, no mitigation measures are proposed or required.

3.2 BIOLOGICAL RESOURCES

3.2.1 Affected Environment

3.2.1.1 Definition of Resource

Biological resources include plants and animals and the habitats in which they occur. For this analysis, terrestrial and marine biological resources are considered in separate subsections, with some overlap in the coverage of transitional habitats and the associated species of coastal wetlands, tidal flats, and beaches. Terrestrial biological resources discussed include vegetation communities, wildlife, and special status species. Marine biological resources discussed include marine habitats, fish and fisheries, marine birds, marine mammals, and special-status species. Where appropriate, marine biological resources are further categorized by the habitat type in which they occur (rock versus sand). Special topics such as EFH, special aquatic sites, and fisheries are also discussed for the FOCUS-II project areas.

3.2.1.2 Terrestrial Biological Resources

Terrestrial biological resources at NBVC Point Mugu, at NBVC SNI, and at SCrI are discussed below. Vegetation communities, common species and species of special concern are presented and discussed for each of these three areas, as well as the proposed FOCUS-II project areas within them. Additional detail can be found in the Integrated Natural Resources Management Plans (INRMPs) for NBVC Point Mugu and NBVC SNI, respectively (NBVC 2013, 2010).

Terrestrial Vegetation Communities

Point Mugu

Using a modified habitat classification from Zedler et al. (1992), the 2013 NBVC Point Mugu INRMP (NBVC 2013) mapped habitat types based on dominant plant species and physiognomy (Figure 3.2-1). The areas of habitat types and jurisdictional wetlands within the installation as a whole are provided in Table 3.2-1.

Table 3.2-1 Habitat Types at Point Mugu

Habitat Community	Acres
Ocean beach and dunes	290
Brackish marsh	46
Drainage ditches	57
Intertidal mudflat and sandflat	346
Intertidal salt marsh	784
Non-tidal salt marsh	49
Sand nest islands	9
Salt marsh and salt panne	211
Tidal creeks	216
Transitional wetlands	271
Mixed transition disturbed	765

Source: NBVC 2013

Mugu Lagoon is the largest functioning salt marsh along the coast of southern California today (USFWS 2009a), consisting of 2,140 ac (866 hectares [ha]) of marsh lands that provides habitat for numerous invertebrate, fish, bird, and plant species. Coastal salt marsh at Mugu Lagoon is defined by the presence

of hydrophytic halophytes (plants that grow partly or wholly in water and are salt tolerant) and water levels that fluctuate due to tidal action. Coastal salt marsh at NBVC Point Mugu, for mapping purposes, is divided into intertidal salt marsh and salt panne, intertidal mud flat and sand flat, open water and tidal creeks, and non-tidal salt marsh (Navy 2002). Proceeding upward from the high-tide line are unvegetated sand beach and vegetated dune communities, within which can be recognized foredune (unstable habitats characterized by pioneering plant species), backdune (stabilized by perennial plants), and dune swale (wetland) communities, which are important vestiges of the sand dune habitats that have been largely eliminated from southern California. Other prevalent communities at NBVC Point Mugu include developed and/or disturbed habitats. Apart from Mugu Lagoon and dune and beach habitat, the non-wetland areas of NBVC Point Mugu provide relatively minor amounts of plant and wildlife habitat and beach habitats.

The endangered salt marsh bird's beak is the only federally listed plant species that occurs at NBVC Point Mugu (Navy 2002).

San Nicolas Island

SNI has been heavily disturbed by past land uses and exploitation, especially sheep grazing, which caused the removal of native vegetation and subsequent erosion, and contributed to the introduction and spread of non-native plants. Using a modified habitat classification from Halvorson et al. (1996), the 2010 NBVC SNI INRMP (NBVC 2010) calculated areas of habitat types and jurisdictional wetlands provided in Table 3.2-2.

Table 3.2-2 Habitat Types on San Nicolas Island

Habitat Community	Acres
Beaches	234.4
Coastal Dunes	138.6
Inland Dunes	783.2
Coreopsis Scrub	1348.7
Lupine Scrup	2.7
Coastal Scrub	6003.0
Grasslands	1739.3
Barren areas	3469.9
Vernal pools	0.8
Coastal Marshes	9.1
Riparian	201.1
Pine trees (planted)	2.7
Developed areas	324.8

Source: Halvorson et al. 1996 in NBVC 2010

Two hundred seventy-eight vascular plant taxa (species, subspecies and varieties) have been documented on SNI (Junak 2008). SNI has strong floristic affinities with nearby geographic regions, sharing 86 percent of its native plants with the southern California mainland, 85 percent with the four northern Channel Islands, 84 percent with the other three southern Channel Islands, and 53 percent with islands off the Pacific coast of Baja California, Mexico. Compared to the other seven Channel Islands, SNI has a relatively limited richness of native plant species and also has the highest percentage (51 percent) of introduced plant species (NBVC 2010).

Approximately 11 percent of the island's native vascular plant taxa are endemic to the Channel Islands, ranking it in the middle amongst other Channel Islands. Two vascular plant taxa found only on SNI are the SNI buckwheat (*Eriogonum grande* var. *timorum*) and the SNI malacothrix (*Malacothrix foliosa* ssp. *polycephala*) (NBVC 2010). SNI has no federally listed endangered or threatened plant species. Special-status plants on SNI are provided in Table 3.2-3 below.

Figure 3.2-2 shows the vegetation in the vicinity of the proposed SNI landing site based on classification and mapping by Halvorson et al. (1996). Coreopsis scrub is the dominant native vegetation community in the vicinity of the drilling site. Coreopsis scrub is dominated by sea dahlia (*Leptosyne gigantea*) and is found predominantly along the northern slopes of the island.

The majority of the proposed SNI project areas are within barren or sparsely vegetated areas. The proposed onshore cable alignments would either follow existing roads or would use existing infrastructure and alignments for existing cable or pipelines that are located in previously disturbed habitat or areas devoid of vegetation due to the previous construction of pipeline corridors. Disturbed habitat is typified by non-native grasses and invasive weedy species.

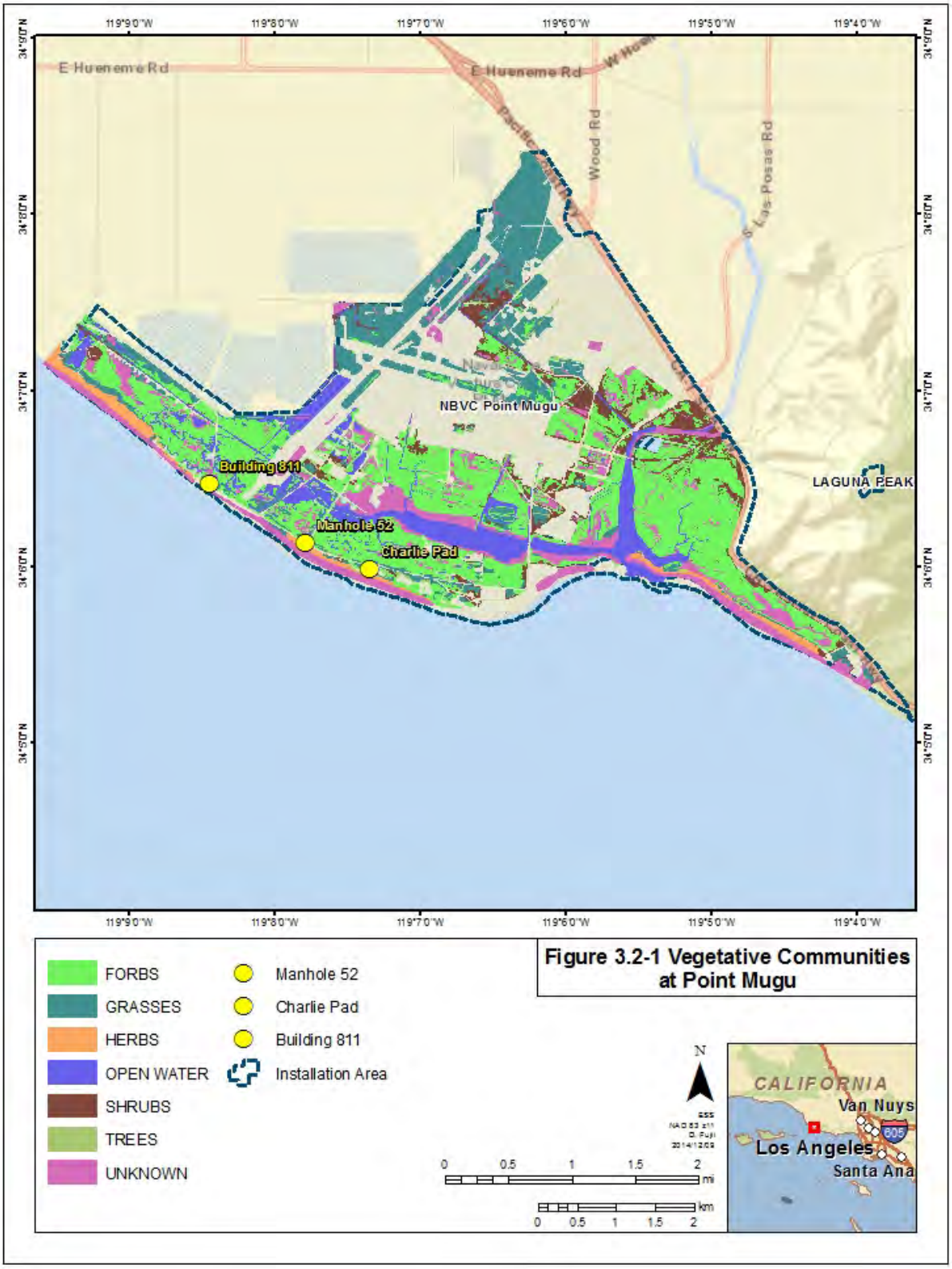


Figure 3.2-1 Vegetative Communities at Point Mugu

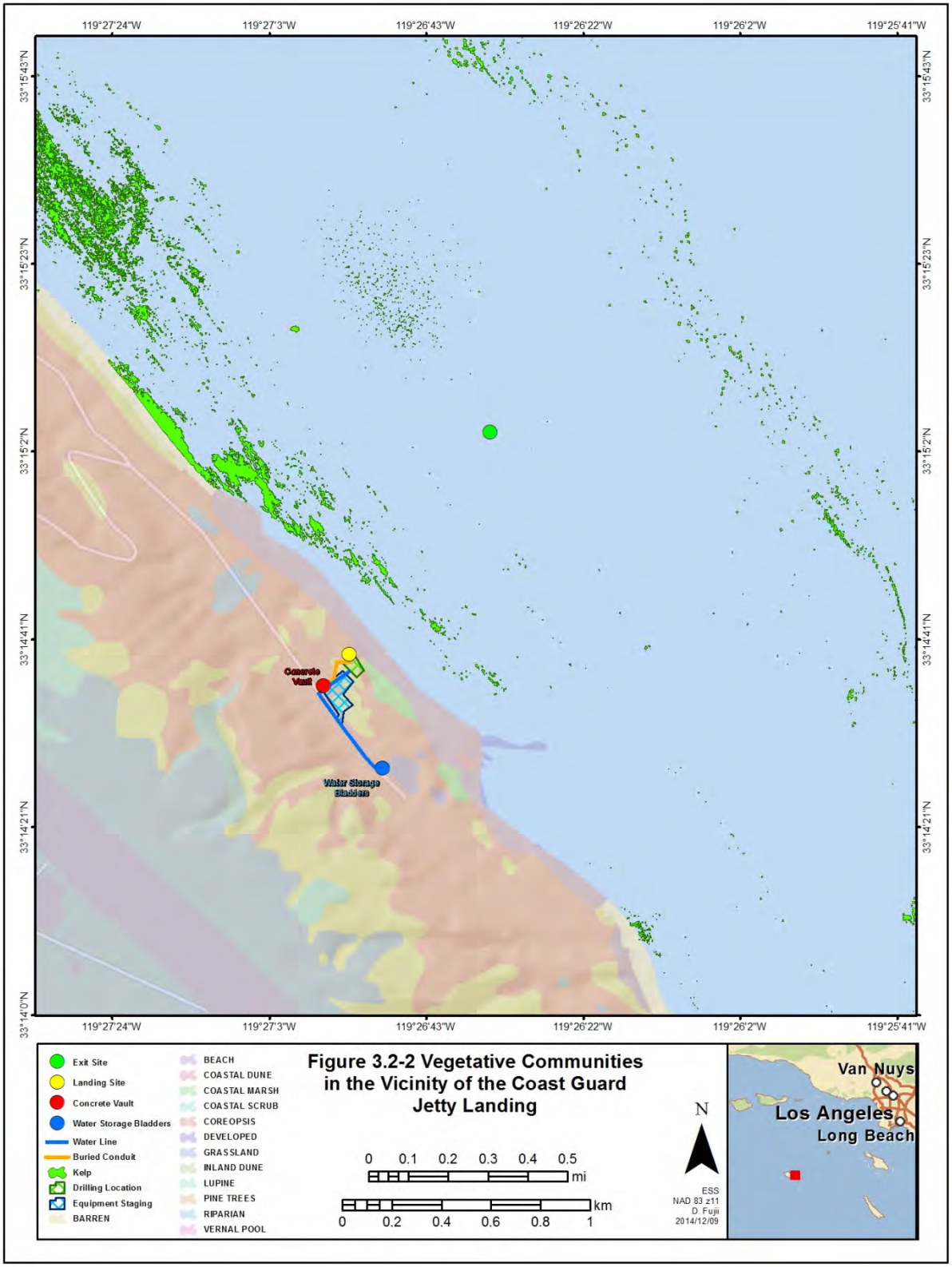


Figure 3.2-2 Vegetative Communities in the Vicinity of the Coast Guard Jetty Landing

Santa Cruz Island

The vegetation of SCrI has been extensively impacted by sheep grazing and pig farming operations on the island. In 1937, the Stanton Ranch controlled 90 percent of the island and attempted to control the island's sheep population through fencing and round up operations. Due to the severe grazing that had occurred, coastal prickly pear (*Opuntia littoralis*), a native cactus and component of island coastal bluff scrub, began to expand. By 1939 the Stanton Ranch estimated that 40 percent of the rangeland on the island was useless because of dense prickly pear stands. By the 1970's, an estimated 263,000 sheep were removed from SCrI and sent to market (NPS 2015). Through a combination of removal methods, all non-native terrestrial grazing animals have been removed from the island.

Approximately 480 native (42 of these endemic) and 170 non-native vascular plant species are known to grow on SCrI. Seven additional species occur on the island but it is unknown whether they are native or non-native. Large portions of the island are currently dominated by grasslands, with remnant areas of coastal bluff scrub, chaparral, coastal sage scrub, coyote-brush scrub, woodlands, and wetlands. The grasslands are present mainly on coastal terraces and broad plateaus on the eastern end of the island and extend up the broader ridges into the steep rocky slopes to the west. (NPS 2015)

The following discussion of SCrI plants is taken from the 2015 Channel Islands National Park Final General Management Plan/Wilderness Study/ Environmental Impact Statement (NPS 2015).

Prevalent non-native annual grasses include ripgut brome (*Bromus diandrus*), soft-chess (*B. hordeaceus*), red brome (*B. madritensis*, ssp. *rubens*), wild oats (*Avena fatua and A. barbata*), ryegrass (*Festuca perennis*), and foxtail barley (*Hordeum murinum*). Following the removal of sheep on the island, natural recovery of perennial grasses has occurred including purple needlegrass (*Stipa pulchra*) and California barley (*H. brachyantherum* ssp. *californicum).* Scattered throughout the grasslands are solitary shrubs such as lemonade berry (*Rhus integrifolia*), manzanita (*Arctostaphylo* spp.), and island wild lilac (*Ceanothus* spp.). (NPS 2002 in NPS 2015)

Island chaparral and oak woodlands are the dominant woody vegetation communities on the isthmus. The island chaparral community differs somewhat from mainland chaparral. Structurally, the dominant island chaparral species can be more arborescent, resulting in a more open woodland appearance, which may be a result of the island's grazing history. Island scrub oak (*Quercus pacifica*) tends to dominate the island chaparral community on the isthmus. Other common species include a prostrate variety of chamise (*Adenostoma fasciculatum* var. *prostratum*), McMinn's manzanita (*Arctostaphylos viridissima*), and toyon (*Heteromeles arbutifolia*). The southern coastal oak woodland community is dominated by coast live oak (*Quercus agrifolia*). This community also grows in a small area on the east end of the island. (NPS 2015)

Coastal bluff scrub grows on the steep coastal cliffs and slopes that surround much of the island. Due to their inaccessibility, this plant community has been a refuge for some plant species. With the elimination of grazing, many plant species formerly confined to these coastal bluffs are spreading into other areas of the island. Common plant species found in this community include common yarrow (*Achillea millefolium*), morning glory (*Calystegia macrostegia* ssp. *macrostegia),* giant coreopsis, Greene's Dudleya (*Dudleya greenei*), island hazardia (*Hazardia detonsa*), and island buckwheat (*Eriogonum grande* var. *grande*). (NPS 2015)

Coastal sage scrub grows on dry, rocky slopes across the island, but particularly on south-facing slopes. It intergrades with grasslands on gentle slopes with deeper soils, and with island chaparral on rocky north-facing slopes. Currently much of this community is dominated by nonnative annual grasses due to alteration attributed to the past grazing land use. However, some areas are intact on the slopes east of Valley Anchorage on the isthmus. In these areas, nearly impenetrable 3- to 4-ft-tall thickets of shrubs grow. The dominant species in this community include California sagebrush (*Artemisia californica*), island paintbrush (*Castilleja lanata* ssp. *hololeuca*), SCrI buckwheat (*Eriogonum arborescens*), California brittlebush (*Encelia californica*), sawtooth goldenbush (*Hazardia squarrosa*), coastal prickly pear, lemonade berry, and black sage (*Salvia mellifera*). Coastal sage scrub has recovered significantly since the removal of sheep from the island. (NPS 2015)

Coyote-brush scrub is found on SCrI at elevations below 500 ft (152 m) on moderate slopes and flats. This shrubland primarily grows on deep, unstable soils that are continually disturbed by natural forces. Many species found in the community are weedy nonnatives, particularly annual grasses and fennel (*Foeniculum vulgare*). Some areas of annual grassland/Baccharis scrub, such as those in the Rancho De Norte area on the isthmus, are dominated by tall stands of fennel, particularly on intrinsically unstable clay soils that cover much of the area. (NPS 2015)

There are two wetland complexes on the island, one of which is within the project area near the Prisoners Harbor landing site (Figure 3.2-3). This complex comprises three contiguous classes of wetlands. The rocky shoreline is classified as marine/ intertidal/rocky shore. Above the shoreline is a zone classified as palustrine/emergent/persistent, palustrine/scrub-shrub/broad-leaved deciduous, and palustrine/forested/broad-leaved deciduous. The remaining wetland area includes the stream channel and channel bottom and is classified as riverine/ lower perennial/rock bottom. (NPS 2015)

The Prisoners Harbor wetland complex has been dramatically altered by filling and dredging over the past 100 years. Approximately 60 percent of the original wetland has been filled or dredged over this period. It is thought that the pre-settlement wetland extended over the entire floodplain west of the existing stream channel and northeast of the dock access road. In recent years, corrals have been moved and approximately three acres of new wetland have been created. (NPS 2015)

There are two endemic species of manzanita present on SCrI: the island manzanita (*Arctostaphylos insularis*) and McMinn's manzanita. Neither species is state or federally listed as threatened or endangered. There is an old growth grove of island manzanita growing on either side of Navy Road along the ridge near the Navy Site. (NPS 2015)

Figure 3.2-3 Wetlands in the Vicinity of the Prisoners Harbor Landing Site

Terrestrial Wildlife

Point Mugu

Numerous wildlife species inhabit the tidal flats, beaches, salt marsh, and adjacent dunes and other upland habitats at NBVC Point Mugu. Mugu Lagoon (including the lagoon and adjacent wetland and upland areas) is the largest and least disturbed coastal wetland ecosystem in southern California.

A total of 351 species of birds have been identified at Mugu Lagoon, including 151 species of water birds (i.e., shorebirds, waterfowl, and wading birds) (Navy 2002). The diversity and abundance of avian species varies seasonally with migration; NBVC Point Mugu experiences the highest bird densities during the spring migration. With the exception of rock doves (*Columba livia*), European starlings (*Sturnus vulgaris*), and house sparrows (*Passer domesticus*), all bird species at Point Mugu are protected under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. § 703 *et seq.*), which prohibits the taking, killing, or possessing of migratory birds or the parts, nests, or eggs of such birds, unless permitted by regulation. Conservation of migratory bird habitats is mandated by EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*.

Amphibians are uncommon in salt marshes but can occur in adjacent habitats. Reptiles are common in the salt marsh. The southern Pacific rattlesnake (*Crotalus organus helleri*) inhabits the upper fringe of intertidal salt marsh habitat. The southern western pond turtle (*Actinemys marmorata*), a California Department of Fish and Wildlife (CDFW) (formerly California Department of Fish and Game) Species of Special Concern (CDFG 2011), occurs in fresh water, brackish, and saline habitats on the base. (NBVC 2013)

California ground squirrels (*Ostospermophilus beecheyi*), black-tailed jackrabbits (*Lepus californicus*), and desert cottontails (*Sylvilagus audubonii*) occur in the upper marsh. Other mammals known to inhabit the upland areas of NBVC Point Mugu and Mugu Lagoon include coyote (*Canis latrans*), raccoon (*Procyon lotor*), and striped skunk (*Mephitis mephitis*). Mugu Lagoon also supports numerous terrestrial invertebrates including spiders, wasps, and moths. (Navy 2002)

San Nicolas Island

NBVC SNI has a limited diversity of fauna due to low annual rainfall, small size, isolation from other landmasses and relatively sparse plant cover. Human usage of the island, including the introduction of grazing animals, feral cats, military activities, and the introduction of non-native species, has also impacted native land animal populations. Nevertheless, over 200 species of invertebrates have been documented on NBVC SNI, including 6 native and two non-native species of terrestrial snails. (NBVC 2010)

Of the over 300 species of birds known to occur on NBVC SNI, most are not year-round residents but are seasonal visitors, migrants, or vagrants. Twenty species of birds regularly breed on NBVC SNI, including the western gull (*Larus occidentalis*), Brandt's cormorant (*Phalacrocorax penicillatus*), and black oystercatcher (*Haematopus bachmani*). Three species endemic to the Channel Islands are the island horned lark (*Eremophila alpestris insularis*), San Clemente Island house finch (*Carpodacus mexicanus clementae*), and dusky orange-crowned warbler (*Vermivora celata sordid*). Gulls and cormorants

establish large seasonal breeding colonies on the west end of SNI. Numbers of nesting birds have increased in recent years due to protection from human activities (NBVC 2010). Brandt's cormorants are sensitive to disturbance during nesting, but do not nest near the project area. Roosting areas for Brandt's cormorants are shown on Figure 3.2-5. Of the bird species breeding on NBVC SNI, the western snowy plover is the only species protected by the federal ESA; the plover is listed as threatened and is discussed in further detail on page 3-29.

Raptors are uncommon visitors to NBVC SNI, with the exception of American kestrels (*Falco sparverius*) peregrine falcons, (*Falco peregrinus*), and barn owls (*Tyto alba*) which are permanent residents. In addition, NBVC SNI also supports a wintering population of burrowing owls (*Athene cunicularia*) (NBVC 2010). Migratory birds in the project area are protected by the MBTA, which prohibits the taking, killing, or possessing of migratory birds or the parts, nests, or eggs of such birds, unless permitted by regulation. Conservation of migratory birds is also mandated by EO 13186, and is addressed by the Navy for all activities occurring on NBVC SNI (NBVC 2010).

Reptiles on NBVC SNI include three species of lizards: side-blotched lizard (*Uta stansburiana*), southern alligator lizard (*Elgaria multicarinatus*), and the island night lizard (*Xantusia riversiana riversiana*, discussed below). SNI supports two native terrestrial mammalian species, the state-listed threatened San Nicolas Island fox and the endemic San Nicolas Island deer mouse (*Peromyscus maniculatus exterus*), which are widely distributed on the island (NBVC 2010). Bats appear to be rare on SNI, with a few recent observations due to efforts to determine bat use of the island (NBVC 2010).

Santa Cruz Island

Five native reptile and three native amphibian species have been recorded on SCrI. The Channel Islands slender salamander (*Batrachoseps pacificus pacificus*) and the island fence lizard (*Sceloorus occidentalis beckii*) are endemic to the Channel Islands. The Santa Cruz gopher snake (*Pituophis catenifer pumilus*) and Pacific tree frog (*Pseudacris regilla*) occur only on SCrI and Santa Rosa Island. The yellow-bellied racer (*Coluber mormon*) and the black-belly slender salamander (*Batrachoseps nigriventris*) only occur on SCrI. The southern alligator lizard (*Elgaria multicarinata*) occurs on all the channel islands and they side-blotched lizard (*Uta stansburnia*) occurs on Anacapa and SCrI. In addition, the non-endemic Baja California tree frog (*Pseudacris hypochondriaca hypochondriaca*) and San Diego night snake (*Hypsiglena ochrorhyncha klauberi*) have been reported on SCrI. These reptiles and amphibians occur in scattered areas and in limited numbers on the islands**.** The salamanders should be found in most habitats. Very little is known about the Santa Cruz gopher snake. (NPS 2015)

Forty-four native land bird species are known to breed on SCrI. Extensive riparian areas, oak woodlands, chaparral, and pine forests provide habitat for acorn woodpeckers (*Melanerpes formicivorus*), red-breasted nuthatches (*Sitta Canadensis*), northern flickers (*Colaptes auratus*), and the endemic island scrub-jay (*Aphelocoma insularis*), as well as pacific-slope flycatchers (*Empidonax difficilis Insulicola)*, black phoebes (*Sayornis nigricans*), and spotted towhees (*Pipilo maculates*). Introduced stands of eucalyptus also provide breeding habitat for northern saw-whet owls (*Aegolius acadicus*). Eight subspecies are endemic to SCrI and one or more of the other northern Channel Islands, while the island scrub-jay lives only on SCrI. Three of the endemic subspecies (horned lark, rufous-crowned sparrow [*Aimophila ruficeps*], and loggerhead shrike [*Lanius ludovicianus anthonyi*, a California species of special

concern (CDFW 2008)]) exist at low population levels. Several pairs of peregrine falcons breed annually on the island. (NPS 2002 in NPS 2015)

Fifteen mammal species are known to live on the island. The relatively large size of the island and the diversity of habitats it supports allow for a relative abundance of terrestrial wildlife species to thrive on SCrI. The Santa Cruz Island deer mouse (*Peromyscus maniculatus santacruzae*) is the most common mammal species. The island spotted skunk (*Spilogale gracilis amphiala*) is only found on SCrI and Santa Rosa Island. The skunks are nocturnal carnivores, preferring ravines, and, to a lesser extent, chaparral and grasslands. A direct competitor of the federally-listed endangered Santa Cruz Island fox, the endemic spotted skunk has always been a common species on SCrI. (NPS 2015)

Bat surveys conducted on the Channel Islands have detected the presence of 11 species of bats in the Channel Islands National Park. These include the California myotis (*Myotis californicus*), Longeared myotis (*M. evotis*), Fringed myotis (M. thysanodes), Townsend's big-eared bat (*Corynorhinus townsendii townsendii*), Big brown bat (*Eptesicus fuscus*), Pallid bat (*Antrozous pallidus*), Silver-haired bat (*Lasionycteris noctivagans*), Hoary bat (*Lasiurus cinereus*), Western bat (*L. blossevillii*), Mexican free-tailed bat (*Tadarida brasiliensis*), and Western mastiff bat (*Eumops perotis*). All of the bat species currently recorded from the park occur on SCrI, suggesting the presence of much suitable habitat for bats on the island. (NPS 2015)

Three mammal subspecies occur only on the island: Santa Cruz deer mouse, Santa Cruz Island harvest mouse (*Reithrodontomys megalotis santacruzae*), and Santa Cruz Island fox. The island spotted skunk (*Spilogale gracilis amphiala*) occurs only on SCrI and Santa Rosa Island. Widespread small mammal monitoring has not been conducted on SCrI, although endemic deer mice would predictably be found in all habitat types on the island. (NPS 2015)

It should be noted that there is one species of bee that is found only on SCrI. The Channel Island sweat bee (*Lasioglossum channelense*) nests in the ground and can be found in a woody area along one stretch of Navy Road. This endemic species is not state or federally listed. (NPS 2015)

Special-Status Species

Special-status species include those species that are listed, proposed for listing, or are active candidates for listing as threatened or endangered under the federal ESA by the USFWS; or as rare, threatened, or endangered under the California ESA by the CDFW. A summary of special status species is shown in Table 3.2-3. Marine special-status species are discussed separately in section 3.2.1.4 below.

Table 3.2-3 Summary of Threatened and Endangered Species Known to Occur or Potentially Occurring at Point Mugu, San Nicolas Island, and Santa Cruz Island.

Common Name	***Scientific Name***	***Federal Listing Status***	***State Listing Status***	***Found Near project areas***
Point Mugu				
Salt Marsh Bird's Beak	*Chloropyron maritimum ssp. maritimum*	FE	SE	X
Tidewater Goby	*Eucyclogobius newberryi*	FE	None	--
Ridgway's Rail	*Rallus longirostris levipes*	FE	SE	X
California Least Tern	*Sterna antillarum browni*	FE	SE	X
Least Bell's Vireo	*Vireo bellii pusillus*	FE	SE	--
Western Snowy Plover	*Charadrius alexandrinus ssp. nivosus*	FT	None	X
Belding's Savannah Sparrow	*Passerculus sandwichensis beldingi*	None	SE	--
San Nicolas Island				
SNI Buckweat	*Eriogonum grande var. timorum*	None	SE	--
Beach Spectacle-Pod	*Dithyrea maritima*	None	ST	--
Trask's Milkvetch	*Astragalus traskiae*	None	SR	--
Black Abalone	*Haliotis cracherodii*	FE	None	--
White Abalone	*Haliotis sorenseni*	FE	None	U
Western Snowy Plover	*Charadrius alexandrinus ssp. nivosus*	FT	None	X
San Nicolas Island fox	*Urocyon littoralis dickeyi*	None	ST	X
Southern Sea Otter	*Enhydra lutris nereis*	FT	None	X
Santa Cruz Island				
Box Bedstraw (Sea Cliff Bedstraw)	*Galium buxifolium*	FE	SR	X
Island Rush-Rose	*Heliathemum greenei*	FT	None	X
Hoffmann's Rockcress	*Arabis hoffmannii*	FE	None	--
Island Barberry	*Berberis pinnata ssp. insularis*	FE	None	--
Santa Cruz Island live-forever	*Dudleya nesiotica*	FT	None	--
Santa Cruz Island bush mallow	*Malacothamnus fasciculatus var. nesioticus*	FE	None	--
Santa Cruz Island chicory	*Malacothrix indecora*	FE	None	--
Island malacothrix	*Malacothrix squalida*	FE	None	--
Santa Cruz Island lace pod	*Thysanocarpus conchuliferus*	FE	None	--
Black Abalone	*Haliotis cracherodii*	FE	None	--
White Abalone	*Haliotis sorenseni*	FE	None	U
Western Snowy Plover	*Charadrius alexandrinus ssp. nivosus*	FT	None	X
Bald Eagle	*Haliaeetus leucocephalus*	None	SE	X
Santa Cruz Island Fox	*Urocyon littoralis*	FE	ST	X

Abbreviations Used: FE = Federal endangered; FT = Federal threatened; SE = State endangered; ST = State threatened; SR = State Rare; X = present; -- = not present; U = Unknown but possible. (CNDDB 2016).

Point Mugu

Salt Marsh Bird's Beak – The federally and state-listed endangered salt marsh bird's beak is an annual plant, blooming from May to October. It is found in the upper portions of tidal and salt marshes, especially where there is seasonal fresh water inflow or inundation; low salinities enhance seed germination. This species is hemiparasitic, meaning it augments its nutrient supply by rooting into a host plant. The species is currently known to persist in seven coastal salt marshes in California from San Diego County to San Luis Obispo County (USFWS 2009b). Salt marsh bird's beak is considered sensitive at Mugu Lagoon. The primary distribution is located west of Runway 3 (north-south runway); however, a few remnant populations are located in dispersed areas east of Runway 3 (NBVC 2013).

Figure 3.2-4 provides an overview of the federally listed species found at NBVC Point Mugu, including salt marsh bird's beak habitat. Primary suitable habitat for salt marsh bird's beak on NBVC Point Mugu occurs in salt marsh habitats on the eastern and western arms of Mugu Lagoon. Specific salt marsh bird's beak populations have been identified outside the Building 811 site area and east of the Charlie Pad site.

Ridgway's Rail – The federally and state-listed endangered Ridgway's rail (*Rallus longirostris levipes,* formerly known as light-footed clapper rail) is found in salt marshes dominated by tall, dense vegetation, typically cordgrass (*Spartina foliosa*), which it uses for nesting and cover, and pickleweed (*Salicornia pacifica*), which it uses for foraging and high tide refuge. Due to its secretive nature, the Ridgway's rail is a rarely observed, resident bird at Point Mugu. (NBVC 2013)

Ridgway's rails commence breeding activity around mid-February with the establishment of mating pairs. Nesting occurs from mid-March to July, with the majority of eggs laid between April and May. Mugu Lagoon represents a relatively secure breeding and foraging site because public access is restricted (though Ridgway's rails are generally tolerant of human activity if it does not result in habitat degradation [USFWS 2001]), and because of current Navy management policies.

Mugu Lagoon is the northernmost marsh in California occupied by Ridgway's rail and represents over 25 percent of the potential habitat for the species (USFWS 2009a). At Mugu Lagoon, nesting occurs in stands of southwestern spiny rush (*Juncus acutus* spp. *leopoldii*) that afford proximity to foraging habitat in tidal flats and channels. Since doubling in size between 2001 and 2003, the Point Mugu subpopulation fluctuated between 14 and 19 pairs, from 2003 to 2007. It had been much smaller, three to seven pairs for nearly 20 years until augmentations with captive-bred rails fostered its growth. There was a crash in 2008 back to five pairs, but the subpopulation was back up to nine pairs in 2009, 12 pairs in 2010, a minimum of 16 pairs in 2011, 22 pairs in 2012, and an all-time high of 23 pairs in 2013 (CDFW 2013a). Ridgway's rail habitat at Point Mugu is shown in Figure 3.2-4. Much of the lagoon area north of Beach Road has been identified as Ridgway's rail habitat, including areas in close proximity to the Charlie Pad project areas.

Under the Navy's INRMP (NBVC 2013), Ridgway's rail nesting and foraging areas are protected, and additional recovery programs, such as population and nesting monitoring and predator management, are conducted.

California Least Tern – The federally and state-listed endangered California least tern (*Sterna antillarum browni*) nests in open beach habitat adjacent to Mugu Lagoon; birds forage in the shallow open waters of

the lagoon and ocean waters just offshore. California least terns establish nesting colonies on sandy soils with little vegetation along the ocean, lagoons, and bays. Their nests are shallow depressions lined with shells or other debris. Least terns are generally present at nesting areas in California between mid-April and late September, often with two waves of nesting during this time period (CDFG 2012).

In 2011, an estimated 498-703 breeding pairs established 717 nests at Point Mugu for a total of 72 fledglings. The vast majority of breeding pairs and fledglings (467-672 pairs and 59 fledglings) were located at Point Mugu's Ormond Beach East; 28 breeding pairs and 12 fledglings were located at Holiday Beach, two pairs and one fledgling were located at the Holiday Beach Salt Panne, and one pair without fledglings was located at the Eastern Arm of the Mugu Lagoon's barrier beach (CDFG 2012). The Point Mugu Ormond Beach colony is the largest least tern colony in Ventura County. Under the Navy's INRMP (NBVC 2013), least tern nesting and foraging areas are protected, and additional recovery programs, such as population and nesting monitoring and predator management, are conducted.

Least tern breeding and foraging areas at Point Mugu are shown in Figure 3.2-4. Mugu Lagoon and adjacent beaches represent a relatively secure breeding and foraging area for the species due to no public access and current Navy management policies. Least tern nesting habitat can be found in the beach areas adjacent to the project sites.

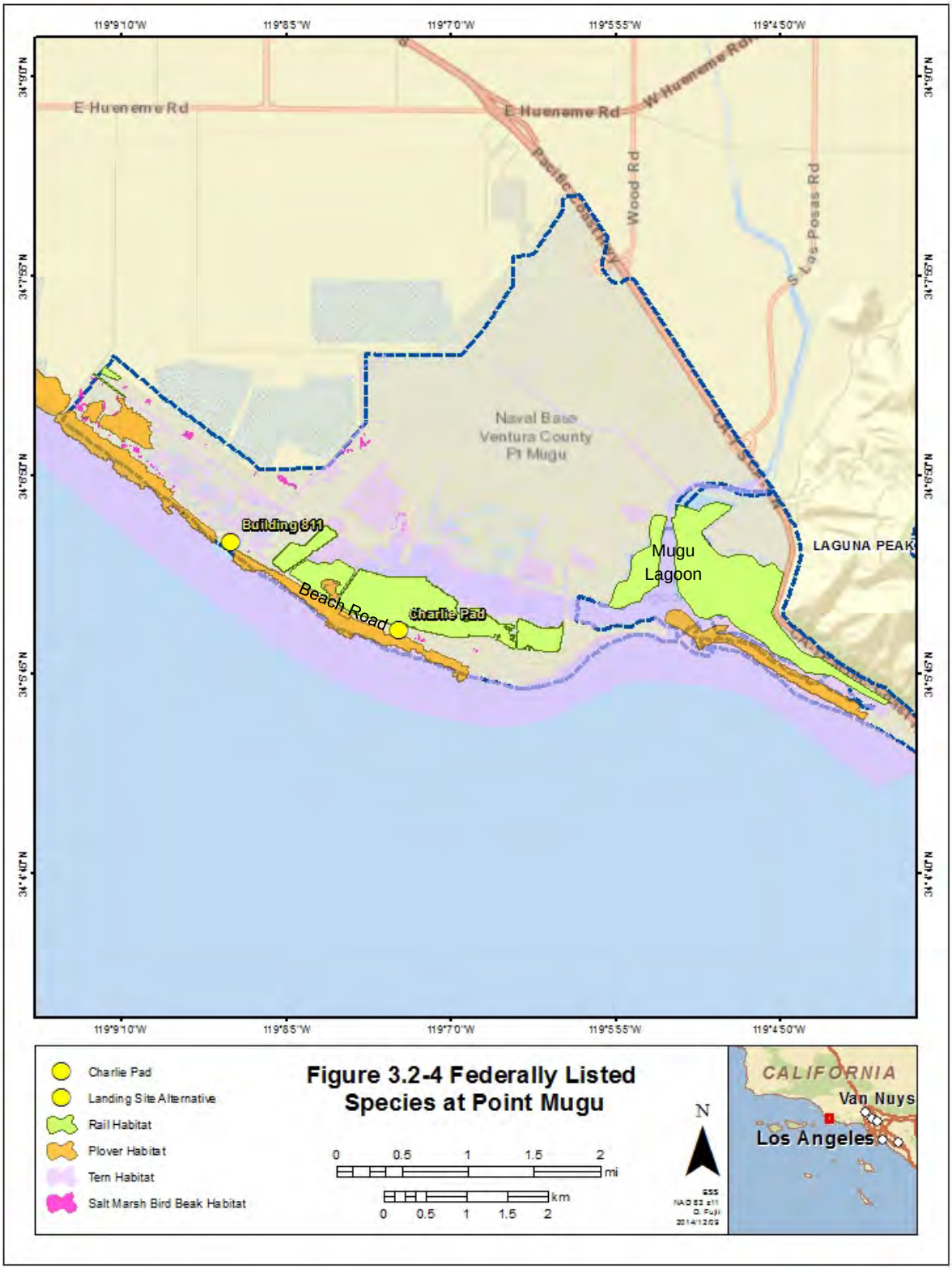
Least Bell's Vireo – The least Bell's vireo (*Vireo bellii pusillus*) was listed as an endangered bird species by the USFWS in June 1986 due to habitat loss restricting their breeding range and nest parasitism by the brown-headed cowbird (*Molothrus ater*). The least Bell's vireo prefers habitat in dense riparian vegetation dominated by willows with a lush understory. Most foraging occurs within riparian vegetation. Occasionally, foraging occurs within oak woodlands and adjacent chaparral; however, these foraging areas are generally situated within 100 ft (30 m) of riparian vegetation (USFWS 1989). There has been only one least Bell's vireo confirmed at NBVC Point Mugu before 2009; however, vireos have been documented at several different locations at the installation between 2009 and 2011. Vireos are irregular visitors at Point Mugu, leaving within a week or two of arrival while traveling to more appropriate breeding locations. None of the project areas associated with the proposed action and its alternatives have suitable habitat or foraging areas for least Bell's vireo. Therefore, the least Bell's vireo is not discussed further in this EA/OEA.

Western Snowy Plover – The federally listed threatened western snowy plover nests on sandy beaches and above-tidal flats adjacent to Mugu Lagoon from the beginning of April to mid-September (Navy 2002). Snowy plovers forage on open flats and beaches above and below the mean high tide water line and in salt pannes, where they pick insects and marine invertebrates from sand surfaces, decomposing kelp, marine mammal carcasses, and foredune vegetation. Nesting generally occurs between March 1 and September 15 of each year, though egg laying in southern California has been documented as early as mid-February, and continues through late July (NBVC 2013).

The majority of the sandy beaches and salt pannes at Point Mugu are utilized for foraging, nesting, and resting by snowy plovers, and these areas are considered essential habitat for the species (Navy 2002; USFWS 2012). The area provides both nesting (for birds of southern latitudes) and wintering areas (for birds of northern latitudes) for snowy plovers. Three primary nesting sites are utilized by snowy plovers on Point Mugu (see Figure 3.2-4), on the western and eastern arms of the Mugu Lagoon barrier beach.

Breeding season surveys at Point Mugu between 1978 and 2011 found a low of 26 adults in 1997 and a high of 87 adults in 2010. In 2011, 55 adults were observed at Point Mugu during the breeding season (USFWS 2011). The beach pads at Point Mugu are located on previously developed and disturbed land that is located within or adjacent to western snowy plover habitat. The highest density of wintering plovers is found on a stretch of beach in front of the Bravo and Charlie Pads. Nesting areas are also found on the beaches adjacent to the Charlie Pad project sites.

In its current designation of critical habitat (USFWS 2012), the USFWS has determined that lands subject to the INRMP for Point Mugu are exempt from critical habitat designation under ESA section 4(a)(3) owing to the effectiveness of Navy conservation measures implemented. Under the Navy's INRMP (NBVC 2013), snowy plover nesting and foraging areas are protected. Additional recovery programs are implemented, such as population and nesting monitoring and predator management.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119°5'55"W
119°4'50"W
34°9'0"N
34°7'54"N
34°6'48"N
34°5'42"N
34°4'36"N
E Hueneme Rd
W Hueneme Rd
Pacific Coast Hwy
Wood Rd
S Las Posas Rd
Naval Base
Ventura County
Pt Mugu
Building 311
Beach Road
Charlie Pad
Mugu
Lagoon
LAGUNA PEAK
Charlie Pad
Landing Site Alternative
Rail Habitat
Plover Habitat
Tern Habitat
Salt Marsh Bird Beak Habitat
Figure 3.2-4 Federally Listed
Species at Point Mugu
0 0.5 1 1.5 2 mi
0 0.5 1 1.5 2 km
N
CALIFORNIA
Van Nuys
Los Angeles

Belding's Savannah Sparrow – The state-listed endangered Belding's savannah sparrow (*Passerculus sandwichensis beldingi*) resides year-round in the coastal salt marshes of southern California and is common throughout Mugu Lagoon, primarily in the pickleweed-dominated areas of the salt marsh. The single largest subpopulation is at Point Mugu, comprising 31 percent of the state total in 2010 (Zembal and Hoffman 2010).

The Belding's savannah sparrow breeding cycle begins in late December with the establishment of male territories. These defended territories are occupied by males that sing (males only use the primary song for territorial displays), perch on prominent areas within the boundaries of the territory, survey the territory, and chase other conspecific sparrows. Nest building starts in mid-to-late March, with egg-laying in early April. Nests are predominately constructed on the ground or in the low branches of salt marsh vegetation, which make them vulnerable to predation and human disturbances. The initial brood hatches in mid-April, and fledging of the chicks occurs in approximately 10 days. Females are able to re-nest up to three times in a breeding season. The nesting season ends in mid-August. (NBVC 2013)

There have been numerous restoration projects at Point Mugu that have brought considerable acreage of wetland under enhanced tidal influence. Consequently, Mugu Lagoon may represent 20-25 percent of the available coastal marsh habitat in southern California. Furthermore, Belding's savannah sparrows are widespread throughout the marsh, perhaps as a product of dampened tidal amplitude (Zembal and Hoffman 2010). Belding's savannah sparrows occupy areas of higher elevation intertidal salt marsh dominated by pickleweed at Point Mugu. Mugu Lagoon represents a relatively secure foraging and nesting area for Belding's savannah sparrows because of restricted public access and current Navy management policies (NBVC 2013).

Tidewater Goby – The tidewater goby (*Eucyclogobius newberryi*) has been designated as endangered by the USFWS since February 1994, due primarily to the modification and loss of habitat as a result of coastal development, channelization of habitat, and diversions of water flows. In a 2011 survey, 11 individuals were located along a 500-ft stretch of Calleguas Creek, approximately 2.4 mi (3.9 km) northeast of Charlie Pad (the nearest project site). The U.S. Geological Survey conducted a tidewater goby survey within the potential habitats within NBVC Point Mugu, and no gobies were observed other than within the location documented in the 2011 survey. Furthermore, it is expected that suitable tidewater goby habitat would not extend past the northern edge of Calleguas Creek within the Point Mugu installation. Individual gobies may venture further downstream during storm events, but even then, tidewater gobies would not be found in proximity to the FOCUS-II project sites nor would the project sites have suitable habitat for tidewater gobies. As such, the tidewater goby is not discussed further in this EA/OEA.

San Nicolas Island

SNI has no federally listed endangered or threatened plant species. Special-status plants on SNI include one state endangered (SNI buckwheat), one state threatened (beach spectacle-pod [*Dithyrea maritima*]), and one state rare (Trask's milkvetch [*Astragalus traskiae*]). In addition, the California Native Plant Society considers five plant species as sensitive and 20 plant species as rare (NBVC 2010). The San Nicolas Island fox is a state threatened species that can be found in the FOCUS-II project site near Coast Guard jetty.

The only terrestrial federally listed wildlife species that may occur in the vicinity of the onshore project areas is the western snowy plover. The 2010 SNI INRMP (NBVC 2010) and the Biological Opinion for Activities on SNI, California (USFWS 2001) were the basis of island-wide information on the status, distribution, and known locations of federally listed species. The island night lizard was formerly federally listed as a threatened species. On 01 April 2014, the lizard was removed from the federal list of threatened and endangered wildlife species (USFWS 2014), with the Navy currently conducting post-delisting monitoring for this species to ensure that populations and habitats remain stable.

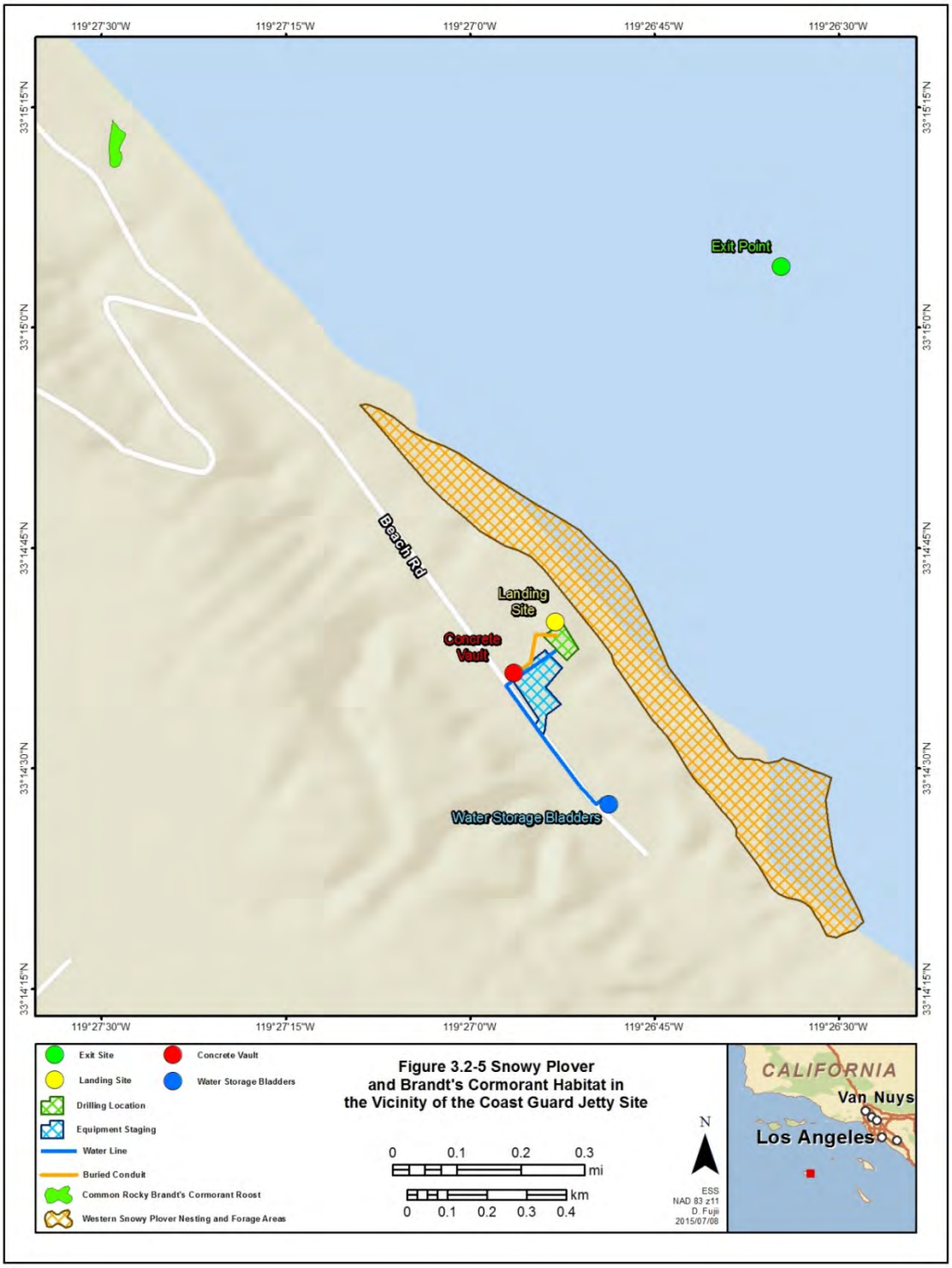
Western Snowy Plover – SNI beaches are exempt from western snowy plover critical habitat designation due to the protections afforded to the species through the 2010 SNI INRMP (USFWS 2012). Snowy plovers are year-round residents of SNI, although wintering populations from other areas are transient. Snowy plovers nest and forage on beaches at SNI (see Figure 3.2-5), including the beaches in the vicinity of the Coast Guard Jetty. The results of snowy plover surveys for the whole of SNI from 2005 through 2011 are shown in Table 3.2-4. Under the Navy's SNI INRMP (NBVC 2010), snowy plover nesting and foraging areas are protected. Additional recovery programs are implemented, such as population and nesting monitoring.

Table 3.2-4 Adult Snowy Plovers Observed on SNI during Winter and Breeding Season Surveys[1], 2005 – 2011

Year	Winter Survey	Breeding Survey
2005	243	62
2006	212	96
2007	182	68
2008	138	45
2009	86	69
2010	99	50
2011	129	42

[1] Surveys conducted by Navy staff in compliance with USFWS Biological Opinion

San Nicolas Island Fox – The island fox (*Urocyon littoralis*) is the largest of the Channel Islands' native mammals. A descendent of the mainland gray fox, the island fox evolved into a unique species over 10,000 years ago. The San Nicolas Island fox subspecies is listed by the state as threatened. San Nicolas Island foxes are omnivorous, foraging on insects, vegetation, mice, lizards (including island night lizards), and seasonally available bird eggs. They occupy all island habitat types, with densities being highest in areas of native vegetation and lowest in barren areas or those comprised primarily of alien annual grasslands. Island fox may be present, but are not common within any of the proposed project areas. The San Nicolas Island fox population appears to be at a high but decreasing density with an estimated population over 400 animals. The San Nicolas Island fox population is affected by disturbance from humans, primarily from vehicle strikes, and was affected by competition with feral cats until their eradication from the island in 2011. (NBVC 2010)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33°14'45"N
33°14'30"N
33°14'15"N
Exit Point
Beach Rd
Landing Site
Concrete Vault
Water Storage Bladders
Exit Site
Landing Site
Drilling Location
Equipment Staging
Water Line
Buried Conduit
Common Rocky Brandt's Cormorant Roost
Western Snowy Plover Nesting and Forage Areas
Concrete Vault
Water Storage Bladders
Figure 3.2-5 Snowy Plover
and Brandt's Cormorant Habitat in
the Vicinity of the Coast Guard Jetty Site
0 0.1 0.2 0.3
mi
0 0.1 0.2 0.3 0.4
km
N
ESS
NAD 83 z11
D. Fuji
2015/07/08
CALIFORNIA
Van Nuys
Los Angeles

Santa Cruz Island

The USFWS listed nine SCrI plant taxa as endangered or threatened in 1997 as a result of habitat alteration, low numbers of populations, demographic decline within populations, or continued presence of feral animals (Table 3.2-3). Some of these species may be delisted as populations rebound following removal of feral pigs and sheep from SCrI.

Only two of the federally listed plants have been found near the project area: the island bedstraw and island rush-rose (*Heliathemum greenei*). The island bedstraw is only found on vertical cliff faces and steep bluff slopes, which will be avoided during construction activities (Figure 3.2-6). The island rush-rose has been identified to occur near the Navy Site in surveys conducted prior to calendar year 2000. More recent surveys have located the island rush-rose near Prisoners Harbor (and the Prisoners Harbor landing site); however, these populations will be avoided, as most ground disturbances would be conducted within existing roadways, vehicle traffic will be restricted to the same roadways, and any populations discovered near the project area will be marked and avoided. As such, these populations will not be considered further in this EA/OEA.

No critical habitat for wildlife or vegetative species is located within the project areas on SCrI (NPS 2015).

Western Snowy Plover – On SCrI, western snowy plover forage in the wet sand and amidst surf-cast kelp in the intertidal zone. The plovers can also be found in dry, sandy areas above the high tide. In the non-breeding season, snowy plovers are found on many of the beaches used for nesting, as well as on beaches where they do not nest, and on estuarine sand and mud flats. On SCrI, western snowy plovers have been observed in areas on the western TNC portion of the island (NPS 2015). As such, SCrI populations of western snowy plover are not considered further in this EA/OEA.

Bald Eagle – Bald eagles (*Haliaeetus leucocephalus*) are protected by the MBTA and the Bald and Golden Eagle Protection Act. The species was reintroduced to SCrI beginning in 2002 through cooperative efforts of non-profit and governmental entities. As a result of this effort, bald eagles hatched on SCrI for the first time in half a century in 2006. Adult and juvenile eagles have been observed in the northwest of Prisoners Harbor in the riparian forest above the mouth of Cañada del Puerto near the well site. (NPS 2015)

Santa Cruz Island Fox – The island fox subspecies endemic to SCrI is listed as endangered under the federal ESA due to its limited range and small population numbers. It is also listed as a threatened species under the California ESA in 1987. The Santa Cruz Island fox can be found in nearly all habitats on SCrI, including the Prisoners Harbor area and the length of Navy Road included in the project area. The fox is generally nocturnal but is also active during daylight hours. The island fox is inquisitive and docile. They show little fear of humans. (NPS 2015)

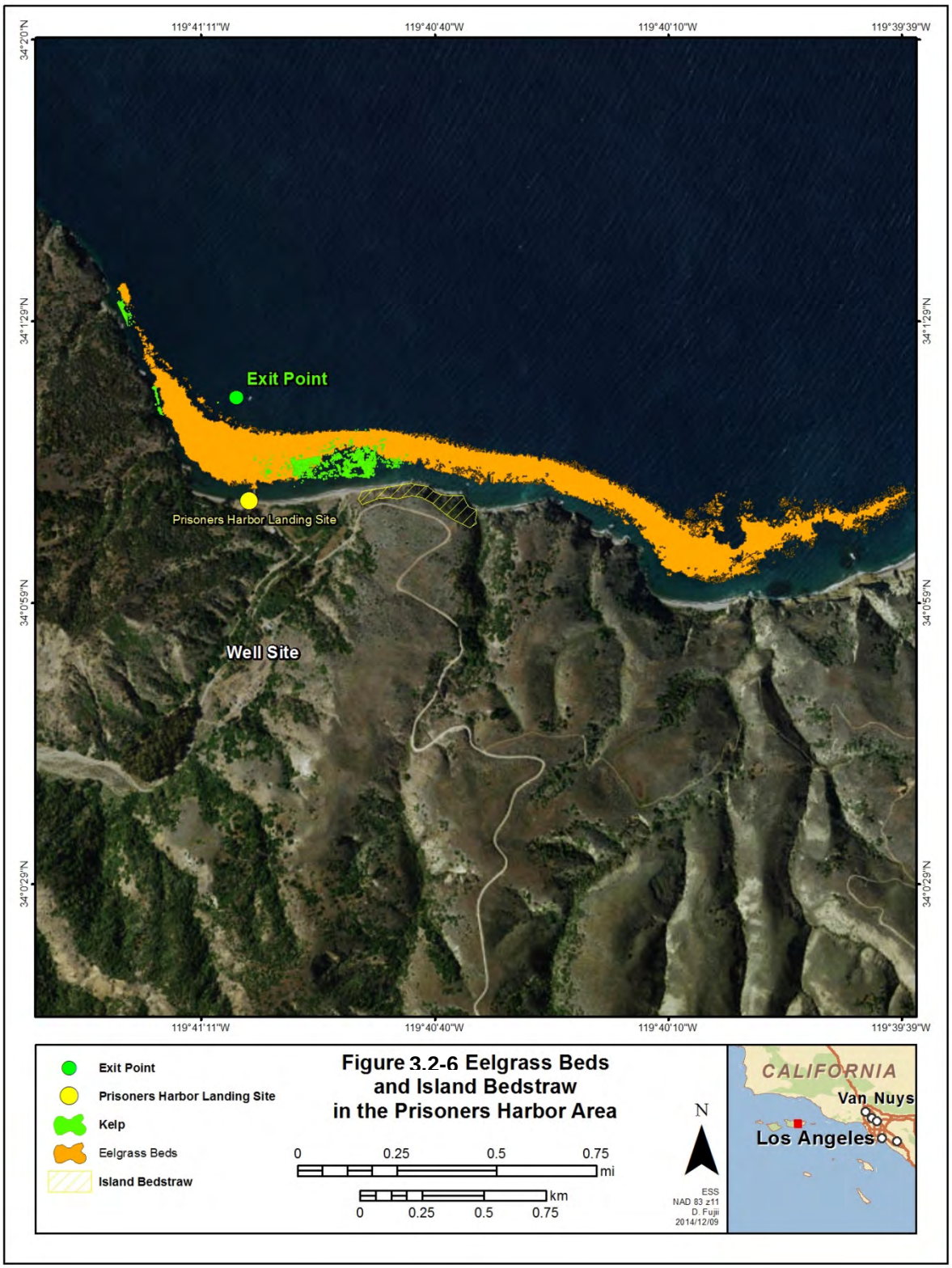


Figure 3.2-6 Eelgrass Beds and Island Bedstraw in the Prisoners Harbor Area

3.2.1.3 Marine Biological Resources

Marine biological resources within the Southern California Bight (SCB), from Point Conception south to Mexico, are found in diverse habitats, including soft substrates such as sandy beaches, shelves, and slopes that are abundant along the mainland and the offshore islands (Pondella et al. 2012). Hard bottom habitats such as the rocky intertidal, shallow subtidal reefs, deep rock reefs, and kelp beds, are also common along the coasts of the mainland and islands, though less common in deeper water (Pondella et al. 2012). SCB is dominated by sandy beaches, with approximately 15 percent rocky-headlands habitats, compared to remainder of the state where rock is much more abundant (Pondella et al. 2012). Beyond the depths of kelp beds (greater than 100 ft [30 m]), approximately three percent of the sea floor consists of rubble and rocky outcrops inhabited by marine invertebrate assemblages (Dailey et al. 1993). On the continental shelf regions, sand and gravel substrate is typically interspersed between these rocky areas. Deep hard substrates and their biological assemblages in the Sea Range are the least-studied benthic habitats primarily because they exceed typical diving depths (about 100 ft [30 m]) and cannot easily be sampled with coring devices or trawls. The following sections describe marine biological resources found at each of the proposed landing sites and along the proposed offshore route.

<u>Regulatory Setting</u>

Marine Protected Areas (MPAs) are “any area of the marine environment that has been reserved by federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein” (EO 13158, *Marine Protected Areas*). The Marine Life Protection Act (MLPA), California Fish and Game Code Section 2850-2863, directs the state to redesign California's system of MPAs to function as a network in order to: increase coherence and effectiveness in protecting the state's marine life and habitats, marine ecosystems, and marine natural heritage, as well as to improve recreational, educational and study opportunities provided by marine ecosystems subject to minimal human disturbance. The MLPA has clear guidance associated with this MPA network. MPAs are developed on a regional basis with specific goals in mind and are evaluated over time to assess their effectiveness for meeting these goals.

Marine Managed Areas (MMAs) are broader groups of named, discrete geographic areas along the coast that protect, conserve, or otherwise manage a variety of resources and uses, including living marine resources, cultural and historical resources, and recreational opportunities. MMAs are similar to MPAs in that they have a conservation or management purpose, defined boundaries, and some legal authority to protect resources. MMAs, however, encompass a wider range of management intents, which include areas of protection for geological, cultural, or recreational resources. MMAs may also include areas that are managed for reasons other than conservation (e.g., security zones, shellfish closures, sewage discharge areas, and pipeline and cable corridors).

The State of California designated 34 coastal regions under the 1972 California Ocean Plan as State Water Quality Protection Area (some known as Area of Special Biological Significance [ASBS]). There are ASBSs near the mouth of Mugu Lagoon extending west to Latigo Point, surrounding SNI, and surrounding SCrI (see section 3.7.1.3).

The offshore route transects the Cowcod Conservation Area (CCA). Cowcod (*Sebastes levis*) is an overfished stock that is being rebuilt under the West Coast Groundfish Fishery Management Plan (FMP)

(Pacific Fishery Management Council [PFMC] 2016). Following the first stock assessment of cowcod in 1999, the species was declared "overfished". In order to rebuild populations, two CCAs were established within the Southern California Bight. SNI lies within the CCA West (Area 1) which spans over 4,200 mi^2 (11,100 km^2). Bottom-fishing of waters deeper than 20 fathoms (36 m) is prohibited within CCAs. Take or possession of other associated species [rockfish (*Sebastes* spp.), lingcod (*Ophiodon elongatus*), cabezon (*Scorpaenichthys marmoratus*), greenlings (*Hexagrammos* spp.), California scorpionfish (*Scorpaena guttata*), California sheephead (*Semicossyphus pulcher*), and ocean whitefish (*Caulolatilus princeps*)] within CCAs is also prohibited to reduce incidental catches of cowcod.

In addition to these closures, there is also a statewide no-retention fishery for cowcod in both commercial and recreational sectors (CDFW Website 2014). While the presence of a CCA does not regulate or prohibit the placement of undersea cables or other non-fishing impacts, portions of the CCA are designated as Habitat Areas of Particular Concern (HAPCs) within the EFH definition in the PFMC groundfish FMP. EFH guidelines published in Federal regulations (50 CFR 600.815(a)(8)) identify HAPCs as ecologically important, sensitive, stressed, or rare habitats that should be given particular attention when considering potential non-fishing impacts. HAPCs based on habitat type may vary in location and extent over time. For this reason, the mapped extent of these areas offers only a first approximation of their location (CDFW Website 2014). Discrete areas within CINMS and the CCA are designated as HAPCs because they are afforded high levels of protection through their inclusion in a National Marine Sanctuary and/or designation as an ecologically important closed area. The HAPCs adjacent to SCrI are located at Painted Cave, Gull Island and Scorpion MPAs. Painted Cave and Gull Islands are outside the FOCUS project site and landing site near Prisoners Harbor and the project will not impact resources within them. The offshore cable route may cross a portion of the Scorpion MPA in deep water. The offshore cable route will also be adjacent to, but likely not cross, the Anacapa MPAs. The Navy will consult with NMFS regarding potential impacts to EFH (see section 3.2.2.1).

Because of their ecological uniqueness, the CINMS was established to provide habitat for 492 species of marine algae, four species of seagrasses, over 5,000 species of invertebrates, 481 species of fish, four species of sea turtles, 33 cetaceans, seven pinnipeds, sea otters, and over 195 species of birds (NOAA 2009). The CINMS encompasses waters within 6 NM (11.1 km) of the northern Channel Islands (San Miguel, Santa Rosa, Santa Cruz, and Anacapa islands) and Santa Barbara Island; it does not include the waters surrounding SNI.

California state waters extend 3 NM (5.6 km) from the shores of each of these islands. Five of the northern Channel Islands – Anacapa, Santa Cruz, Santa Rosa, San Miguel, and Santa Barbara – and the rocks, islets, submerged lands, and waters within 1 NM (1.85 km) of each island were designated by Congress as the Channel Islands National Park, owned and managed by the NPS (16 U.S.C §410ff). Within these boundaries, there are several regulatory agencies (i.e., federal, state, and local) that have overlapping jurisdiction and various activities that are prohibited "except as may be necessary for national defense" (Navy 2008). In 2007, NOAA designated the federal portion of the Channel Islands MPA network, consisting of eight marine reserves and one marine conservation area within the CINMS (15 CFR §922(g)) (NOAA 2009). For SCrI, MPAs include Scorpion State Marine Reserve (SMR), Painted Cave State Marine Conservation Area (SMCA), and Gull Island SMR. Although the offshore route will transit the Scorpion SMR, the landing site near Prisoners Harbor is not close to any of these MPAs.

Point Mugu Marine Habitats and Species

As described in Section 2.1, it is assumed that two 12-fiber sea cables, one from SNI and one from SCrI, would come ashore at Point Mugu and would transition to two 12-fiber land cables. The Building 811 site would be used as the landing site for the Point Mugu-SCrI cable. This site is located adjacent to a large expanse of sandy beach lined with rip rap for shoreline protection. Beaches are an important habitat at Point Mugu; exposed sandy beaches make up over 85 percent of the mainland shoreline and are biologically less diverse than rocky intertidal areas (Navy 2008).

Coastal wetlands occur on the north side of Beach Road in the vicinity of the Building 811 site (Figure 2-3) and both north and south of the Charlie Pad HDD location (Figure 2-5). Coastal wetlands form the transition zone between terrestrial and marine systems. They can be one of the most productive and diverse natural systems and provide feeding, nesting, shelter, high tide refuge, spawning grounds, nursery habitat, and other benefits for thousands of commercially and recreationally important fish, birds, mammals, and invertebrates (Navy 2008). They also provide vital food and habitat for many invertebrates including clams and crabs, as well as offering shelter and nesting sites for many species of migratory waterfowl along the Pacific flyway.

Vegetation

Kelp beds and other marine vegetation do not exist immediately offshore the Point Mugu landing sites, primarily due to the lack of hard bottom habitat.

Invertebrates

Benthic communities vary in species, densities, and diversity with changes in the physical composition and depth of the substrate. Physical variations include substrate types (sand, clay, mud, cobble, or rocky outcrops), relief structure (high relief and low relief), and the presence or absence of kelp beds and seagrass beds (MBC 1993). Within the surf zone at Point Mugu, marine invertebrates include species common to sandy beaches: clams, sand crabs (*Emerita analoga*), and polychaete worms. Two common clams include the Pismo clam (*Tivela stultorum*) and the bean clam (*Donax gouldii*). The Pismo is the larger of the two and the subject of sport fishing elsewhere. Marine invertebrates of the nearshore continental shelf include several clam species (genera Tellina, Macoma, and Spisula), sand dollars (*Dendraster spp.*), tubicolous polychaetes (genera Diopatra, Nothria, Onuphis, Owenia, and Pista), sea cucumbers (*Parastichopus spp*. and *Eupentacta spp*.), and small bivalve mollusks. Common predatory and opportunistic scavengers include various crabs, hermit crabs, sea stars, and snails. The mainland shelf, with depths from 100 to 492ft (30 to 150m) deep, has high species abundance and diversity relative to other deep benthic areas and similar to that found on offshore shelves. Species composition and abundance decrease with increasing water depth and vary according to changes in substrate relief. (NBVC 2013)

Fishes

Fish that are common to inshore sandy beaches of southern California, and the Point Mugu landing sites, include round stingrays (*Urolophus halleri*), thornbacks (*Platyrhinoides triseriata*), shovelnose guitarfish (*Rhinobatos productus*), corbina (*Menticirrhus undulatus*), California halibut (*Paralichthys californicus*), speckled sanddabs (*Citharichtys stigmaeus*), lizard fish (*Synodus lucioceps*), spotted and horny head

turbot (*Pleuronichtys verticalis*.), barred sandbass (*Paralabrax nebulifer*), and surfperch species, such as white seaperch (*Phanerodon furcatus*), and shiner surfperch (*Cymatogaster agreggatta*) (City of Hermosa Beach 2001). These areas also support large populations of croakers such as queenfish (*Seriphus politus*) and white croaker (*Genyonemus lineatus*) (Navy 2008). Grunion (*Leuresthes tenuis*) are a small pelagic fish that swim onto the beaches, including those located near the landing sites at Point Mugu, to spawn during nighttime spring (as opposed to neap) high tides in spring and summer (Navy 2008).

Commercial and Recreational Fisheries

The Point Mugu landing sites are located within CDFW commercial catch block 682 (Figure 3.2-7). Between 2008 and 2013, a total of 43 species/groups were reported within this block, with the top 15 species representing 99 percent of the total commercial catch (Table 3.2-5). Market squid (*Loligo opalescens*) had the highest overall catch of over 100 million pounds, followed by Pacific sardine (*Sardinops sajax*), jack mackerel (*Trachurus symmetricus*), and red sea urchin (*Mesocentrotus franciscanus*). Other species with high catches included Pacific mackerel (*Scomber japonicas*), unspecified rock crabs (*Cancer* spp.), warty sea cucumber (*Parastichopus parvimensis*), northern anchovy (*Engraulis mordax*), yellow rock crab (*Cancer anthonyi*), and brown rock crab (*Cancer antennarius*). Of the species listed above, market squid, Pacific sardine, unspecified rock crabs, California spiny lobster (*Panulirus interruptus*) and warty sea cucumber had the highest total commercial value, with market squid accounting for 99 percent of the total commercial value within catch block 682 (Table 3.2-5).

Table 3.2-5 Total Catch and Value for Fish Landed in CDFW Commercial Catch Blocks within Point Mugu Landing Sites, 2008-2013

Species	Total Catch (pounds)	Total Value (dollars)
Market squid	102,709,200	$27,582,497
Pacific sardine	1,053,597	$79,992
Jack mackerel	66,860	$3,631
Red sea urchin	50,772	$31,347
Pacific mackerel	23,426	$835
Unspecified rock crab	15,924	$39,816
Warty sea cucumber	7,769	$32,959
Northern anchovy	7,090	$71
Yellow rock crab	5,849	$8,378
Brown rock crab	4,680	$7,020
White seabass	4,577	$17,420
California spiny lobster	2,591	$34,073
Greenspotted rockfish	2,164	$2,531
Halibut, California	1,413	$8,848
Giant red sea cucumber	1,263	$5,810
Total	103,969,249	$27,861,476

Source: CDFW Data for 2008-2013 from Commercial Landings reported in catch block 682.

The Point Mugu landing sites are located within the California Recreational Fisheries Survey (CRFS) Channel Sampling District (RecFin, 2016). While recreational fishing by the general public does not

occur in the project area - due to access restrictions, the top ten recreational fish species landed in the district as a whole (in terms of numbers of individual fish caught) are presented in Table 3.2-6. Barred surfperch (*Amphistichus argenteus*) was caught in the highest number by recreational fishermen, followed by Pacific sardine, Chub (Pacific) mackerel, jacksmelt (*Atherinopsis californiensis*) and walleye surfperch (*Hyperprosopon ellipticum*). Other commonly caught recreational species included rockfish, surfperch (*Embiotocidae*), Pacific sanddab (*Citharichthys sordidus*), vermilion rockfish (*S. miniatus*) and copper rockfish (*S. caurinus*) (Table 3.2-6).

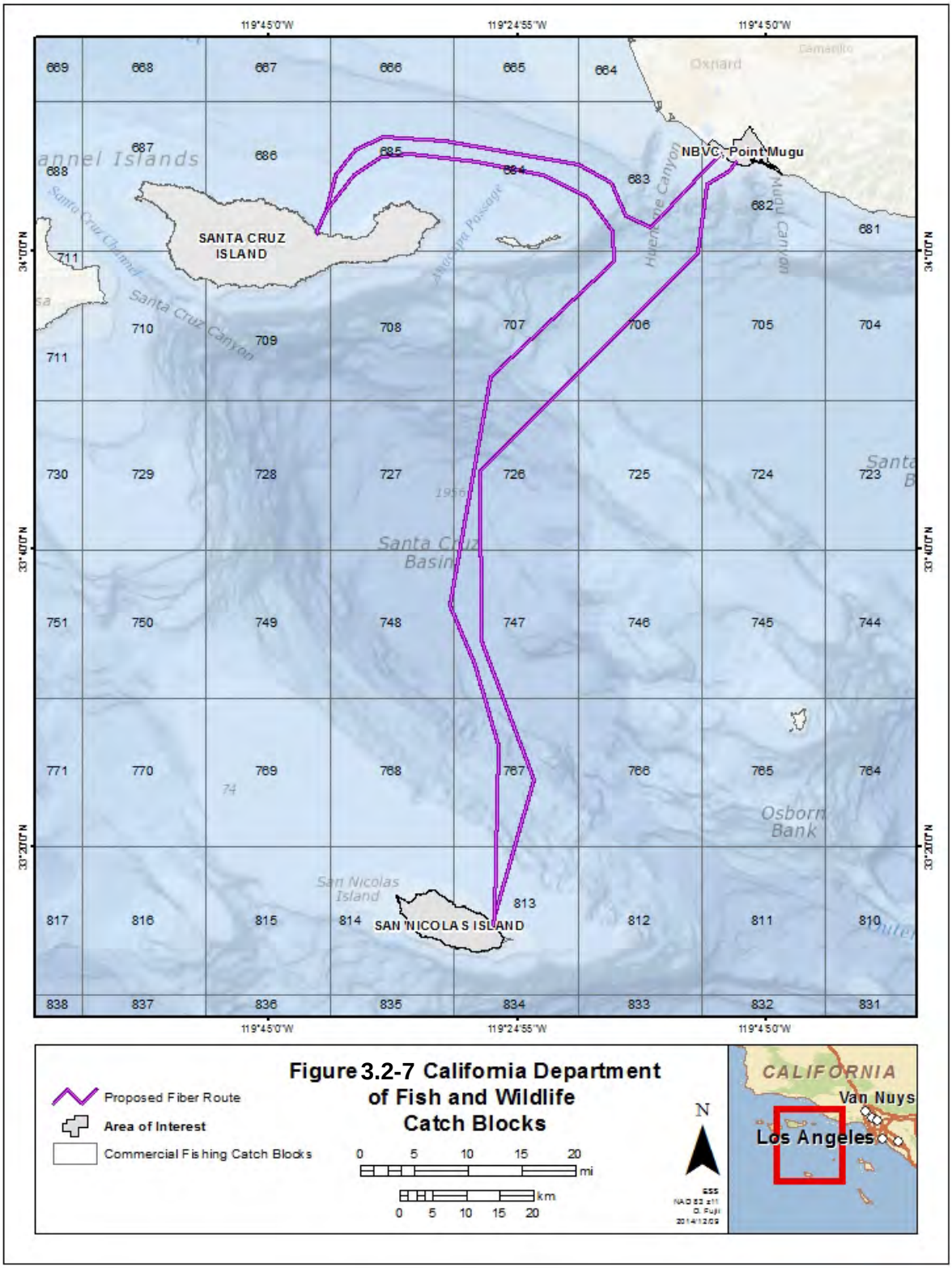


Figure 3.2-7 California Department of Fish and Wildlife Catch Blocks

Table 3.2-6 Top 10 Recreational Fish Species (Number of Fish) Landed by Recreational Anglers in Nearshore Waters around Point Mugu and Santa Cruz Island, 2008-2013

Species	2008	2009	2010	2011	2012	2013	Total
Barred surfperch	271,455	151,638	6,194	324,339	332,551	181,912	1,268,090
Pacific sardine	302,538	41,724	164,043	104,013	367,904	173,089	1,153,312
Chub (Pacific) mackerel	386,045	96,691	35,387	217,177	34,848	30,815	800,963
Jacksmelt	141,732	72,303	24,239	48,361	57,425	112,990	457,050
Walleye surfperch	60,673	23,089	47,600	45,453	129,810	51,077	357,702
Rockfish Genus	23,990	21,292	20,141	73,852	59,527	92,624	291,428
Surfperch Family	67,994	11,525	11,894	42,740	77,035	70,108	281,296
Pacific Sanddab	17,638	6,540	11,692	60,935	68,310	113,193	278,309
Vermilion Rockfish	16,407	11,198	10,142	58,311	92,341	84,230	272,629
Copper Rockfish	24,934	16,032	6,994	40,723	57,383	92,702	238,768
Total	1,771,017	696,953	722,087	1,416,717	1,847,261	1,616,120	8,070,155

Source: RecFIN (http://www.recfin.org/) for California Recreational Fisheries Survey (CRFS) data for Channel Sampling District (Ventura to Santa Barbara and Santa Cruz, Santa Rosa, San Miguel islands). Includes catches less than 3 miles from shore. Rank based on summed total for all years.

San Nicolas Island Marine Habitats and Species

SNI is the most remote of southern California's Channel Islands; both from shore and from the nearest neighboring island (Kenner 2013). The marine habitats surrounding SNI are influenced by the cold, productive waters of the California current. Fish and algal communities resemble more northerly regions such as San Miguel Island and the central California coast. The species diversity and richness at SNI is attributed to the complex oceanographic circulation patterns of the surrounding waters. The coastline is composed of sandy beach, rocky intertidal habitat, coastal marsh, and small bays. Nearshore marine habitats include offshore rocks and islets, rocky reefs, kelp forests, eel grass beds, and soft (mostly sandy) bottom. Sandy subtidal habitat is the dominant substrate along the southeastern portion of SNI, including the preferred landing site near the Coast Guard Jetty (Navy 2010).

Vegetation

Beds of giant kelp (*Macrocystis pyrifera*) and various understory algae are found on hard bottom rocky reefs scattered throughout the area surrounding the preferred landing site at SNI (NBVC 2010). SNI kelp forests are well distributed within the nearshore waters and display temporal and spatial variability between years based on oceanographic circulation, growth conditions, and grazing pressure (NBVC 2010). Rocky habitats around SNI are ideal for giant kelp and numerous species of red, green, and brown algae. Historically, SNI was an important area for commercial kelp harvesting, and large kelp beds were harvested at sites along the northern and southern shores. At present, no commercial kelp harvest occurs at SNI.

Invertebrates

Benthic invertebrates are generally characterized by habitat type (i.e., rocky or sandy) in which they are found. Because rocky habitats are ideal for attachment of sessile (non-motile) invertebrates and are generally more stable than sandy beaches, rocky habitats support more invertebrate species than sandy habitats. Based on the best available data, common invertebrate species that inhabit the shallow sandy areas off SNI are similar to the species found in other beach habitats throughout the SCB, including polychaetes, sea stars, purple olive snails (*Olivella biplicata*), sandstars, short-spined sea stars, brittlestars, maldanid worms, sea pansies, and sea pens (Navy 2008). Abalone (*Haliotis* spp.) are common within the intertidal and subtidal rocky areas of SNI and are represented by several species. These habitats at SNI support one of only a few remaining viable populations of the endangered black abalone (*Haliotis cracherodii*), which occurs in densities high enough for reproduction by broadcast spawning (NMFS 2008a, 2009). These hard bottom areas historically supported the endangered white abalone (*H. sorenseni*), although this species is not known to presently occur at SNI.

Fishes

SNI supports a variety of fish species including benthic and demersal groundfishes (e.g. flatfishes, skates/sharks/chimeras, and rockfishes) and epipelagic fishes that are important recreational and commercial species (Navy 2010). Fish diversity on nearshore reefs at SNI is related to the presence or absence of kelp and substrate topography. Hard substrate is the least common habitat type in the Project Area but is among the most important fish habitat because it supports kelp. Dominant fish species in shallow sandy areas near the cable landing site include various species of flatfishes such as sanddabs (*Citharichthys* spp.), English sole (*Parophrys vetulus*), and blackeye gobies (*Rhinogobiops nicholsii*). Forty-eight fish species were recorded during two early studies at SNI by Cowen and Bodkin (1993) and Engle (1994). The high abundances during these studies were primarily due to large numbers of two resident schooling fishes, senorita and blacksmith, typically accounting for 90 percent of all individuals (Navy 2008).

Commercial and Recreational Fisheries

The SNI landing site is located within CDFW commercial catch block 813 (Figure 3.2-7). Between 2008 and 2012, a total of 47 species/groups were reported within this block, with the top 15 species representing 99 percent of the total commercial catch (Table 3.2-7). Red sea urchin had the highest overall catch of over 500,000 lb (227,000 kg), followed by warty sea cucumber, California spiny lobster, spot prawn, and white seabass (*Atractoscion nobilis*). Other species with high catches included unspecified rock crabs, California halibut, giant red sea cucumber (*Parastichopus californicus*), California sheephead and hagfishes (*Eptatretus* sp.). Of the species listed above, California spiny lobster, spot prawn, warty sea cucumber, red sea urchin, and white seabass had the highest total commercial value (Table 3.2-7).

Table 3.2-7 Total Catch and Value for Fish Landed in CDFW Commercial Catch Blocks within vicinity of SNI Landing Sites, 2008-2013

Species	Total Catch (pounds)	Total Value (dollars)
Red sea urchin	514,266	$272,590
Warty sea cucumber	136,757	$480,216
California spiny lobster	126,203	$1,887,751
Spot prawn	86,332	$915,795
White seabass	50,826	$178,856
Unspecified rock crab	46,114	$70,617
California Halibut	16,441	$82,944
Giant red sea cucumber	8,807	$34,919
California sheephead	8,428	$35,708
Hagfishes	2,875	$3,284
Pacific Bonito	2,169	$594
Red rock crab	2,096	$2,650
Shortfin mako shark	2,076	$2,499
Ridgeback prawn	1,843	$8,999
Box crab	1,515	$3,343
Total	1,014,293	$4,001,272

Source: CDFW Data for 2008-2013 from Commercial Landings reported in catch block 813.

The SNI landing site is located within the CRFS South Sampling District (RecFin 2016). The top ten recreational fish species landed (in terms of numbers of individual fish caught) are presented in Table 3.2-8. Chub (Pacific) mackerel were caught in the highest number by recreational anglers, followed by Pacific sardine, kelp bass (*Paralabrax clathratus*), California lizardfish, and barred surfperch. Other commonly caught recreational species included barred sandbass, members of the silversides (*Atherinidae*), California scorpionfish, Northern anchovy, and jacksmelt.

Table 3.2-8 Top 10 Recreational Fish Species (Number of Fish) Landed by Recreational Anglers in Nearshore Waters Surrounding San Nicolas Island, 2008-2013

Species	2008	2009	2010	2011	2012	2013	Total
Chub (Pacific) Mackerel	2,019,261	1,517,142	1,353,882	1,132,406	1,009,350	542,697	7,574,738
Pacific Sardine	301,496	669,972	685,151	401,689	603,973	501,645	3,163,925
Kelp Bass	456,347	515,110	350,276	370,189	371,297	402,464	2,465,684
California Lizardfish	8,397	79,706	317,989	58,265	247,556	605,429	1,317,342
Barred Surfperch	82,939	94,804	34,813	165,502	565,289	307,202	1,250,548
Barred Sandbass	225,184	193,725	185,125	220,770	194,531	108,242	1,127,576
Silverside Family	181,225	228,854	156,409	14,066	60,487	82,976	724,016
California Scorpionfish	111,691	94,174	98,057	127,795	137,579	92,068	661,364
Northern Anchovy	71,438	16,830	35,879	166,622	37,290	324,315	652,375
Jacksmelt	160,324	135,683	71,143	70,667	130,325	56,591	624,734
Total	5,050,580	5,236,755	4,638,348	3,879,440	4,862,431	4,736,299	28,403,854

Source: Data extracted from RecFIN (http://www.recfin.org/) for California Recreational Fisheries Survey (CRFS) data for South Sampling District (Los Angeles County south through San Diego County and San Nicholas, Santa Catalina, and San Clemente Islands). Includes catches less than 3 miles from shore. Rank based on summed total for all years.

Santa Cruz Island Marine Habitats and Species

Although sandy beaches make up approximately 23 percent of the Channel Islands' coastlines (NOAA 2009), the proposed landing site at SCrI, situated 80 ft (24 m) west of the Prisoners Harbor Pier, is composed of cobbles. Other marine habitats in the vicinity of the SCrI landing site are similar to those described above for SNI and include rocky intertidal, sandy beaches and hard and soft substrate subtidal areas.

Vegetation

In the SCB, there are at least 492 species of algae and four species of seagrasses known to occur out of the 673 species described for California (Abbott and Hollenberg 1976; Murray and Bray 1993). Giant kelp, surfgrass and eelgrass are marine plants that provide important habitat to numerous other species within the CINMS. As described above for SNI, kelp beds and various understory algae are found on hard bottom rocky reefs scattered throughout the preferred landing site at SCrI. In addition, one of the largest eelgrass beds in the CINMS occurs at Prisoners Harbor (NOAA 2008). Figure 3.2-6 (above) provides an overview of the eelgrass beds in the vicinity of Prisoners Harbor. The existing eelgrass bed near the proposed landing site starts at a water depth of approximately 10 ft (3.0 m) and is the prominent biological feature to a water depth of approximately 36 ft (11 m) (Ugoretz 2014). Eelgrass is patchier at the upper and lower depth limits, with an estimated cover of 80 percent. Peak eelgrass density along the eastern side of SCrI occurs at a depth of 25 ft (7.6 m), and eelgrass is rarely found at depths greater than 52 ft (15.8 m) in this area (NMFS 2015).

Invertebrates

Invertebrates in the rocky intertidal and subtidal areas at the Prisoners Harbor landing site are similar to other areas of and other islands within the CINMS. These species include sea fans, spiny lobster, crabs, sea urchins, sea cucumbers, sea stars, abalone, nudibranchs, scallops, mussels, squid, clams, barnacles,

snails, scalps, tunicates, jellyfish, sea slugs, worms, and anemones (ONMS 2009). Abalone are common within the intertidal and subtidal rocky areas of SCrI and are represented by several species, including the federally endangered black and white abalone. Kelp forest habitats are dominated by sunflower stars (*Pycnopodia helianthoides*), bat stars (*Patiria miniata*), giant-spined stars (*Pisaster giganteus*), and ochre stars (*P. ochraceus*) (NPS 2015).

Fishes

More than 400 fish species have been observed in the CINMS, and are likely present in the vicinity of the landing site, including several species of rockfish like bocaccio (*Sebastes paucispinis*), blue rockfish (*S. mystinus*), olive rockfish (*S. serranoides*), and kelp rockfish (*S. atrovirens*) (ONMS 2009). Other fish species found in the vicinity of the eelgrass beds near the Prisoners Harbor landing site include blue banded gobies (*Lythrypnus dalli*), black eye goby (*Coryphopterus nicholsi*), island kelpfish (*Alloclinus holderi*), kelp bass, blacksmith (*Chromis punctipinnis*), black perch (*Embiotoca jacksoni*), striped seaperch (*E. lateralis*), opaleye (*Girella nigricans*), garibaldi (*Hypsypops rubicundus*), señiorita (*Oxyjulis californica*), and California sheephead (NPS 2015).

It should be noted that these fish are absent or infrequently observed in the sandy bottom areas outside the eelgrass beds. In a 2014 survey of the area conducted by NPS and CDFW divers, the following was noted. From 10 to 36 ft (three to 11 m), the most notable biological feature was worm tubes that were abundant in the soft mud/silt-like substrate. Crabs were common and consisted mostly of small sheep crabs (*Loxorhynchus grandis*) and graceful rock crabs (*Cancer gracilis*), though other crabs that are most active nocturnally were likely common under the substrate. Fish were rare at depths below 40 ft (12 m). At a water depth of about 55 ft (17 m), some small tufts of brown algae (*Dictyota/Pachydictyon* sp.) were present as well as a thick algal/bacterial film on the substrate. Several clusters of nudibranch eggs (*Navanax inermis* and either *Haminoe virescens* or *Bulla gouldiana*) were present at about a 40 ft (12 m) depth. Fish became more common just before the eel grass started at a water depth of 38 ft (11.6 m) (Ugoretz, 2014).

Commercial and Recreational Fisheries

The Prisoners Harbor landing site is located within CDFW commercial catch block 686 (Figure 3.2-7). Table 3.2-9 presents total fish catch and value provided by CDFW (2016) for the top 15 species (fish and invertebrates) between 2008 and 2013. A total of 52 species/groups were reported within this block, with the top 15 species representing 99 percent of the total commercial catch. Market squid had the highest overall catch of over 19 million pounds, followed by Pacific sardine, red sea urchin, Pacific mackerel, and Pacific bonito (*Sarda chiliensis lineolata*). Other species with high catches included white seabass, warty sea cucumber, California spiny lobster, California halibut, and hagfishes. Of the species listed, market squid, California spiny lobster, red sea urchin, spot prawn, and California halibut had the highest total commercial value, with market squid accounting for more than 90 percent of the total catch by weight and more than 80 percent of the commercial value within catch block 686.

Table 3.2-9 Total Catch and Value for Fish Landed in CDFW Commercial Catch Blocks within vicinity of the SCrI Landing Site, 2008-2013

Species	Total Catch (pounds)	Total Value (dollars)
Market squid	19,981,961	$5,876,650
Pacific sardine	702,706	$31,285
Red sea urchin	305,609	$170,715
Pacific mackerel	159,286	$11,888
Pacific bonito	86,163	$29,755
White seabass	47,558	$115,806
Warty sea cucumber	37,723	$113,206
California spiny lobster	26,702	$364,057
California halibut	23,134	$141,298
Hagfishes	15,342	$15,342
Jack mackerel	13,734	$474
Spot prawn	11,513	$141,840
California Sheephead	5,112	$24,091
Northern anchovy	4,134	$115
Unspecified rock crab	2,586	$3,823
Total	21,442,110	$7,078,754

Source: CDFW Data for 2008-2013 from Commercial Landings reported in catch block 686

Recreational catches for SCrI are included in the same CRFS sampling district as Point Mugu. Reported recreational catches for both locations are considered the same for this analysis and are presented in Table 3.2-6 (RecFin, 2016). To reiterate, barred surfperch were caught in the highest number by recreational fishermen, followed by Pacific sardine, chub (Pacific) mackerel, jacksmelt, and walleye surfperch. Other commonly caught recreational species included the rockfish genus, the surfperch family, Pacific sanddab, vermilion rockfish and copper rockfish.

Marine Habitats and Fishes Associated with the Offshore Routes

This section describes the habitats and biological resources that are found along the offshore cable route, from the point at which the cable comes on to the seafloor (pop out point), drilled from the landing site using HDD techniques to approximately 70 to 80-ft (21 to 24-m) water depth.

Marine Habitats

The majority of the sea route (~ 93 percent) is located in deepwater, soft-bottom areas. In general, these offshore areas are characterized by a diversity of habitats, primarily muddy (silt-clay) to sandy shelf and muddy slope environments, but also include areas of deep basins, submarine canyons, shelf-slope break, and near-island habitats (Dailey et al. 1993). A few areas such as near the northern Channel Islands have more extensive hard-bottom features, but these areas would be avoided by the cable route.

Vegetation

Little to no offshore algae or vegetation is present along the cable route. HDD technology will be used at the landing sites to drill offshore below and past the kelp beds and vegetated areas.

Invertebrates

Most of the biological resources that occur commonly along the sea route are found throughout much of southern California, especially at depths below about 656 ft (200 m), where many species tend to be relatively cosmopolitan in distribution along the California coast (SAIC 2000).

Macrofaunal abundance and diversity in shelf areas from 100 to 492 ft (30 to 150 m) typically decrease with increasing shelf depth. Dominant assemblages include polychaetes (*Spiophanes missionensis, Chloeia pinnata, Pectinaria californiensis, Paraprinospio pinnata, Maldane sarsi, Tharyx* spp.), ophiuroids (*Amphiodia urtica*), pelecypods (*Parvilucina tenuisculpta, Cyclocardia ventricosa*), ostracods (*Euphilomedes* spp.), and echiurans (*Listriolobus pelodes*). Assemblages that inhabit offshore shelves, ridges, and banks at depths to about 1,640 ft (500 m) and are much more spatially heterogeneous than those on the mainland shelf (Navy 2002). Dominant assemblages include polychaetes (*Chloeia pinnata, Lumbrineris* spp.), ophiuroids (*Amphipholis squamata, Amphiodia urtica*), pelecypods (*Parvilucina tenuisculpta*), ostracods (*Euphilomedes* spp.), and amphipods (*Photis californica*) (Navy, 2002).

Offshore lower slope regions, with water depths of 1,640 to 4,921 ft (500 to 1,500 m), consist mostly of randomly dispersed populations, with amphipods (*Byblis* spp.), polychaetes (*Lumbrineris* spp., *Tharyx* spp., Paraonidae, *Phyllochaetopterus limicolus*), and ophiuroids (*Amphipholis squamata, Ophiura leptoctenia)* dominating the species assemblages (Navy 2002).

Invertebrate assemblages in most basin areas, at depths between 2,057 to 3,077 ft (627 to 938 m) in nearshore basins and between 4,452 to 8,435 ft (1,357 to 2,571 m) in offshore basins, are dominated by polychaetes (*Lumbrineris* spp., *Thmyx* spp., *Phyllochaetopterus limicolus*, Paraonidae), ophiuroids (*Ophiura leptoctenia*), gastropods (*Mitrella permodesta*), and mollusks (Aplacophora) (Navy 2002). Faunal assemblages in submarine canyons, such as the Mugu submarine canyon, have higher abundances of deposit feeders such as maldanid worms and heart urchins (Navy 2002).

Along much of the California coast, invertebrates associated with hard bottom habitat are generally similar at the same depth and substrate type (SAIC 2000). Epifaunal invertebrate communities on the continental shelf 100 to 500 ft (30 to 150 m) commonly include cup corals (e.g., *Paracyathus* and *Balanophyllia*), hydroids, encrusting sponges, and ascidians.

Fishes

Shallow water areas (235-280 ft [72-85 m] water depth) are typified by sanddabs, rex sole (*Glyptocephalus zachirus*), English sole, and pink surfperch (*Zalembius rosaceus)* along the coast of California. Soft-bottom habitats on the upper and middle slope (water depths from approximately 656 to about 3,281 ft [200 to 1,000 m]) are characterized by moderate numbers of fish species, including flatfishes such as Dover sole (*Microstomas pacificus*), California halibut, rockfishes, Pacific hake (*Merluccius productus*), sablefish (*Anoplopoma fimbria*), and skates (CSLC 2005). At depths over 1,968 ft (600 m), the thornyhead (*Sebastolobus* spp.) is likely common. Rockfishes are commonly observed in areas with hard bottom features.

Essential Fish Habitat

The 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act [16 U.S.C. §§1801-1881, (MSFCMA)], known as the Sustainability Fisheries Act (PL 104-297), require the delineation of "essential fish habitat" for all managed species. Federal action agencies which fund, permit, or carry out activities that may adversely impact EFH are required to consult with NMFS regarding the potential effects of their actions on EFH, and respond in writing to NMFS's recommendations. In addition, the MSFCMA defines EFH as those waters and substrates necessary (required to support a sustainable fishery and the managed species) to fish for spawning, breeding, feeding, or growth to maturity (i.e., full life cycle). These waters include aquatic areas and their associated physical, chemical, and biological properties used by fish, and may include areas historically used by fish. Substrate types include sediment, hard bottom, structures underlying the waters, and associated biological communities.

The proposed project is located within an area designated as EFH for three FMPs, including Pacific Coast Groundfish (PFMC 2016), Coastal Pelagic Species (PFMC 2011a), and Highly Migratory Species (PFMC 2011b).

The following is a brief description of the managed fish species that potentially occur in the vicinity of the proposed landing sites at Point Mugu, SCrI, and SNI, as well as along the offshore route. A list of FMP managed species is presented in Table 3.2-10.

Groundfishes

All of the 91 groundfish species managed under the Pacific Groundfish FMP are found in diverse habitats at various stages in their life histories throughout the Study Area (proposed landing sites and offshore route). Some species are broadly dispersed during specific life stages, especially those with pelagic eggs and larvae, while other species may have limited distributions (i.e., adult rockfishes in nearshore habitats) with strong affinities to a particular location or substrate type. The overall extent of groundfish EFH for all FMU species is identified as all waters and substrate within the following areas: depths less than or equal to 3,500 m (1,914 fathoms) to mean higher high water level (MHHW) or the upriver extent of saltwater intrusion, defined as upstream and landward to where ocean-derived salts measure less than 0.5 parts per thousand (ppt) during the period of average annual low flow; seamounts in depths greater than 3,500 m as mapped in the EFH assessment GIS; and areas designated as HAPCs not already identified by the above criteria.

Estuaries, sea grass beds, canopy kelp, rocky reefs, and other "areas of interest" (e.g., seamounts, offshore banks, canyons, certain oil platforms, and portions of the CCAs) are designated as HAPCs for groundfish managed species. While the proposed project will avoid rocky reefs and all cable HDD exits will be deeper than canopy kelp or seagrass beds, the cables could potentially cross small rocky outcroppings considered EFH.

Fish species likely found in the Study Area and managed under the Pacific Groundfish FMP include flatfishes (13 species), 39 species of rockfish, two species of thornyheads, roundfishes (six species), cabezon, kelp greenling, lingcod, Pacific cod, Pacific hake, and sablefish (Table 3.2-10). There are also nine species of skates, sharks, and chimeras managed under this plan (Table 3.2-10).

Coastal pelagic Species

The coastal pelagic species (CPS) live in the water column, not near the sea floor, and are usually found from the surface to over 3,000 ft (1,000 m) deep (PFMC 2011a). There are six coastal pelagic species managed under the CPS FMP, including Jack mackerel, Krill (Euphausiids), Pacific mackerel, Pacific sardine, market squid, and Northern anchovy (Table 3.2-10). CPS finfish are pelagic (in the water column near the surface and not associated with substrate), because they generally occur above the thermocline in the upper mixed layer. For the purposes of EFH, the four CPS finfish are treated as a single species complex, because of similarities in their life histories and similarities in their habitat requirements. Market squid are also treated in this same complex because they are similarly fished above spawning aggregations.

The specific description and identification of EFH for CPS finfish accommodates the fact that the geographic range of all CPS finfish varies widely over time in response to the temperature of the upper mixed layer of the ocean, particularly in the area north of Point Arena, California (39° N latitude). This generalization is probably also true for market squid but few data are available. Adult CPS finfish are generally not found at temperatures colder than 10°C or warmer than 26°C and preferred temperatures and minimum spawning temperatures are generally above 13°C. Spawning is most common at 14°C to 16°C. (PFMC, 2011a)

The east-west geographic boundary of EFH for each individual CPS finfish and market squid is defined as all marine and estuarine waters from the shoreline along the coasts of California, Oregon, and Washington offshore to the limits of the exclusive economic zone (EEZ) and above the thermocline where sea surface temperatures range between 10°C to 26°C. The southern boundary of the geographic range of all CPS finfish is consistently south of the US-Mexico border, indicating a consistency in sea surface temperatures at below 26°C, the upper thermal tolerance of CPS finfish. Therefore, the southern extent of EFH for CPS finfish is the United States-Mexico maritime boundary. The northern boundary of the range of CPS finfish is more dynamic and variable due to the seasonal cooling of the sea surface temperature. The northern EFH boundary is, therefore, the position of the 10°C isotherm which varies both seasonally and annually, but is always north of the project area. (PFMC, 2011a).

Highly Migratory Species

EFH for highly migratory species (HMS) is defined on a species-by-species basis and includes portions of all marine waters from the shoreline to 200 NM (370 km) offshore; no HAPCs have been adopted for HMS in the Study Area. There are five species of shark managed under the HMS management plan, including bigeye thresher shark (*Alopias superciliosus*), blue shark (*Prionace glauca*), common thresher shark (*A. vulpinus*), pelagic thresher shark (*A. pelagicus*), and shortfin mako shark (*Isurus oxyrinchus*). In addition, there are five species of tunas managed under this plan, including albacore tuna (*Thunnus alalunga*), bigeye tuna (*T. obesus*), northern bluefin tuna (*T. orientalis*), skipjack tuna (*Katsuwonus pelamis*), and yellowfin tuna (*T. albacares*) (Table 3.2-10). Striped marlin (*Tetrapturus audax*) is the only species of billfish managed under the HMS management plan, while broadbill swordfish (*Xiphias gladius*) is the only species of swordfish, and dorado (*Coryphaena hippurus*) is the only species of dolphinfish managed under this plan (Table 3.2-10).

Table 3.2-10 EFH Species Potentially Located within the Proposed Landing Sites and Along the Offshore Route

Common Name	Scientific Name	Fishery Management Plan
GROUNDFISH SPECIES		
Flatfishes		
Arrowtooth flounder	*Atheresthes stomias*	GMP
Butter sole	*Isopsetta isolepis*	GMP
Curlfin sole	*Pleuronichthys decurrens*	GMP
Dover sole	*Microstomus pacificus*	GMP
English sole	*Parophrys vetulus*	GMP
Flathead sole	*Hippoglossoides elassodon*	GMP
Pacific sanddab	*Citharichthys sordidus*	GMP
Petrale sole	*Eopsetta jordani*	GMP
Rex sole	*Glyptocephalus zachirus*	GMP
Rock sole	*Lepidopsetta bilineata*	GMP
Sand sole	*Psettichthys melanostictus*	GMP
Starry flounder	*Platichthys stellatus*	GMP
Rockfishes		
Aurora rockfish	*Sebastes aurora*	GMP
Bank rockfish	*S. rufus*	GMP
Black rockfish	*S. melanops*	GMP
Black-and-yellow rockfish	*S. chrysomelas*	GMP
Blackgill rockfish	*S. melanostomus*	GMP
Blue rockfish	*S. mystinus*	GMP
Bocaccio	*S. paucispinis*	GMP
Bronzespotted rockfish	*S. gilli*	GMP
Brown rockfish	*S. auriculatus*	GMP
Calico rockfish	*S. dallii*	GMP
Canary rockfish	*S. pinniger*	GMP
Chameleon rockfish	*S. phillipei*	GMP
Chilipepper	*S. goodei*	GMP
China rockfish	*S. nebulous*	GMP
Copper rockfish	*S. caurinus*	GMP
Cowcod	*S. levis*	GMP
Darkblotched rockfish	*S. crameri*	GMP
Dusky rockfish	*S. ciliatus*	GMP
Dwarf-red rockfish	*S. rufinanus*	GMP
Flag rockfish	S. *rubrivinctus*	GMP
Freckled rockfish	*S. lentiginosus*	GMP
Gopher rockfish	*S. carnatus*	GMP
Common Name	**Scientific Name**	**Fishery Management Plan**
GROUNDFISH SPECIES		
Grass rockfish	*S. rastrelliger*	GMP
Greenblotched rockfish	*S. rosenblatti*	GMP
Greenspotted rockfish	*S. chlorostictus*	GMP
Greenstriped rockfish	*S. Elongatus*	GMP
Halfbanded rockfish	*S. semicinctus*	GMP
Harlequin rockfish	*S. variegatus*	GMP
Honeycomb rockfish	*S. umbrosus*	GMP
Kelp rockfish	*S. atrovirens*	GMP
Mexican rockfish	*S. macdonaldi*	GMP
Olive rockfish	*S. serranoides*	GMP
Pink rockfish	*S. eos*	GMP
Pinkrose rockfish	*S. simulator*	GMP
Pygmy rockfish	*S. wilsoni*	GMP
Pacific ocean perch	*S. alutus*	GMP

Quillback rockfish	*S. maliger*	GMP
Redbanded rockfish	*S. babcocki*	GMP
Redstripe rockfish	*S. proriger*	GMP
Rosethorn rockfish	*S. helvomaculatus*	GMP
Rosy rockfish	*S. rosaceus*	GMP
Rougheye rockfish	*S. aleuttianus*	GMP
Sharpchin rockfish	*S. zacentrus*	GMP
Shortbelly rockfish	*S. jordani*	GMP
Shortraker rockfish	*S borealis*	GMP
Silvergray rockfish	*S. brevispinis*	GMP
Speckled rockfish	*S. ovalis*	GMP
Splitnose rockfish	*S. diploproa*	GMP
Squarespot rockfish	*S. hopkinsi*	GMP
Starry rockfish	*S. constellatus*	GMP
Stripetail rockfish	*S. saxicola*	GMP
Swordspine rockfish	*S. ensifer*	GMP
Tiger rockfish	*S. nigrocinctus*	GMP
Treefish	*S. serriceps*	GMP
Vermilion rockfish	*S. miniatus*	GMP
Widow rockfish	*S. entomelas*	GMP
Yelloweye rockfish	*S. ruberrimus*	GMP
Yellowmouth rockfish	*S. reedi*	GMP
Yellowtail rockfish	*S. flavidus*	GMP
Scorpionfish		
California scorpionfish	*Scorpaena guttatta*	GMP
Thornyheads		
Longspine thornyhead	*Sebastolobus altivelis*	GMP
Shortspine thornyhead	*S. alascanus*	GMP
Roundfishes		
Cabezon	*Scorpaenichthvs marmoratus*	GMP
Kelp greenling	*Hexagrammos decagrammus*	GMP
Lingcod	*Opiodon elongatus*	GMP
Pacific cod	*Gadus macrocephalus*	GMP
Pacific hake	*Merluccius productus*	GMP
Sablefish	*Anoplopoma fimbria*	GMP
Skates, Sharks and Chimeras		
Big skate	*Raja binoculata*	GMP
California skate	*Raja inornata*	GMP
Finescale codling	*Antimora microlepis*	GMP
Leopard shark	*Triakis semifasciata*	GMP
Longnose skate	*Raja rhina*	GMP
Common Name	**Scientific Name**	**Fishery Management Plan**
GROUNDFISH SPECIES		
Pacific rattail	*Coryphaenoides acrolepis*	GMP
Soupfin shark	*Galeorhinus zyopterus*	GMP
Spiny dogfish	*Squalus acanthias*	GMP
Spotted ratfish	*Hydrolagus colliei*	GMP
COASTAL PELAGIC SPECIES		
Jack mackerel	*Traxchurus symmetricus*	CPMP
Krill	Euphausiids	CPMP
Pacific mackerel	*Scomber japonicus*	CPMP
Pacific sardine	*Sardinops sagax*	CPMP
Market squid	*Loligo opalescens*	CPMP
Northern anchovy	*Engraulis mordax*	CPMP
HIGHLY MIGRATORY SPECIES		
Sharks		
Bigeye thresher shark	*Alopias superciliosus*	HMMP

Blue shark	*Prionace glauca*	HMMP
Common thresher shark	*Alopias vulpinus*	HMMP
Pelagic thresher shark	*Alopias pelagicus*	HMMP
Shortfin mako shark	*Isurus oxyrinchus*	HMMP
Tunas		
Albacore tuna	*Thunnus alalunga*	HMMP
Bigeye tuna	*T. obesus*	HMMP
Northern bluefin tuna	*T. orientalis*	HMMP
Skipjack tuna	*Katsuwonus pelamis*	HMMP
Yellowfin tuna	*T. albacares*	HMMP
Billfish		
Striped marlin	*Tetrapturus audax*	HMMP
Swordfish		
Broadbill swordfish	*Xiphias gladius*	HMMP
Dolphin-fish		
Dorado (mahi mahi)	*Coryphaena hippurus*	HMMP

Commercial and Recreational Fisheries

The offshore route is located within CDFW commercial catch blocks 683-685, 706, 707, 726, 747, 748, 767, and 813 (Figure 3.2-7). Table 3.2-11 presents total fish catch and value for the top 15 species (fish and invertebrates) between 2008 and 2013. A total of 134 species/groups were reported within these blocks, with the top 15 species representing 99 percent of the total commercial catch. Market squid had the highest overall catch of over 125 million pounds, followed by Pacific sardine, northern anchovy, Pacific Mackerel, and red sea urchin. Other species with high catches included spot prawn, warty sea cucumber, white seabass, California spiny lobster, and California halibut. Of the species listed above, market squid, California spiny lobster, spot prawn, California halibut, and white seabass had the highest total commercial value, with market squid accounting for 78 percent of the total commercial value within catch blocks 683-685, 706, 707, 726, 727, 747, 748, and 767.

Table 3.2-11Total Catch and Value for Fish Landed in CDFW Commercial Catch Blocks along the Offshore Routes, 2008-2013

Species	Total Catch (pounds)	Total Value (dollars)
Market squid	125,083,959	$32,989,391
Pacific sardine	4,153,281	$296,340
Northern anchovy	915,825	$272,464
Pacific mackerel	514,628	$36,216
Red sea urchin	375,121	$211,778
Spot prawn	227,378	$2,662,075
Warty sea cucumber	197,015	$492,420
White seabass	185,242	$511,694
California spiny lobster	183,381	$2,783,212
California halibut	170,453	$926,618
Unspecified rock crab	142,610	$241,697
Shortspine thornyhead	65,134	$254,642
Yellow rock crab	62,510	$82,682
Jack Mackerel	36,976	$2,933
Spider crab	33,296	$49,524
Total	132,588,855	$42,363,343

Source: CDFW Data for 2008-2013 from Commercial Landings reported in catch blocks 683-685, 706, 707, 726, 747, 748, 767, and 83.

The offshore route overlaps both the South and the Channel CRFS Sampling Districts (RecFin, 2016). In the South District, the top ten offshore recreational fish species landed (in terms of numbers of individual fish caught) are presented in Table 3.2-12. California scorpionfish were caught in the highest number by recreational fishermen, followed by Pacific sanddab, barred sandbass, vermilion rockfish, and bocaccio. Other commonly caught recreational species included chub (Pacific) mackerel, calico rockfish, rockfish genus, kelp bass, and Pacific barracuda (*Sphyraena argentea*). (RecFin, 2016)

In the Channel District, the top ten offshore recreational fish species landed (in terms of numbers of individual fish caught) are presented in Table 3.2-13. Vermilion rockfish were caught in the highest number by recreational fishermen, followed by bocaccio, Pacific sanddab, greenspotted rockfish, and rockfish genus (unspecified). Other commonly caught recreational species included copper rockfish, starry rockfish (*S. constellatus*), lingcod, speckled rockfish (*S. ovalis*) and brown rockfish (*S. auriculatus*). (RecFin, 2016)

Table 3.2-12 Top 10 Recreational Fish Species (Number of Fish) Landed by Recreational Anglers in CRFS South Sampling District Offshore Waters, 2008-2013

Species	2008	2009	2010	2011	2012	2013	Total
California Scorpionfish	136,582	151,355	173,353	233,326	331,932	407,259	1,433,807
Pacific Sanddab	93,148	114,437	237,579	315,665	259,356	326,488	1,346,673
Barred Sandbass	36,747	34,652	58,157	155,134	41,274	48,224	374,188
Vermilion Rockfish	12,223	19,686	27,864	59,938	111,245	72,000	302,955
Bocaccio	14,312	13,749	18,261	59,000	105,714	58,300	269,335
Chub (Pacific) Mackerel	60,940	38,205	47,775	25,235	20,486	67,772	260,412
Calico Rockfish	405	2,181	3,359	51,826	198,806	2,409	258,986
Rockfish Genus	26,886	18,340	27,315	37,498	44,513	50,257	204,808
Kelp Bass	32,022	21,073	24,938	36,183	26,111	33,323	173,650
Pacific Barracuda	12,747	26,413	34,325	30,236	28,989	15,287	147,997
Total	604,659	639,598	783,220	1,307,931	1,487,153	1,463,514	6,286,075

Source: RecFIN (http://www.recfin.org/) for California Recreational Fisheries Survey (CRFS) data for South Sampling District (Los Angeles County south through San Diego County and San Nicolas, Santa Catalina, and San Clemente islands). Includes catches greater than 3 miles from shore.

Table 3.2-13 Top 10 Recreational Fish Species (Number of Fish) Landed by Recreational Anglers in CRFS Channel Sampling District Offshore Waters, 2008-2013

Species	2008	2009	2010	2011	2012	2013	Total
Vermilion Rockfish	11,327	6,803	27,278	24,843	19,778	27,462	117,492
Bocaccio	4,419	8,783	16,414	23,902	24,807	8,995	87,320
Pacific Sanddab	7,778	3,119	7,922	30,030	18,983	4,386	72,218
Greenspotted Rockfish	9,312	17,729	14,131	14,655	14,362	831	71,020
Rockfish Genus	3,932	1,416	12,039	15,974	6,771	14,880	55,011
Copper Rockfish	7,527	6,849	13,113	5,057	5,805	3,429	41,779
Starry Rockfish	4,252	5,354	7,060	5,135	3,888	2,398	28,087
Speckled Rockfish	3,042	4,757	10,232	2,806	1,935	1,459	24,230
Brown Rockfish	2,332	2,711	4,799	7	4,799	6,891	21,540
Flag Rockfish	2,184	2,921	3,463	3,489	3,604	1,580	17,239
Total	58,112	62,451	118,461	127,906	106,743	74,325	535,934

Source: RecFIN (http://www.recfin.org/) for California Recreational Fisheries Survey (CRFS) data for Channel Sampling District (Ventura to Santa Barbara and Santa Cruz, Santa Rosa, San Miguel islands). Includes catches greater than 3 miles from shore. Rank based on summed total for all years.

3.2.1.4 Marine Mammals and Special Status Species

Point Mugu

Sandy beaches within Point Mugu, including near the landing sites, are used as an occasional haulout area for individual pinnipeds, including juvenile elephant seals and California sea lions (Navy 2013). In addition, Pacific harbor seals regularly haul out at several locations within Mugu Lagoon, including intertidal mudflats within Mugu Lagoon's Central Basin, for resting, molting, and breeding, (NBVC

2013). Some beaches are used as haulout sites for resting; however, this is very uncommon. Peak counts at Mugu Lagoon have exceeded 500 individuals, representing about 1.46 percent of the seals hauling out along all California shorelines, including offshore rocks and islands (Carretta et al. 2011).

San Nicolas Island

Table 3.2-14 summarizes the seasonal use patterns of pinnipeds on SNI. Three species of pinniped are regularly observed in the vicinity of or onshore at SNI: California sea lion, northern elephant seal, and Pacific harbor seal (Figure 3.2-8). SNI and the surrounding waters provide important foraging, breeding, and haulout areas for these pinnipeds. Carretta (2009) reported a total of 754 harbor seals during May 2009, but the actual number of harbor seals using SNI is probably higher than annual counts because not all seals are detected onshore during any one aerial survey (NBVC 2010). Although no recently published information exists on the number of harbor seals at specific haulout sites on SNI, the total numbers of seals using the island have remained relatively stable between 2002 and 2009, with counts ranging from 584 in 2002 (an El Niño year) to 858 individuals in 2007 (Carretta et al. 2009). Harbor seal haulout sites are irregularly distributed on all shores of SNI with the exception of the northeast stretch.

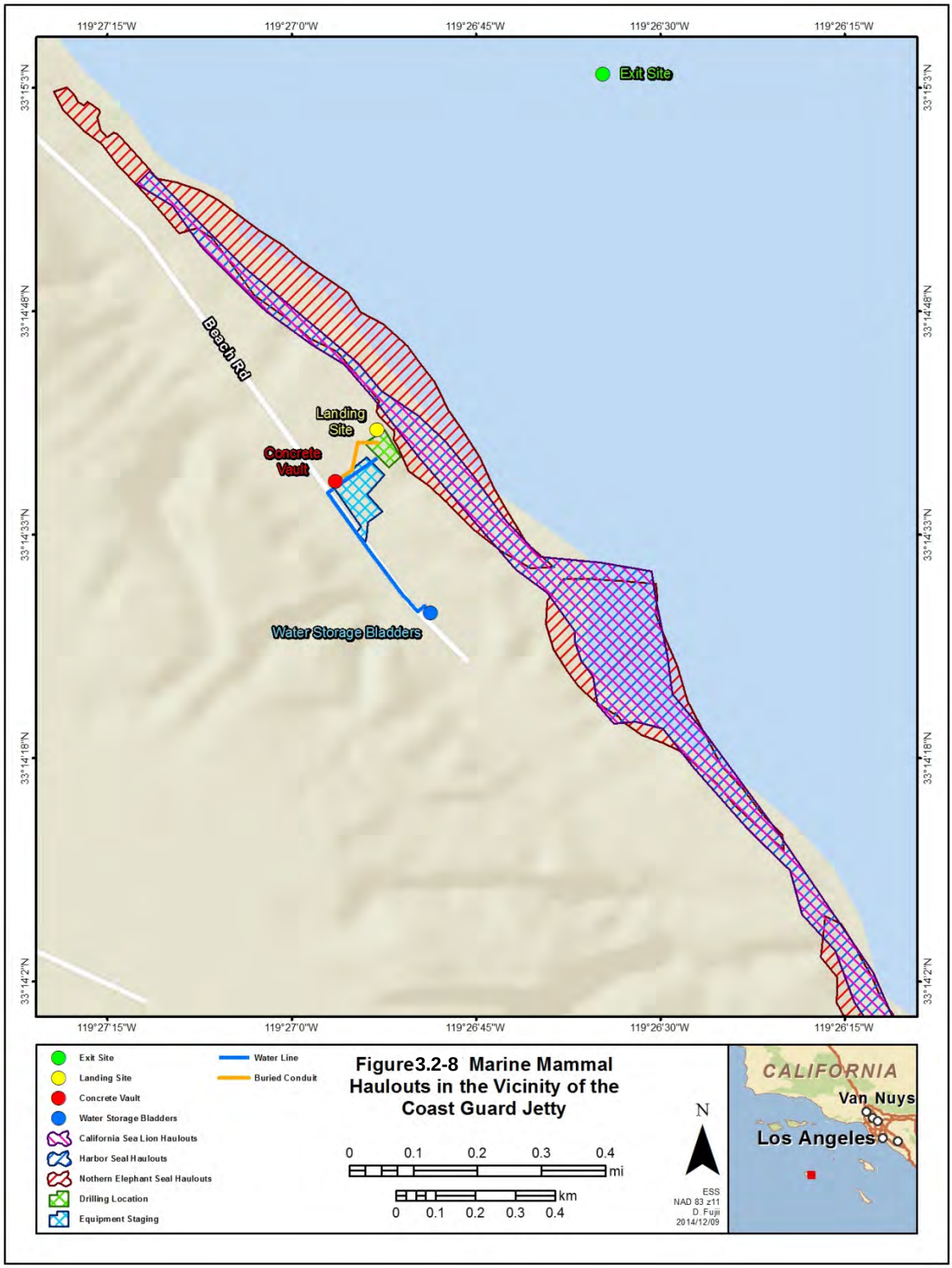
Table 3.2-14 Seasonal Use Patterns of Pinnipeds on SNI

Species	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*
ELEPHANT SEAL	Adult Males											
	At sea		Breed		At sea				Molt		At sea	
	Adult Females											
	At sea		Breed/Pup/Nurse		At sea		Molt		At sea			
	Pups and Weaners											
	At sea			Hauled out			At sea					
HARBOR SEAL	At sea/Hauled out				Breed/Pup/Nurse			Molt	At sea/Hauled out			
CALIFORNIA SEA LION	Adult Males											
	At sea							Breed		At sea		
	Adult Females											
	At sea/Hauled out								Breed/Pup/Nurse	At sea/Hauled out		

Source: NBVC 2010.

Elephant seal haulouts exist along most of the southern, eastern, and western shores. Over the course of the year, more than 32,000 elephant seals may use SNI (Lowry 2002; Barlow et al. 1993), representing about 32 percent of the elephant seals hauling out along all California shorelines. SNI is the second largest elephant seal rookery and hauling ground in southern California.

California sea lions are known to haul out on many beaches along the SNI shoreline, including Coast Guard Beach. Since 2001 the SNI California sea lion population has remained stable between 43,000 and 57,000 individuals, with the exception of the 2002 El Niño year. Recorded pup production on SNI between 2003 and 2008 has consistently been reported between 25,000 and 29,000 individuals, which represents nearly 60 percent of the pups born into the population based on the carrying capacity developed by Carretta et al. (2009).


119°27'15"W
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119°26'45"W
119°26'30"W
119°26'15"W
33°15'3"N
33°14'48"N
33°14'33"N
33°14'18"N
33°14'2"N
Exit Site
Beach Rd
Landing Site
Concrete Vault
Water Storage Bladders
Exit Site
Landing Site
Concrete Vault
Water Storage Bladders
California Sea Lion Haulouts
Harbor Seal Haulouts
Nothern Elephant Seal Haulouts
Drilling Location
Equipment Staging
Water Line
Buried Conduit
Figure3.2-8 Marine Mammal Haulouts in the Vicinity of the Coast Guard Jetty
0 0.1 0.2 0.3 0.4 mi
0 0.1 0.2 0.3 0.4 km
N
ESS
NAD 83 z11
D. Fujii
2014/12/09
CALIFORNIA
Van Nuys
Los Angeles

In 2000, SNI was the largest sea lion rookery in the U.S. with 24,167 pups counted (Lowry and Maravilla, 2005). Data collected at SNI over the past ten years suggests that the California sea lion population has leveled off indicating that the surrounding habitat may be approaching its carrying capacity (NBVC 2010). In addition to the three commonly sighted pinnipeds, the Northern fur seal (*Callorhinus ursinus*) and federally threatened Guadalupe fur seal (*Arctocephalus townsendi*) have, on rare occasions, been sighted on SNI (NBVC 2010). There are no known rookeries or haulout sites in California for the Guadalupe fur seal.

The southern sea otter (*Enhydra lutris nereis*) is a federally listed threatened species with the majority of the population occurring north of Point Conception, California. Between 1987 and 2011, USFWS conducted a translocation program governed by Public Law 99-625 and established a small translocated colony of southern sea otters at SNI (USFWS 2003). A total of 140 southern sea otters were relocated to the SNI colony. This program was disestablished in 2011 and the colony is now considered part of the federally threatened population.

As of 2015, population counts yielded a total of 95 individuals (Hatfield, Pers com.). Sea otters feed within kelp beds on various prey items including sea urchins, crabs, and abalone. Therefore, sea otter populations are primarily found in the extensive giant kelp beds located off the northern SNI shoreline, particularly around Rock Crusher (NBVC 2010).

Kelp forests in the vicinity of SNI occupy a physically challenging environment and subsequently contribute significant quantities of wrack (drift algae that breaks off and disperses) throughout the subtidal marine environment. Drift algae is important because it provides food to abalone and other grazers that are limited in their ability to directly graze on the highly nutritional fronds of adult giant kelp plants located near the surface. Abalone, specifically red abalone (*Haliotis rufescens*), white abalone, and black abalone are species of special concern throughout their range because of protection status and historical value as commercial fisheries. Red abalone located in the nearshore waters surrounding SNI represent an important portion of the population located south of Point Conception and are the largest of all abalone species. (NBVC 2010)

White abalone were listed as an endangered species under the ESA in May 2001. White abalone are marine gastropods that grow slowly and have a lifespan of 30 years or more. Juvenile white abalone seek cover in rocky crevices and under rocks, while adults reside in low- to mid-relief rocky areas at the sand/rock interface. White abalone were historically found in waters ranging from 66 to 200 ft (20 to 61 m) but are now found in relatively deep waters ranging from 98 to 200 ft (30 to 61 m) (Butler et al. 2006). White abalone are herbivores that feed on drifting macroalgae and, therefore, are commonly found in association with the brown algae *Laminaria farlowii* and *Agarum fimbriatum* (Hobday and Tegner 2000; Lafferty 2001).

A habitat model for white abalone around SNI was prepared by NOAA using depth ranges and general substrate types as input parameters, but this effort did not include field survey to determine presence/absence of abalone. According to the results, white abalone habitat is most prevalent along the northern shores of SNI, with patches of suitable habitat located along the southern shores and corresponding closely to locations of kelp beds. No white abalone were observed by Pinkard-Meier and Butler (2008) in a 2.5-acre (1-ha) search area during an ROV survey at SNI. Surveys were limited in

coverage due to poor weather conditions and ongoing military operations (Pinkard-Meier and Butler 2008).

Black abalone were listed in 2009 as an endangered species (NMFS 2008b, 2009). In the final rule designating critical habitat for the species, SNI was excluded from critical habitat under ESA Section 4(a)(3) based on conservation benefits provided by the revised INRMP (NMFS 2011). Similar to white abalone, black abalone are relatively slow-growing, long-lived marine gastropods with a flattened shell, reaching a diameter of about 4 in (10 cm) at 4-8 years, and growing more slowly thereafter (NMFS 2008b). Black abalone occur primarily in the intertidal zone, but are found to a water depth of 20 ft (6 m) and where exposed bedrock provides a complex surface with ample crevices in which the animals find refuge from predators and exposure at low tides (NMFS 2008b).

The most extensive and rigorous long-term data on the abundance of black abalone come from SNI and have been collected by G. VanBlaricom of the U.S. Geological Survey and University of Washington. Surveys in the intertidal and shallow subtidal habitats on all sides of SNI have been conducted for more than 30 years (VanBlaricom 1993, 2007; G. VanBlaricom, U.S. Geological Survey and University of Washington, unpublished data). The sites with highest densities, on the order of $1/m^2$, are located on the southern shores of SNI. These data show that black abalone populations on SNI have been increasing for more than a decade.

Santa Cruz Island

The Channel Islands and surrounding waters support a great diversity of marine mammals, including whales, pinnipeds, and otters. In general, the abundance and distribution of marine mammals is an indication of the general heath and ecological integrity of the marine ecosystems of the CINMS (ONMS 2009). The CINMS provides vital habitat for pinnipeds, offering important feeding areas, breeding sites, and haulouts. Although six species of pinnipeds, northern fur seal, Guadalupe fur seal, northern elephant seals, Pacific harbor seal, Steller sea lion (*Eumetopias jubatus*), and California sea lion have historically occurred in the northern Channel Islands, the most common pinniped in the region is the California sea lion. No pinniped haulout areas are located at or near the proposed landing site. Both black and white abalone are found in rocky habitats surrounding SCrI.

Special Status Species Associated with the Offshore Routes

Marine mammals reported within the Santa Barbara Channel are represented by more than 40 species, all of which are protected under the MMPA; these include 34 species of cetaceans (whales, dolphins and porpoises) and six species of pinnipeds (seals and sea lions) (Carretta et al. 2005; Leatherwood et al. 1982 and 1987; Leatherwood and Reeves 1983; Reeves et al.1992; and County of Santa Barbara 2011). As discussed above, the southern sea otter is also found in the waters surrounding SNI. Six species of cetaceans are federally listed as endangered, while two species of pinnipeds and the southern sea otter are listed as threatened under the federal ESA.

Although a total of eight species of baleen whales occur in the Southern California Bight (SCB) (Carretta et al. 2005; Leatherwood et al. 1982 and 1987; Leatherwood and Reeves 1983), including along the proposed offshore route, only four species, the California gray whale (*Eschrichtius robustus*), the humpback whale (*Megaptera novaeangliae*), the blue whale (*Balaeoptera musculus*), and the fin whale (*B. physalus*) (Dohl et al. 1983; Carretta et al. 2005) are commonly sighted. In addition, several dolphin

and porpoise species are commonly observed in offshore areas along the proposed cable route, including long-beaked common dolphin (*Delphinus capensis*), short-beaked common dolphin (*D. delphis*), bottlenose dolphin (*Tursiops truncatus*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), Northern right whale dolphin (*Lissodelphis borealis*), and Risso's dolphin (*Grampus griseus*) (ONMS 2009).

Four pinniped species are year-round residents in offshore areas of the Santa Barbara Channel, including sea lions, northern fur seals, harbor seals, and northern elephant seals. California sea lions are the most abundant pinnipeds off the shore of California and have their highest densities throughout the year in the Santa Barbara Channel, near the northern Channel Islands. Harbor seals also haul out along the mainland shore of the Santa Barbara Channel, and forage relatively close to shore, remaining within 6.2 mi (10 km) of the shoreline 75 percent of the time (MMS 2001).

3.2.2 Environmental Consequences

3.2.2.1 Assessment Criteria

The factors used to assess the significance of impacts to biological resources include the extent or degree to which implementation of an alternative would result in: 1) substantial loss or degradation of sensitive habitats; or 2) adversely affect a species listed as threatened or endangered by the USFWS or NMFS or protected under the MMPA. This section discusses potential impacts of proposed cable route installation and operation to marine and terrestrial biological resources. Potential impacts to commercial and recreational fisheries are also addressed.

3.2.2.2 Alternative 1 – Preferred Alternative

Terrestrial Vegetation Communities

Point Mugu

The Building 811 and Charlie Pad drillings site would be located within previously disturbed areas devoid of vegetation. The drilling and trenching activities would be conducted in a manner to minimize the impact on vegetation in the vicinity of construction activities. All project vehicles and equipment would be restricted to previously disturbed or graded surfaces. No work will begin in an area adjacent to wetlands until the wetlands have been flagged and all personnel working in the site have had NBVC biologists review appropriate BMPs for the site.

Prior to construction activities, the project sites will be surveyed for invasive weeds and the appropriate treatments will be conducted. The project sites would include the HDD sites, equipment staging areas, and road shoulders disturbed by trenching activities. Once FOCUS-II installation is complete, a second round of invasive weed treatment will be conducted three weeks after the first rain of the subsequent rainy season. Invasive plant species will not be considered as a ground stabilization measure necessary to close out the general construction permit. Therefore, revegetation of areas of ground disturbance may be required.

Trenching between the project sites and existing manhole infrastructure would be conducted in previously disturbed areas along existing roadways. Soils excavated during the trenching operations would be kept in

previously disturbed areas, minimizing impacts to adjacent wetlands. Therefore, implementation of Alternative 1 would have no significant impact on Point Mugu terrestrial vegetation communities.

San Nicolas Island

The drilling site, staging area, and trenching corridor connecting the landing site to the concrete vault would be situated within previously disturbed areas with sparse vegetation. The 5-inch fire hose connecting the HDD site to the water storage area would follow existing road shoulders. All project vehicles and equipment would be restricted to previously disturbed or graded surfaces. In addition, no sensitive vegetation communities have been identified within the vicinity of the proposed sites. To reduce the potential introduction of ecologically harmful non-native flora or fauna, all barge and aircraft shipments to SNI will be conducted in accordance with NBVC Instruction 5090.14, *Biological Resources Security Requirements for Air and Barge Transport of All Cargo to San Nicolas Island, Naval Base Ventura County*. Specific biosecurity measures are described in the conservation measures to be implemented (see Section 2.1.3).

Prior to construction activities, the project sites will be surveyed for invasive weeds and the appropriate treatments will be conducted. The project sites would include the HDD sites, equipment staging areas, and road shoulders disturbed by trenching activities. Once FOCUS-II installation is complete, a second round of invasive weed treatment will be conducted three weeks after the first rain of the subsequent rainy season. Invasive plant species will not be considered as a ground stabilization measure necessary to close out the general construction permit. Therefore, revegetation of areas of ground disturbance may be required. Through the application of these conservation measures, implementation of Alternative 1 would have no significant impact SNI terrestrial vegetation communities.

Santa Cruz Island

The drilling site, staging areas, and trenching corridor connecting the landing site to Building 4 would be situated within previously disturbed areas devoid of vegetation. The above ground elevated channel would follow a path along previously undisturbed oak woodland and grassland. All project vehicles and equipment would be restricted to previously disturbed or graded surfaces. Elevated cable channel support stakes would be installed by hand or using hand-held power tools and no heavy equipment or vehicles. In addition, island bedstraw and rush rose have not been identified within the vicinity of the proposed sites. As discussed above erosion control barriers will be placed along Navy Road and offroad work areas and, prior to construction, biologists will survey work areas and mark any sensitive populations to ensure there is no take. Soils excavated during trenching operations would be kept within the Navy Road footprint, minimizing impacts to the Prisoners Harbor wetlands (See Section 2.1.3 Protective Measures). To reduce the potential introduction of ecologically harmful non-native flora or fauna, all barge and aircraft shipments to SCrI will be conducted in accordance with CINP Biosecurity Protocols (NPS 2014). Specific biosecurity measures are described in the conservation measures to be implemented (see Section 2.1.3).

Prior to construction activities, the project sites will be surveyed for invasive weeds and the appropriate treatments will be conducted. Once FOCUS-II installation is complete, a second round of invasive weed treatment will be conducted three weeks after the first rain of the subsequent rainy season. Invasive plant species will not be considered as a ground stabilization measure necessary to close out the general construction permit. Therefore, revegetation of areas of ground disturbance may be required. Through the

application of these conservation measures, implementation of Alternative 1 would have no significant impact on SCrI terrestrial vegetation.

Terrestrial Wildlife

Terrestrial wildlife, particularly mammals and birds, may be temporarily displaced to nearby areas by noise or visual stimuli associated with project activities, particularly heavy equipment use associated with the drilling process. However, Point Mugu and SNI are currently utilized for various military training activities and Alternative 1 would not significantly increase the overall intensity of activities presently conducted in the area. The project areas on SCrI are located on areas of relatively high vehicle traffic. Furthermore, any disturbance would be highly localized and temporary. Moreover, mammals and birds are highly mobile organisms and are not dependent solely upon the project area. For these reasons, project activities are not expected to lead to substantial disruption of important nesting, resting, or foraging activities and no significant impact on the abundance or distribution of mammals or birds is anticipated. Therefore, implementation of Alternative 1 would have no impact on Point Mugu, SNI, or SCrI wildlife communities.

Terrestrial Special Status Species

Point Mugu

Salt Marsh Bird's Beak – Primary suitable habitat for salt marsh bird's beak on NBVC Point Mugu occurs on the eastern and western arms of Mugu Lagoon. Specific salt marsh bird's beak populations have been identified outside the Building 811 site area and east of the Charlie Pad site. A qualified biologist will survey the proposed ground disturbance areas at the Building 811 and Charlie Pad sites to confirm that the salt marsh bird's beak is not present at the time of construction operations. All other FOCUS-II project activities at Point Mugu would occur on previously disturbed areas. Furthermore, all project personnel, vehicles, and equipment would remain on previously constructed or graded surfaces to the fullest extent possible. Therefore, implementation of Alternative 1 would have no effect on salt marsh bird's beak or its habitat.

Ridgway's Rail – Both Building 811 and Charlie Pad are distant from known populations of Ridgway's rail and activities are not anticipated to impact the species. In addition, by implementing the conservation measures included as part of the proposed action (see Section 2.1.3), HDD and other activities that could disturb a nesting Ridgway's rail would not occur during nesting season. Given the background of prevailing activities, the proposed activities are not expected to have effects on foraging or resting by Ridgway's rails. As such, implementation of Alternative 1 would have no effect on Ridgway's rails.

California Least Tern – Least terns are generally present at nesting areas on the western and eastern arms of the Mugu Lagoon barrier beach between mid-April and late August. Nesting and foraging behavior of least terns can be affected by human activity (USFWS 2006). By implementing the seasonal conservation measures included as part of the proposed action (see Section 2.1.3), HDD and other activities associated with the proposed action would not occur while least terns are present at Point Mugu. Therefore, the proposed action would have no effect on least terns.

Western Snowy Plover –The western snowy plover is a year-round resident on the coast of California. Plovers are sensitive to nest and habitat disturbances. Nesting and foraging behavior of snowy plovers can

be affected by noise and human activity (Lafferty 2001; USFWS 2007). By implementing the conservation measures included as part of the proposed action (see Section 2.1.3), HDD and other activities that could disturb a nesting snowy plover would not occur during nesting season.

The HDD sites on Point Mugu are far enough away from a wrack line where plovers normally roost, so no effects to western snowy plover would be expected. Furthermore, construction crews would not be allowed on the NBVC Point Mugu beach areas. Therefore, implementation of Alternative 1 would have no effect on western snowy plovers.

San Nicolas Island

Western Snowy Plover – The proposed conservation measures (see Section 2.1.3) would require that all activity occur outside of the nesting season. No beach access is required to conduct the HDD activities or installation of cables. Therefore, implementation of Alternative 1 would have no effect on SNI western snowy plovers.

Island Night Lizard – Island night lizards are no longer listed, but are part of an active post-delisting monitoring program and are thus discussed here. High density populations of island night lizard are known to exist in the vicinity of the water bladders and adjacent to the equipment staging area. A survey of the water bladder area would be conducted within seven days prior to use of the water bladders. Additionally, the equipment staging area would be surveyed within seven days of ground disturbance for shrubs that could provide habitat for the island night lizard. Therefore, implementation of Alternative 1 would have no significant impact on island night lizards.

San Nicolas Island Fox – The construction noise and increased human activity could temporarily displace San Nicolas Island foxes from the construction areas. Following the completion of daily construction activities, the inquisitive San Nicolas Island foxes may enter the construction areas. Considering this, conservation measures would be implemented, providing protection to the San Nicolas Island fox. These conservation measures would include daily trash and rubbish removal; securely sealing all trash receptacles; covering pits deep enough to trap foxes; and capping all pipe ends from 2 to 6 inches (5 to 15 cm) in diameter. Construction personnel would not be allowed outside of previously disturbed areas over the duration of proposed drilling and trenching activities. A full list of conservation measures is provided in Section 2.1.3. Therefore, implementation of Alternative 1 would have no significant impact on San Nicolas Island fox.

Santa Cruz Island

Bald Eagle – Noise from construction activities associated with Alternative 1 may generate avoidance reactions by bald eagles at SCrI. However, the construction activities would be located within areas of existing human activity and would be short-term. Though the immediate project area is situated within normal bald eagle foraging areas, equally valuable foraging area is located farther north along the Cañada del Puerto. Considering this, the construction activity would not affect the long term foraging behavior of bald eagles at SCrI. Therefore, implementation of Alternative 1 would have no significant impact on SCrI bald eagles.

Santa Cruz Island Fox – The construction noise and increased human activity may temporarily displace Santa Cruz Island foxes from the construction areas, but this is similar to existing activities and displacement regularly occurring in the area. Following the completion of daily construction activities,

the inquisitive Santa Cruz Island foxes may enter the construction areas. Considering this, conservation measures would be implemented, providing protection to the Santa Cruz Island fox. These conservation measures would include daily trash and rubbish removal; securely sealing all trash receptacles; covering pits deep enough to trap foxes; and capping all pipe ends from 2 to 6 inches (5 to 15 cm) in diameter. Construction personnel would not be allowed outside of previously disturbed areas over the duration of proposed drilling, trenching, and elevated channel installation activities. A full list of conservation measures is provided in Section 2.1.3. Therefore, implementation of Alternative 1 would have no effect on the Santa Cruz Island fox.

Marine Habitats

HDD technology would be used to install the cable beneath the sandy beach and out to approximately 85 ft (26 m) water depth. This technology would avoid (go under) all sensitive nearshore habitats and not significantly impact biological resources in these areas. Drilling fluid releases during HDD activities at the landing and exit sites are unlikely and, if they do occur, would not cause significant impacts to nearshore organisms. This is because of the naturally high dispersion these fluids would experience in this dynamic environment, thereby precluding significant effects from temporary increases in turbidity (e.g., clogging of invertebrate or fish feeding structures or burial) and the lack of significant toxicity of this material. BMPs such as HDD Installation Monitoring would help prevent an accidental discharge into the marine environment.

Impacts to soft sediments where the cable is plowed into the bottom will temporarily be disturbed, but will return to pre-burial conditions almost immediately. The main impact associated with cable installation relates to the physical disturbance of seabed and the subsequent creation of a temporary sediment plume. These impacts are, however, localized in nature and are generally short-term with the seabed usually returning to its original state. When compared with the area affected by other activities (e.g., trawl fisheries), the spatial extent of cable installation is very small (Berr, 2008). In locations where existing cables do not bury, the benthic community on the cables is equal to surrounding communities and often the cable becomes so overgrown that it is indiscernible from surrounding substrate. Kogan, et al. (2006) found that the Acoustic Thermometry of Ocean Climate/Pioneer Seamount (ATOC) cable offshore Pillar Point, California, where exposed, "functions as a colonization surface similar to outcrops and isolated rocks." No significant differences to marine habitats were found in this study (Kogan, et al. 2006). Therefore, implementation of Alternative 1 would have no significant impact on marine habitats and would yield no significant harm to marine habitats within the U.S. EEZ as defined by EO 12114.

Marine Vegetation

Eelgrass and other marine vegetation will not be affected by the proposed project because HDD technology will be used to install the cable offshore and underneath eelgrass beds located in shallow waters at the proposed landing site (Figure 3.2-6, above). Therefore, implementation of Alternative 1 would have no significant impact on marine vegetation such as eelgrass beds.

Invertebrates

Some impacts (e.g., burial, crushing, and/or displacement) would occur to invertebrates in both hard-bottom and soft-bottom areas as a result of cable-laying activities. The significance of the impact depends

on the relative area of disturbance compared to the overall habitat and community, either locally or regionally, and the type of species that may be impacted.

Hard-bottom habitats are anticipated to be limited along the cable route and seafloor mapping will confirm a final route that avoids these habitats to the maximum extent possible. In general, potential impacts from cable installation would not cause significant impacts to sensitive species (as defined) in any unavoidable hard-bottom areas due to the expected low abundance of these organisms along the offshore route, especially since habitat and/or environmental conditions favoring substantial populations of these species do not appear to occur within the potential limited hard-bottom areas along the cable route corridor.

Furthermore, none of these species is recognized as biologically significant in local, state or federal policies, statutes or regulations. The predominant (i.e., non-sensitive) species in these limited hard-bottom habitats are mostly very low profile (e.g., one inch or less) and/or sturdy species such as cup corals and encrusting or turf forms, while species on the soft-bottom habitat are relatively mobile, such as seastars, sea cucumbers, and fishes. Cable laying on these species would have only a temporary and localized scale of disturbance (likely a few inches) and would be inconsequential given the common occurrence of these species throughout these habitats. In the ATOC cable study, no tests evaluating the overall effect of the cable were statistically significant. Actinarians (sea anemones) colonized the ATOC cable when it was exposed on the seafloor, and were therefore generally more abundant on the cable than in surrounding, sediment-dominated seafloor habitats (Kogan, et al. 2006). Therefore, implementation of Alternative 1 would have no significant impact on marine invertebrate populations or habitats and would yield no significant harm to invertebrate populations or habitats within the U.S. EEZ as defined by EO 12114.

Fishes

Temporary displacement of some fishes from the immediate vicinity (e.g., tens of feet) of the cable route would occur during short-term passage of cable installation equipment. These fishes are anticipated to return almost immediately to normal behaviors following the passage of the equipment. In addition, suspended solids are expected in a plume resulting from cable burial by the seaplow and would vary depending on the type of sediment and bottom currents that would serve to transport and disperse the material following the disturbance. Potential impacts to soft-bottom species from turbidity would be localized and short term, with temporary (e.g., hours) and localized (occurring over a very discrete area) impacts. Once the cable is buried by the plow, or settles onto the bottom in deep water, the soft sediment would rapidly return to a normal state. In the ATOC cable study, some fishes were more abundant (not statistically significant) near the cable, apparently due to the higher habitat complexity provided by the cable (Kogan, et al. 2006). Therefore, implementation of Alternative 1 would have no significant impact on fish populations or habitats and would yield no significant harm to fish populations or habitats within the U.S. EEZ as defined by EO 12114.

Commercial and Recreational Fisheries

Types of commercial fishing gear used in the vicinity of the landing sites or offshore route include drift gillnets, longline gear, troll gear, trawls, seining, and traps or pots. As described above, pelagic species are commercially caught in the highest abundances, including market squid, Pacific sardine, northern anchovy, and Pacific mackerel. Commercial and recreational fishing is limited in the vicinity of the

landing sites. Some short-term and temporary impacts on commercial or recreational fisheries could occur from preclusion of fishing during cable installation, operation, repair, and removal activities from the proposed project. The presence of the cable installation vessel and equipment could preclude fishing within a limited area (~1 mi; ~1.6 km) for a temporary period (a few hours to several days based on location). However, advance notice would be given to fishing vessels, via Notice to Mariners, to alert them to the cable installation activities. In addition, commercial fisheries that use equipment that contacts the bottom (e.g., otter trawls) could potentially snag unburied portions of the cable, causing damage to or loss of their fishing gear, or damage to the cable. Otter doors during a "typical" trawl may penetrate the seafloor between 1-2 inches (3-5 cm) when fishing properly or up to 1.6 ft (0.5 m) if doors become buried or fall on their side. The cable is expected to be buried three feet (1 m) below the surface in soft-bottom areas to a water depth of 3,280 ft (1,000 m), so interaction with bottom-fishing gear is not expected. Recreational fishing is limited in the vicinity of the landing sites and along the offshore routes. Recreational anglers would be able to fish in other areas during cable installation. Therefore, implementation of Alternative 1 would have no significant impact on commercial or recreational fishing and would yield no significant harm to commercial and recreational fisheries within the U.S. EEZ as defined by EO 12114.

Essential Fish Habitat

The use of HDD technology will place the fiber optic cable below sensitive habitats between the shoreline and the exit point for the borehole. These distances are sufficiently offshore to avoid all nearshore kelp beds. In addition, the barge landing site used to offload cable installation equipment and supplies on SCrI would follow existing landing routes and would not cause any new impacts on existing eelgrass beds. Based on the best available data, no sensitive plants or habitats occur along the offshore sea route, though additional mapping by the Navy will determine if any hard bottom habitat will be encountered within the project area. During cable installation, the cable ship would not work within any kelp beds. Kelp and seagrasses are not anticipated to be encountered in the cable area, thus precluding any significant impacts or need for mitigation. Shallow-water route surveys have already been conducted in the vicinity of the bore exit points by divers to confirm the presence or absence of kelp beds or other sensitive habitats in those regions (Navy 2003, Ugoretz 2014).

Most of the offshore cable route (~93 percent) occurs over soft bottom where groundfish populations would not be affected. The burial of the cable in waters less than 3,280 ft (1,000 m) deep would not significantly impact groundfish due to the temporary and localized nature of cable installation operations.

Given the broad definition of EFH for groundfish, the entire offshore project area falls within the EFH boundary. There are no estuaries in the proposed project area and canopy kelp is absent in depths greater than 85 ft (26 m) in any of the exit point locations. Seagrass is present nearby the SCrI HDD exit point, though the closest bed is approximately 400 ft (330 m) inshore of the HDD exit point. Rocky substrate will be avoided, though the potential exists to cross limited rocky outcroppings in deeper water. The proposed project area includes portions of the Cowcod Conservation Area, though not those designated as areas of interest by NMFS (Figure 3.2-9). The cable route north of SCrI will likely cross the offshore portion of one of the areas specified in the Federal waters of the CINMS.

The following non-fishing activities have been determined by PFMC as having a potential to impact groundfish EFH: point source discharge; fish processing waste-shoreside and vessel operation; water

intake structures/discharge plumes; oil/gas exploration/development/production; habitat restoration/ enhancement; and marine mining. Of these, only water intake structures would be included in the proposed action as a component of the temporary use of seawater in the HDD at SCrI. The groundfish FMP indicates that, in order to avoid such impacts, intake structures should be designed to minimize entrainment or impingement. Velocity caps that reduce horizontal intake/discharge currents should be employed and intake velocities across the intake screen should not exceed 0.5 foot per second. These measures will be employed for the HDD seawater intake at SCrI.

The entire proposed offshore project area is included in the CPS EFH definition. It is unlikely, however, that cable-laying activities would have any lasting impacts on CPS species, their spawning, or feeding. If any disruption did occur, it would be temporary and reversible. Commercial fishing for these species would not be altered by the project, because CPS are found and taken by gear that does not interact with bottom habitats (i.e., seines).

The following non-fishing activities have been determined by PFMC as having a potential to impact CPS EFH: dredging, fills/dredge material disposal, oil/gas exploration/production, water intake structures, aquaculture, wastewater discharge, discharge of oil or release of hazardous substances, and coastal development. Of these, only water intake structures would be included in the proposed action as a component of the temporary use of seawater in the HDD at SCrI. The CPS FMP indicates that, in order to avoid such impacts "All intake structures should be designed to minimize entrainment or impingement of prey species…" (PFMC 2011a). As described above, the temporary intake at SCrI will be low-flow rate and screened. Figure 3.2-9 provides an overview of the offshore cable alignments with respect to offshore protected areas.

Based on the individual HMS species EFH definitions, HMS EFH could include many areas within the proposed project area, if not the entire proposed project area. As with CPS, however, it is unlikely that cable-laying activities would have any lasting impacts on HMS species, their spawning, or feeding or fishing activities for these species. If any disruption did occur, it would be temporary and reversible. Therefore, implementation of the project or its alternatives would have minimal and only temporary effects on EFH for HMS species.

Environmentally sound engineering practices would be used during cable installation and operating activities to minimize the influence of the cable on EFH. The Navy will consult with NMFS regarding potential impacts to EFH. Pending this consultation, implementation of Alternative 1 would have no significant impact on EFH species or habitats and would yield no significant harm to EFH species or habitats within the U.S. EEZ as defined by EO 12114.

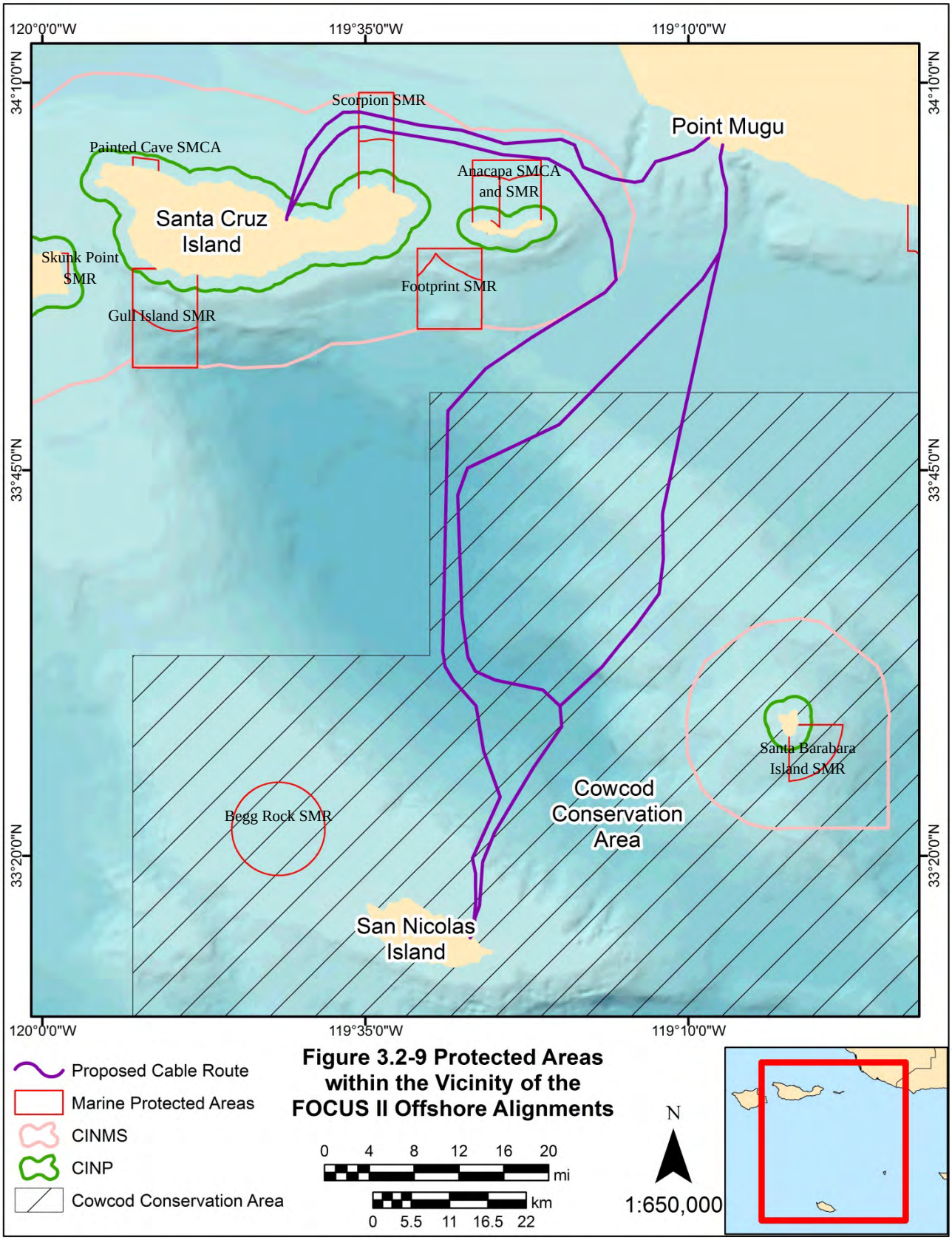

Figure 3.2-9 Protected Areas within the Vicinity of the FOCUS II Offshore Alignments

Marine Mammals and Special Status Species

Drilling activities would occur during the non-breeding season for all pinnipeds potentially present in the project area, so noise from the HDD operation would not impact these communities in the vicinity of the project sites. As provided in 2.1.3, conservation measures would require that all HDD and onshore construction activities on SNI occur between September 15 and December 15, outside sensitive bird breeding and nesting periods as well as marine mammal breeding seasons. Given the distance between the SNI sea otter populations and the project sites, the proposed action would have no effect on sea otters on SNI.

No population of a special status species (threatened, endangered, or regulated) would be affected due to the general avoidance of these resources by the sea route and/or low abundance of these organisms in the general vicinity. Moreover, there would be no significant disruption in the migration route of fish or wildlife. This is because the cable installation phase would last only minutes to hours (sea route) to a few days (landing sites) in any one location and would not cause disruption substantially different from normal ship traffic (e.g., noise) through the area. Similarly, the long-term occurrence of the cable on the bottom would not significantly impede migration since it would be buried along most (93 percent) of the route and represent a very low profile (e.g., one to several inches) in hard-bottom areas as a result of careful installation and post-lay inspection/adjustment of the cable in these areas.

While both black and white abalone are found in the waters surrounding SCrI, black abalone are only found in rocky intertidal habitats and white abalone are found in deep rocky habitats that will not be affected by the proposed actions. Black and white abalone habitats would be avoided by cable laying and HDD activities. No white or black abalone have been found at any of the HDD drill sites and deeper rocky habitat will be mapped and avoided. Therefore, implementation of Alternative 1 will have no effect on black or white abalone.

For the reasons described above and with implementation of the proposed conservation measures, implementation of Alternative 1 would have no significant impacts on marine mammal or marine special status species and would yield no significant harm to marine mammal or marine special status species within the U.S. EEZ as defined by EO 12114. Implementation of Alternative 1 would also not result in takes under the MMPA.

<u>Mitigation Measures</u>

The increase in noise levels associated with Alternative 1 construction activities would potentially affect wildlife, including threatened and endangered species at Point Mugu, SNI, and SCrI. Through implementation of conservation measures (see Section 2.1.3), there would be no affect to listed species and no significant impact to wildlife species at Point Mugu, SNI, or SCrI. Therefore implementation of Alternative 1 would have no significant impacts on wildlife and vegetative species, including threatened and endangered species and would yield no significant harm to marine mammal or marine special status species within the U.S. EEZ as defined by EO 12114. As no significant impacts to wildlife and vegetative species are anticipated, no mitigation measures are proposed or required.

3.2.2.3 Alternative 2

Under Alternative 2, construction activities at NBVC Point Mugu and NBVC SNI would be identical to those analyzed under Alternative 1. On SCrI, the elevated cable channel installed between the well site and Navy Road would follow the road bed and no work would be performed in previously undisturbed habitat for its installation. This alternative would have the same four offshore cable routes analyzed in Alternative 1. Therefore implementation of Alternative 2 would have no significant impacts on wildlife and vegetative species, including threatened and endangered species and would yield no significant harm to marine mammal or marine special status species within the U.S. EEZ as defined by EO 12114. Implementation of Alternative 2 would also not result in takes under the MMPA.

3.2.2.4 Alternative 3

Under Alternative 3, construction activities at NBVC Point Mugu and NBVC SNI would be identical to those analyzed under Alternative 1. On SCrI, there would be no elevated cable channel installed between the well site and Navy Road, as the FOCUS-II cable and water line would be installed in trenches following Navy Road starting at the NPS warehouse. This alternative would involve an additional 200 ft (60 m) of trenching along existing road corridors but would not lead to any additional new ground disturbance, as compared to Alternative 1. This alternative would have the same four offshore cable routes analyzed in Alternative 1. Therefore implementation of Alternative 3 would have no significant impacts on wildlife and vegetative species, including threatened and endangered species and would yield no significant harm to marine mammal or marine special status species within the U.S. EEZ as defined by EO 12114. Implementation of Alternative 3 would also not result in takes under the MMPA.

3.2.2.5 Alternative 4

Under Alternative 4, construction at NBVC Point Mugu would be limited to the Charlie Pad site with no construction activities conducted at the Building 811 site. The NBVC SNI activities would be identical to those analyzed in Alternative 1. There would be no project activities conducted at SCrI. Offshore cable installation would be limited to the two routes between NBVC Point Mugu and NBVC SNI. Therefore implementation of Alternative 4 would have no significant impacts on wildlife and vegetative species, including threatened and endangered species and would yield no significant harm to marine mammal or marine special status species within the U.S. EEZ as defined by EO 12114. Implementation of Alternative 4 would also not result in takes under the MMPA.

<u>Mitigation Measures</u>

The increase in noise levels associated with the Alternative 4 construction activities would potentially affect wildlife, including threatened and endangered species at Point Mugu and SNI. Through implementation of conservation measures, there would be no effect on wildlife species at Point Mugu or SNI. Therefore, no mitigation measures are proposed or required.

3.2.2.6 Alternative 5 – The No-Action Alternative

Under the No-Action alternative, the proposed action would not occur and existing conditions would remain unchanged. Therefore, no significant impacts to biological resources would occur.

Mitigation Measures

Implementation of the No-Action Alternative would not result in significant biological resources impacts; therefore, no mitigation measures are proposed or required.

3.3 CULTURAL RESOURCES

3.3.1 Affected Environment

3.3.1.1 Definition of Resource

Cultural resources include prehistoric and historic sites, structures, artifacts, and districts that depict evidence of human activity considered important to any culture, subculture, or community. Cultural resources, as defined in the EA/OEA, consist of archaeological resources, architectural resources, and traditional cultural properties.

Archaeological resources consist of the material remains of prehistoric and/or historic human activity. The Archaeological Resources Protection Act of 1979 (ARPA) defines archaeological resources as "pottery, basketry, bottles, weapons, weapon projectiles, tools, structures or portions of structures, pit houses, rock paintings, rock carvings, intaglios, graves, human skeletal materials, or any portion or piece of any of the foregoing items" (16 U.S.C. 470bb).

Architectural resources include manmade structures including, but not limited to, standing buildings, dams, bridges, and canals. Under the National Historic Preservation Act of 1966 (NHPA) (PL 89-665, as amended by PL 96-515; 16 U.S.C. 470 et seq.) only architectural resources over the age of 50 years are considered for protection; however, younger structures can be afforded the same protection under special circumstances.

Traditional cultural properties may include archaeological resources, architectural resources, topographic features, plant and animal habitat, and any other inanimate object deemed essential to the continuance of a traditional culture by Native Americans and other groups.

3.3.1.2 Regulatory Setting

The NHPA provides for establishment of the National Register of Historic Places (NRHP) to include districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, and culture. Section 106 of the NHPA requires federal agencies with jurisdiction over a proposed federal project to take into account the undertaking's effect on cultural resources listed or eligible for listing in the NRHP, and affords the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP) an opportunity to comment with regard to the undertaking. In California, the SHPO is the head of the Office of Historic Preservation (OHP) of the Department of Parks and Recreation.

For the purposes of the proposed action, the Navy is the lead federal agency for the environmental review under the National Environmental Policy Act (NEPA) and historic preservation review and consultation under the NHPA. As described in 36 Code of Federal Regulations (CFR) 800.8(c), the Navy is using the NEPA public comment process to satisfy the public involvement requirement of Section 106 of the NHPA. The NPS will have lead responsibility for native American tribal consultations for portions of the project on NPS lands. The Section 106 process for the FOCUS-II project will be conducted in four steps including:

1. **Initiation of the Section 106 process**:
    a. Meeting with NPS to establish roles and responsibilities with regards to the Section 106 process, lines of communication, and how to properly document the process.
    b. Coordination with tribes.
    c. Plan for public involvement.
2. **Identification of historic properties:**
    a. Definition of area of potential effect (APE) and areas of direct impact (ADI)
    b. Literature review of historic properties within APE and ADI
    c. Review of information regarding tribal affiliations within project areas
3. **Assessment of effects:**
    a. Determination that there are no historic properties within the APE at NBVC Point Mugu and NBVC SNI
    b. Development and execution of an Archeological Testing Plan for portions of CA-SCrI-240/439 transversed by ADI at SCrI
        i. NPS and SHPO concurrence with testing plan objectives and methods
        ii. NPS authorization to conduct testing plan
    c. Based upon testing plan findings, determine whether adverse effects will occur and the scale of these effects
4. **Resolution of adverse effects:**
    a. Identify mitigation measures to be implemented
    b. NPS develop and execute a memorandum of agreement (MOA) with SHPO
    c. Conduct any data recovery as specified in MOA
    d. ACHP coordination/communication

In addition to the Section 106 process and NRHP eligibility criteria, other applicable laws and guidelines regarding the management and protection of cultural resources include the following:

- EO 11593, Protection and Enhancement of Cultural Environment (16 U.S.C. 470 [Supp. 1, 1971]);
- Native American Graves Protection and Repatriation Act (PL 101 – 601, U.S.C. 3001 – 3013);
- Determination of Eligibility for Inclusion in the National Register (36 CFR §63);
- Curation of Federally Owned and Federally Administered Archaeological Collections (36 CFR §79); and
- DoD Directive 4710.1 (outlines the policy to incorporate historic preservation requirements into all Department of Defense [DoD] activities).

Section 101(d)(6)(B) of the NHPA requires federal agencies to consult with federally-recognized Indian tribes that attach religious or cultural significance to historic properties. Compliance with 36 CFR §800.2, which implements consultations with Native Americans, may be conducted by federal agencies as part of government-to-government coordination.

3.3.1.3 Existing Conditions

This section provides details regarding the cultural resources that have been identified within and/or adjacent to the APE and/or ADI at the project sites: NBVC Point Mugu, NBVC SNI, and SCrI and offshore areas on the Sea Range.

Point Mugu

The APE for the preferred alternative at NBVC Point Mugu consists of the Building 811 drilling site and Charlie Pad drilling sites, the equipment staging areas as provided in Figures 2-3 and 2-5, and a 328-ft (100-m) radius around the Bravo Launching Control Building. The Charlie Pad site is within 328 ft (100 m) of the Bravo Launching Control Building, which is a contributing factor to the Baker Complex. The complex was constructed in 1948 and was determined to be eligible for listing on the NRHP under Criterion A for the direct association with testing of the earliest missile systems assigned to NBVC Point Mugu. The complex was also determined to be eligible for listing under Criterion C, as an unusual example of a test launch facility.

Pre-History and History of the Point Mugu Project Areas

There are few areas at NBVC Point Mugu that are considered archaeologically sensitive due to the use of fill soils on most areas of the base. Culturally sensitive areas at NBVC Point Mugu include: areas situated adjacent to known archaeological sites located along the base perimeter, areas that are now covered by fill soils between 3 and 15 ft (0.9 and 4.6 m) in depth, providing a measure of protection against buried resources and areas where an examination of historic maps and aerial photos indicates the potential for historic resources. These culturally sensitive areas are identified in the Integrated Cultural Resources Management Plan (ICRMP) for NBVC Point Mugu and Port Hueneme (NAVFAC 2013).

Previous Cultural Resources Investigation of the Point Mugu Project Areas

Among 536 properties evaluated at NBVC Point Mugu in the ICRMP, 11 were found to be eligible for the NRHP for their association with the development, testing, and tracking of early naval guided missile systems that were developed at NBVC Point Mugu during the Cold War era (NAVFAC 2013). The SHPO concurred with this determination and also concurred that the remainder of the buildings at NBVC Point Mugu were not eligible at the conclusion of the study. Of these, only the Bravo Launching Control Building is within the project APE as discussed above. A more detailed discussion of the pre-historic and historic periods for NBVC Point Mugu is provided in the NBVC Point Mugu ICRMP (NAVFAC 2013).

Section 106 Compliance – Point Mugu

No cultural resource surveys were conducted specifically for the proposed NBVC Point Mugu project sites because these project areas are in previously disturbed areas that have been deeply filled and paved. The ICRMP identifies one historic structure within 328 ft (100 m) of the APE: the Bravo Launching Control Building, which contributes to the Baker Launch Complex described above.

San Nicolas Island

The NBVC SNI APE includes the drilling area and staging area near the Coast Guard Jetty plus the area within a 50-ft (15-m) radius around the combined area.

Pre-History and History of the San Nicolas Island Project Areas

There are 605 documented archaeological sites on NBVC SNI. These include 553 recorded prehistoric sites, 42 historic-era sites, and ten sites with prehistoric and historic-era components. The total area covered by these 605 sites is 1,223 acres, representing 8.6 percent of the total 14,234 acres of the island.

In general, the sites are well distributed across the island, although higher densities are found on the western end, the western portion of the central plateau, and along the coastal terraces. (NAVFAC 2012)

No SNI archaeological site has been formally listed on the NRHP either as an individual property, nor has any been identified as contributing to a NRHP District. Four archaeological sites have been formally determined eligible for the NRHP as individual resources. (NAVFAC 2012)

Martz (2002, 2005) provided preliminary eligibility recommendations for all but two of the 538 prehistoric archaeological sites, inclusive of the four sites formally determined eligible. Two prehistoric trails have been identified on SNI but lack eligibility requirements. Eligibility recommendations are almost equally divided between three classes: "appear eligible," "appear ineligible," and "undetermined." The Martz findings identify differences in eligibility recommendations between site types. Habitation sites and the single sandstone quarry are generally recommended as "appear eligible." Sites with unknown characteristics, hearths, lithic reduction sites, and multi-use processing sites are most often recommended as "appear ineligible." Shellfish processing sites are most often considered "undetermined." No eligibility recommendations have been put forward for historic-era archaeological sites (NAVFAC 2012).

Previous Cultural Resources Investigation of the San Nicolas Island Project Areas

Martz (2002) has documented a detailed history of archaeological surveys on SNI. The main survey investigations were carried out by Meighan and Eberhart (1953), Reinman (1962), WESTEC (1978), and Reinman and Lauter (1984). The Reinman and Lauter investigation was the most comprehensive survey. During the 1983 and 1984 period, they surveyed the entire island with the exception of the steep slopes. The survey identified 355 sites, designating 37 different site types. Each site is documented by an individual site form. This survey did not include historic-era sites. The NBVC SNI ICRMP provides a comprehensive description of the archaeological investigations conducted at NBVC SNI (NAVFAC 2012).

JRP prepared an inventory and evaluation of historic-era architectural resources on SNI in 1995. The subsequent survey report was prepared for the Engineering Field Activity West, NAVFAC. The only building recorded and evaluated, Building N74, was found ineligible for listing in the NRHP (JRP 1995). In 1998, JRP conducted a more comprehensive inventory and evaluation study. During the 1998 study, 211 buildings were studied and documented on California Department of Parks and Recreation (DPR) 523 forms. Of the recorded properties, only Building N138 appeared to be eligible for NRHP listing. The NBVC SNI ICRMP summarizes several reports prepared prior to and after JRP's comprehensive survey. As of the 2012 publication of the NBVC SNI ICRMP, 70 buildings and structures have reached the 50 years milestone age, requiring re-evaluation with specific attention given to Cold War-era resources (NAVFAC 2012).

Section 106 Compliance – San Nicolas Island

No cultural resource surveys were conducted specifically for the proposed NBVC SNI project site because the project area is in a previously disturbed area. There are no facilities within the NBVC SNI APE. No sites considered eligible for NRHP listing are found within the APE (NAVFAC 2012).

Santa Cruz Island

Because the entirety of Santa Cruz Island is a designated Historic District, the APE consists of the entire island. Within this, the ADI is the area that could actually be impacted by the FOCUS II installation. Work for this project will be limited to the Navy Road, an area to the west of the access road from the Navy Road to the existing well site at Prisoners Harbor, and staging areas on existing graded areas at Prisoners Harbor (Figures 2-12 and 2-14). The ADI, for purposes of determining potential impacts to known historic sites, was expanded to a 50 foot buffer around the planned construction path. The project calls for the cable to be buried up to 102 cm (40 in) deep (vertical ADI) within the existing road or in an elevated channel approximately 1.6 ft (0.5 m) above the ground. The ADI for the SCrI sites includes the following areas (Figures 2-12 and 2-14):

- The HDD area at Prisoners Harbor;
- Equipment storage areas in the Prisoners Harbor area and at the well site;
- The section of Navy Road connecting the Prisoners Harbor HDD site to the Navy Site; and
- The roadways connecting the well site to Navy Road.

Pre-History and History of the Santa Cruz Island Project Areas

Santa Cruz Island seems to have supported a large human population during most of prehistory. Recent archeological research on SCrI shows evidence of human occupation 8,900 years ago, and the potential for even older material exists. Like Santa Rosa and San Miguel islands, deposits on the west end containing pygmy mammoth remains could also contain evidence of older human occupation. Eleven historic villages are known for SCrI, equal to the total number recognized for both Santa Rosa and San Miguel islands. Earlier sites, ranging from only a few meters square to extensive shell mounds covering hundreds of square meters, are found along the coastline and in the interior. Some of these mounds contain distinctive layers of red abalone shell, indicative of occupation about 5,000 to 8,000 years ago. In addition to shell mounds, prehistoric sites include chert quarries and workshop sites, rock shelters, and rock platforms identified as shrines. One of the rock shelters contains rock art of a style quite distinct from that known on the mainland. Formal cemeteries are found close to many villages, especially at later sites, and isolated human burials have been recorded on the island at seemingly random locations. The potential number of burials ranges into the tens of thousands (NPS 2015).

Although only some 20 percent of SCrI has been surveyed intensively for archeological resources, 750 archeological sites have been recorded (NPS and TNC lands combined). It is estimated that the entire island probably contains about 3,000 archeological resources (NPS 2015).

SCrI is the largest and most ecologically diverse of the Channel Islands, and it held the largest Chumash population at the time of European contact. The last of the island's native population was taken to mainland missions in the 1820s, and in 1839 the land was granted to the largely absentee owner Andrés Castillero (finally confirmed in 1869). His agent, Dr. James Shaw, established a ranch headquarters on the island in the 1850s, and began stocking the land with cattle, horses, and sheep. Castillero sold the island to William Barron in 1857, although Shaw remained as manager and reportedly was given the funds needed to develop a model sheep ranch.

In 1869, Barron's ranch was purchased by the Santa Cruz Island Company, owned by a group of San Francisco investors including several members of a French savings bank. The ranch was managed by J.B. Joyaux who expanded the sheep operations. By 1880, Justinian Caire had obtained all the shares of the company and he and his wife, Albina, developed the island into a legendary "old world" estate. Caire established satellite ranch stations and diversified his crops and livestock to fit specific island locations. Sheep, dairy cows, cattle, poultry, horses, pigs and hogs, grain feed, grapes, and wine were all part of ranch production.

Caire died in 1897 and his heirs entered into litigation that eventually "divided both the family and the island" (Livingston 2006). Settlement in 1918 partitioned the island into shares for descendants of Albina and the six children, resulting in the eastern end of the island being eventually consolidated and operated separately by the Gherini descendants. The larger part of the island was sold to Los Angeles businessman Edwin Stanton in 1937.

The Gherini family developed their ranch for sheep ranching as the National Trading Company, abandoning the diversified economy of the Caire approach. Residing in San Francisco the family spent summers at the ranch, which was maintained by a resident manager. In 1979, the sheep operation was leased out to former employees, and in 1984 the lease was transferred by the Gherinis to Island Adventures. This arrangement lasted until 1997, when the NPS concluded its purchase of these east-end lands.

Edwin Stanton and his son, Dr. Carey Stanton, modernized operations on the larger, western portion of the island by focusing on cattle and improving facilities. After Edwin's death, family dissent arose between Dr. Stanton and his nephew. This prompted Dr. Stanton to arrange the sale and life tenure on the island with The Nature Conservancy in 1978 in order to purchase his nephew's shares in the island company. With Dr. Stanton's death in 1987, his estate was left to the Santa Cruz Island Foundation, which continues research and restoration work on the island. The island's isthmus was transferred by TNC to the NPS in 2000 (Glassow 2010).

Previous Cultural Resources Investigation of the Santa Cruz Island Project Areas

A cultural resources records search for the FOCUS-II project was performed at the Central Coast Information Center at the University of California, Santa Barbara on September 10, 2014 to identify previously recorded sites and previous cultural resource studies conducted within the vicinity of the project areas. The results of the search identified 11 previous cultural resource studies in in area. Table 3.3-1 summarizes these investigations.

The NPS conducted a cultural landscapes inventory for the 14,000-ac (5,660-ha) Santa Cruz Ranching District. The district is located on the eastern end and isthmus of SCrI, and has been inventoried, evaluated, and determined eligible for listing in the NRHP as part of this cultural landscapes inventory. Contributing elements, as identified in the report, include natural systems and features, views and vistas, spatial organization, topography, vegetation, buildings and structures, circulation, small scale features, and constructed water features, and the cluster arrangements of its buildings and structures. The historic development at Prisoners Harbor is part of the Santa Cruz Island Ranching Historic District, and the historic buildings and structures are contributing elements to the District.

Section 106 Compliance – Santa Cruz Island

The 11 previous SCrI investigations identified five documented archaeological sites sectioned by the project ADI: CA-SCrI-96, CA-SCrI-240/439, CA-SCrI-464, CA-SCrI-465, and CA-SCrI-466. Table 3.3-2 summarizes these sites. The sites are all contributing elements of the Santa Cruz Island Archeological District, listed in the National Register. CA-SCrI-240/439 may also be eligible as an individually significant historic property and therefore was assessed as such.

Of the five documented archaeological sites crossed by the Navy Road within the ADI, only CA-SCrI-240/439 has the potential for disturbance to intact deposits. This may result in adverse effects to either or both the Santa Cruz Island Archeological District and the individual archeological site. The other sites have had their deposits removed within the road shoulder's footprint. Navy Road was initially constructed in the 1940s and has experienced routine maintenance up to the current date. As a result of the initial construction and maintenance activities, the road now sits on bedrock with the exception of the area near Prisoners Harbor. In this area, Navy Road construction involved buildup of an aggregate base on an originally shallow grading alignment. The linear ADI crosses approximately 800 ft (240 m) of CA-SCrI-240/439. This intersection with the site likely contains sediments with potential to yield archaeological deposits. A draft archeological testing plan for the FOCUS-II activities on SCrI has been developed for review and approval by SHPO and the tribe.

The Prisoners Harbor HDD site and lengths of road within the ADI are part of the Santa Cruz Island Ranching District. Contributing elements of include a masonry warehouse, a scale house warehouse, corrals, and the Navy Road. The warehouse was built in 1887 and measures 54 ft by 45 ft (16.5 m by 13.7 m) and rests on a mortared rubble foundation. It has parallel twin front gable roofs and is built of native island brick and stone. There are two arched door openings on the northeast side. The scale house, built after 1918, is a wood frame structure with a rectangular plan. It has a corrugated metal roof and open sides (NPS 2004).

Non-contributing elements of the Santa Cruz Island Ranching District include a pier, kiosk, and picnic area on the west end of the cluster; a NPS restroom building on the east side of the warehouse; and the parking area on the east end of the cluster, at the junction of Navy Road (JRP 2012).

Although several dirt roads, four-wheel-drive tracks, and trails exist within the isthmus of SCrI, one of the most important is the major portion of the project area, simply known as Navy Road (Huston 2013). While the Navy constructed Navy Road, portions of it connected previously existing roads and trails (NPS 2004). Furthermore, the road became an integral part of the Stanton ranching operations. The facilities at Point Mugu and the overall historic Cold War operations are considered eligible for listing in the NRHP (Wee and Byrd 2000). Navy Road on SCrI has never been mapped in detail as a feature, but has been formally identified as a contributing element of the Santa Cruz Island Ranching District.

Proposed construction will be restricted to the road surface and its shoulders. For the ADI areas transecting CA-SCrI-96, CA-SCrI-464, CA-SCrI-465, and CA-SCrI-466, it is assumed that there would be no adverse effects to these documented sites, due to the fact that all archaeological deposits have been physically removed during the 60 plus years that the road has been used and maintained.

Table 3.3-1 Previous Cultural Resource Investigation – SCrI ADI

Study Title	Investigator/ Reference Citation	Study Summary
Archaeological Testing of Exposed Deposits in Support of the Prisoners Harbor Wetlands Restoration Program, Santa Cruz Island, CA	Kelly Minas, Channel Islands Nation Park (Minas 2016)	Unpublished internal report on findings at CA-SCrI 240.
The Origins of a Pacific Coast Chiefdom: The Chumash of the Channel Islands	Jeanne E. Arnold (Arnold 2001)	Summary of the Chumash people of the Channel Islands.
An Archaeological Overview of the Northern Channel Islands Including Santa Barbara Island	University of California, Santa Barbara (Glassow, n.d.)	Overview of the archaeological research conducted within the Channel Islands, a prehistoric context for the islands, and management recommendations for resources.
Archaeological Survey at a GTE Mobilenet Repeater Site and Two Existing Communication Sites on Santa Cruz Island	Science Applications International Corporation (Sheets 1992)	Results of an intensive pedestrian survey of three small areas on SCrI. Results found no newly identified or previously recorded sites or studies of the project areas.
Untitled summary report	Jeanne Arnold (Arnold 1993)	Summary of SCrI cultural resources surveys conducted between 1981 and 1993.
Phase I Cultural Resources Survey, Santa Cruz Island Acoustic Range Facility Demobilization, Site CA-SCrI-495, Santa Barbara County, California	Fugro West, Inc. (Maki 1996)	Record and mapping of the CA-SCrI-495 site as part of the Santa Cruz Island NRHP District
SE 1 Archaeological Study for the Environmental Assessment of the Blue Site Restoration Project Santa Cruz Island, Santa Barbara County, California	Historical Environmental Archaeological Team (Wlordaski 1997)	Summary report of a survey. Results were negative.
Cultural Resources Monitoring at Site CA-SCrI-495 for the Collection of Soil Samples at the White Site, Santa Cruz Island, Santa Barbara County, California	ENSR (Maki 1999)	Summary report providing results of a contaminating soils sampling project. 39 bore holes were subjected to archaeological monitoring with no adverse effects determination.
Anthropology 181 Field Trip to Santa Cruz Island	University of California, Santa Barbara (Glassow 2000)	Summary report of an archaeological inventory of four areas situated along two adjacent ridges in the isthmus portion of SCrI. 20 sites located and recorded, including two previously recorded sites in one of the survey areas.
Cultural Resources Monitoring for the Collection of Thirteen Soil Samples at the White Site, Santa Cruz Island, Santa Barbara County, California	Conejo Archaeological Consultants (Maki 2001)	Monitoring report for soil sampling project within CA-SCrI-495 boundaries. 13 borings were subjected to monitoring, with a no adverse effects determination.
Follow-Up Field Trip after the 1974 Season Santa Cruz Island Project	Michael A. Glassow (Glassow 1974a)	Summary of results from the collection of column samples taken at CA-SCrI-369 and CA-SCrI-393. Results found limited collection of shells and flakes with some possible artifacts.
A Journal of the Activities of M.A. Glassow and Crew during the 1974 Field Season of the Santa Cruz Island Project	University of California, Santa Barbara (Glassow 1974b)	Summary of the activities and results of fieldwork during the 1974 U.C. Santa Barbara field season. Numerous sites were identified and documented, including CA-SCrI-347 through CA-SCrI-390. The project also relocated sites CA-SCrI-178, -180, -181, -195, -199, -227, -228 and collected column samples. All sites identified are prehistoric, including shell middens, rock shelters, lithic scatters, quarries, and rock platforms.
East of Pelican Bay Survey	University of California, Santa Barbara (Thakar-Hucks 2008)	Summary of a systematic pedestrian survey of selected prehistoric sites on SCrI. Nine newly identified sites were discovered and documented.

Table 3.3-2 Documented Archaeological Sites Sectioned by SCrI ADI

Site Designation	Temporal Affiliation	Site Description	Relationship to ADI	NRHP Eligibility Status
CA-SCrI-96	Prehistoric	Lithic scatter with tools	Bisects ADI	Contributing Element of SCrI Ranching District
CA-SCrI-240/439	Prehistoric	Shell midden with marine mammal bone, tools, and fire-affected rock	Bisects ADI	Contributing Element of SCrI Ranching District Potentially Individually Eligible
CA-SCrI-464	Prehistoric	Lithic scatter with shell	Bisects ADI	Contributing Element of SCrI Ranching District
CA-SCrI-465	Prehistoric	Lithic scatter with shell and mammal bone	Bisects ADI	Contributing Element of SCrI Ranching District
CA-SCrI-466	Prehistoric	Shell midden with lithics and marine mammal bone	Bisects ADI	Contributing Element of SCrI Ranching District

It is possible that the proposed FOCUS-II construction could result in damage to intact archeological deposits at CA-SCri-240/439. Depending on the nature and significance of the site, and the scale of site-specific impacts, however, it is not likely that these impacts would yield adverse effects to resources within the boundary of site CA-SCrI-240/439.

The Navy Road has already been determined eligible for listing as a contributing element of the Santa Cruz Island Ranching District. However, the FOCUS-II construction, as planned, would be trenched within or avoid altogether the existing roadbed. After construction, the road will largely be returned to its original appearance (depending on the alternative selected). Therefore, this action is not likely to result in an adverse effect to the Ranching District.

Because direct impacts may occur at CA-SCrI-240/439, the Navy will consult with SHPO, the Santa Ynez Band of Chumash Mission Indians, and other individuals and groups that are associated with this site. The Navy will develop and execute an archeological testing program in consultation with the NPS, SHPO, and tribal entities in order to determine the extent, nature and integrity of the deposits within the direct project impact area. If deposits are present in the ADI, the testing will be sufficient to determine whether the site is eligible for individually listing in the National Register as a significant site, and evaluate the potential for adverse effects to both the individual site (if eligible) and the district as a result of the undertaking. This testing program will be supported by an ARPA permit authorized by the NPS and monitored by a tribal cultural monitor approved by the Santa Ynez Band of Chumash Mission Indians. A Plan of Action will be developed to address any discoveries subject to the Native American Graves Protection and Repatriation Act (NAGPRA).

Depending on the extent and significance of the archeological deposits and the direct project impacts to these (which vary by alternative), the undertaking may result in an adverse effect to historic properties. If adverse effects are anticipated, the Navy will consult with the NPS, the SHPO, the Santa Ynez Band of Chumash Mission Indians and other associated individuals and groups to seek ways to avoid, minimize, and resolve these. The results of these consultations will be memorialized in a MOA developed under 36 CFR 800.6.

Offshore Cultural Resources

The APE for the preferred alternative for the offshore alignments includes the HDD exit sites and the lengths of cable connecting the exit sites, plus the area within a 50-ft (15-m) radius around each of these project sites. It should be noted that the offshore APE in the vicinity of SCrI starts at a distance of 1 mi (1.6 km) from the high tide line, as the NPS boundaries extend to this distance.

Pre-History and History of the Offshore Cable Alignments

Submerged lands off Point Mugu include the area that extends to the mean high-tide line. Records do not indicate the presence of any underwater cultural resources within the immediate subsurface tidal zone off Point Mugu (Navy 2002).

Archaeological studies focusing on underwater resources near NBVC SNI have identified 45 shipwrecks and 21 downed aircraft in the vicinity of SNI and Begg Rock, dating from the mid-nineteenth century to the late-twentieth century. Thirty-two of the shipwrecks are situated within two miles (3.2 km) of the SNI shoreline. Seven of these ships are reported wrecked on or just off the north side of the island (NAVFAC 2010). Most shipwreck remains are likely to be found at harbors and at hazards on the western and eastern ends of the islands. No shipwrecks have been recorded within 1.75 mi (2.7 km) of the proposed offshore cable alignment.

The NBVC SNI HDD site and exit point are located within areas characterized as having a low-to-moderate potential for submerged sites (Navy 2002). There is a possibility that submerged archaeological sites could exist just offshore from SNI. These sites would have been occupied over 7,000 years ago when sea levels were lower than current levels. Submerged archaeological sites off the coast of SNI are most likely to occur within 1,640 to 3,280 feet (500 to 1,000 m) of fish habitat, within 1,640 feet (500 m) of rocky shore habitat, and within 1,640 feet (500 m) of a fresh water source (Navy 2002). The proposed offshore cable alignment within five miles (8.0 km) of SNI occurs in a zone with a low-to-moderate potential for submerged sites, and no underwater archaeological resources have been documented near the proposed offshore cable alignment.

Based on current knowledge, a total of five submerged vessels including cargo, military, and civilian wrecks exist off the coast of SCrI, comprising one-quarter of the 20 known shipwrecks associated with the northern Channel Islands. Although it is conceivable that underwater prehistoric archaeological resources may also exist, especially given the antiquity of human occupation of the Channel Islands, no such resources are currently known to exist, apart from an isolated stone bowl found. Only one of the five resources is a military aircraft (Grumman Guardian). Of the five submerged vessels, which range in age from 1952 to 1980, only three are potentially eligible for nomination to the NRHP based on age alone. Only two of the five resources have been identified or investigated by NPS personnel (Glassow 2010, Morris and Lima 1996).

Previous Cultural Resources Investigation of the Offshore Cable Alignments

There have been no offshore cultural resources investigations for the NBVC Point Mugu, NBVC SNI, or SCrI exit sites or along the offshore cable routes. However, there have been numerous documented shipwrecks and plane crashes within the areas surrounding the offshore cable alignments. It should be

noted that the cable alignments have been developed to avoid known locations of shipwrecks and plane crashes.

Section 106 Compliance – Offshore Cable Alignments

No offshore cultural resource surveys were conducted specifically for the HDD exit sites or cable alignments due to the depth of the exit sites and cable alignments (79 ft [24 m] or greater) and lack of evidence that sensitive resources exist at the locations. The cable alignments were developed in a manner that avoids known locations of shipwrecks and plane crashes; therefore, no known historic properties are located within the offshore APE.

3.3.2 Environmental Consequences

3.3.2.1 Assesment Criteria

In accordance with 36 CFR §800.16(d), an APE is defined as the geographical areas within which an undertaking may cause alterations in the character or use of historic properties. Historic properties are cultural resources that have been determined eligible for, or listed in, the NRHP by meeting the following criteria:

- A district, site, building, structure, or object that possesses integrity of location, design, setting materials, workmanship, feeling, and association and:
  - That is associated with events that have made a significant contribution to the broad patterns of our history; or
  - That is associated with the lives of significant persons in our past; or
  - That embodies distinctive characteristics of a type, period, or method of construction, or that represents the work of a master, or that possesses high artistic values, or that represents a significant and distinguishable entity whose components may lack individual distinction; or
  - That has yielded, or may be likely to yield, information important in prehistory or history.

Section 106 provides for consultation with SHPO regarding the effects of an undertaking on historic properties. NBVC has a Programmatic Agreement in place (SHPO 2015) that specifies how cultural resources at NBVC Point Mugu and NBVC Port Hueneme are to be handled and delegates to the Commanding Officer, NBVC the project to make reviews of potential effects to historic properties. The Programmatic Agreement further defines the Section 106 consultation process to be taken for actions within the NBVC area of responsibility, and this process will be followed for the FOCUS-II project sites at NBVC Point Mugu.

As defined in the NBVC Point Mugu Programmatic Agreement, the APE for a construction site is defined as the project site and any lay down or staging areas, if the construction is located more than 328 ft (100 m) from a listed or eligible district, building, or structure. When such projects occur within a listed or eligible district or within 328 ft (100 m) of an eligible district, building, or structure, the APE will be defined to include that eligible district, building, and structure as well as the affected property itself.

The Navy does not have Programmatic Agreements in place for NBVC SNI, specifying how cultural resources issues are to be handled or providing project review authorization normally reserved for the

SHPO. There is also no such Programmatic Agreement in place between the NPS and the SHPO regarding SCrI resources. Therefore, standard Section 106 consultation will be conducted for the NBVC SNI and SCrI sites. The NBVC SNI APE includes the drilling area and staging area near the Coast Guard Jetty plus the area within a 50-ft (15-m) radius around the combined area. The Navy also defines the offshore APE as the offshore cable routes with a 50-ft (15-m) buffer on each side of the alignments. Because the entirety of SCrI is a Historic District, the APE for SCrI is the entire island. For the purposes of analyses at SCrI, the Area of Direct Impact (ADI) will be used.

In addition to the surface footprints described above, the project APEs and ADI include subsurface disturbances comprised of trenching corridors, equipment burial areas for HDD rig stabilization, and drilling bore holes.

3.3.2.2 Alternative 1 – Preferred Alternative

Point Mugu

The APE for the NBVC Point Mugu project sites is defined in Section 3.3.1.3. This section also provides a summary of the archival research and built environment surveys conducted to identify potentially affected historic properties within the APE.

The Bravo Launching Control Building is the only historic structure within the APE and is located approximately 295 ft (90 m) from the Charlie Pad HDD site. The control building is constructed of reinforced concrete and would not be affected by the construction operations associated with the proposed action.

If potential subsurface archaeological deposits are detected during construction, all work in the discovery area would cease until an archaeologist could provide input regarding the significance of the resource. The NBVC Cultural Resources Manager would be immediately contacted to provide direction regarding the potential resource. The potential resource would be evaluated against the eligibility criteria for inclusion on the NRHP and, if it is found to be eligible, a treatment plan detailing either preservation in-place or mitigation of impacts through data recovery would be developed and implemented. Therefore, implementation of Alternative 1 would have no effects on historic properties and no significant impacts to cultural resources at NBVC Point Mugu.

San Nicolas Island

The APE for the NBVC SNI project sites is defined in Section 3.3.1.3. This section also provides a summary of the archival research and built environment surveys conducted to identify potentially affected historic properties within the APE.

No recorded historic properties or other cultural resources are located within the APE. If potential subsurface archaeological deposits are detected during construction, all work in the discovery area would cease until an archaeologist could provide input regarding the significance of the resource. The NBVC Cultural Resources Manager would be immediately contacted to provide direction regarding the potential resource. The potential resource would be evaluated against the eligibility criteria for inclusion on the NRHP and, if it is found to be eligible, a treatment plan detailing either preservation in-place or mitigation of impacts through data recovery would be developed and implemented. Therefore,

implementation of Alternative 1 would have no effects on historic properties and no significant impacts to cultural resources at NBVC SNI.

Santa Cruz Island

The APE and ADI for the SCrI project sites is defined in Section 3.3.1.3. This section also provides a summary of the archival research and built environment surveys conducted to identify historic properties within the ADI.

There are five documented archaeological sites within the ADI on SCrI: CA-SCrI-96, CA-SCrI-240/439, CA-SCrI-464, CA-SCrI-465, and CA-SCrI-466. Proposed construction would be restricted to the road surface and shoulders and an area at the base of the slope to the east of the road from the well site back to the Navy Road. Archaeological deposits have been removed down to the bedrock along the Navy Road, with the exception of the portion of the ADI that transects site CA-SCrI-240/439. To ensure avoidance of off-road archaeological sites, stakes will be placed around the five documented site boundaries prior to construction. These stakes will mark the presence of a resource, and Native American and archaeological monitors should be present for all installation and maintenance work conducted within the boundaries of the five sites and within a 50-meter buffer for each site. The 50-meter buffers are required because the site boundaries are not known confidently in all directions. Previously undocumented, intact archeological resources were discovered in the vicinity of the proposed alignment on SCrI (Minas 2016); subsurface testing will ensure the final route avoids such resources.

A testing plan for the 1,150 ft (350 m) linear stretch of elevated channel within the CA-SCrI-240/439 ADI with archaeological deposits will be executed to determine the presence or absence of deposits along the trenching corridor, the integrity of the deposits, and how the deposits will contribute to the further understanding of CA-SCrI-240/439. If the testing results indicate the presence of intact, significant archeological deposits that will be directly impacted by the project, the Navy will work with the Section 106 consultation parties in an effort to avoid or minimize the potential for adverse effects. If adverse effects are unavoidable, the Navy will develop an MOA as described previously in this chapter.

If previously unknown, intact archeological deposits are discovered during construction activities, work in the immediate vicinity of discovery will stop and the Navy will either 1) follow stipulations identified in the MOA, or 2) in the absence of an MOA, comply with 36 CFR 800.13. The latter would involve assessing the deposits for integrity and significance in consultation with the Section 106 consultation parties and developing a plan for avoiding, minimizing, or mitigating adverse effects.

There are three contributing elements of the Santa Cruz Ranching District within the ADI: a warehouse, a scale house, and Navy Road. The construction phase would create temporary impacts to the cultural landscape of the Ranching District, and all equipment would be removed and the existing visual environment would be restored following completion of construction activities. The proposed action includes the trenching and installation of a subsurface vault in the vicinity of the warehouse. The trenching will be filled and compacted to match the existing contours and visual integrity of the Ranching District. The vault will be installed in a manner that minimizes its final profile, preserving the cultural landscape of the area. The scale house will not be affected by the proposed action.

The proposed action also includes installation of a permanent feature along the 1,150 ft (350 m) elevated channel corridor. This may affect the integrity of the Ranching District in the localized area of the Prisoners Harbor Cluster by introducing a new element into the historic district. This will affect the quality of the district's integrity of setting, but is not likely to constitute an adverse effect to the historic district. This determination will be made in consultation with the NPS and the SHPO. Therefore, pending findings of the testing plan and MOA between NPS and SHPO, if required, implementation of Alternative 1 would have no adverse effect on historic properties and no significant impacts to cultural resources at SCrI.

Offshore Cable Alignments

The APE for the offshore cable alignments is defined in Section 3.3.1.3. This section also provides a summary of the archival research and surveys conducted to identify potentially affected historic properties within the APE.

No recorded historic properties or other cultural resources are located within the APE. If potential subsurface archaeological deposits are detected during construction, all work in the discovery area would cease until an archaeologist could provide input regarding the significance of the resource. The NBVC Cultural Resources Manager would be immediately contacted to provide direction regarding the potential resource. The potential resource would be evaluated against the eligibility criteria for inclusion on the NRHP and, if it is found to be eligible, a treatment plan detailing either preservation in-place or mitigation of impacts through data recovery would be developed and implemented. Therefore, pending concurrence from SHPO, implementation of Alternative 1 would have no effects on historic properties, no significant impacts to offshore cultural resources, and no significant harm to cultural resources within the U.S. EEZ.

3.3.2.3 Alternative 2

Point Mugu

Under Alternative 2, development at NBVC Point Mugu would be the same as described under Alternative 1. The APE for Alternative 2 at this installation would be the same as described under Alternative 1. Further, to ensure that any unevaluated, subsurface cultural resource sites are not inadvertently disturbed during construction activities, conservation and construction measures described for Alternative 1 would be implemented. Therefore, pending concurrence from SHPO, implementation of Alternative 2 would have no effects on historic properties and no significant impacts to cultural resources at NBVC Point Mugu.

San Nicolas Island

Under Alternative 2, development at NBVC SNI would be the same as described under Alternative 1. The APE for Alternative 2 at this installation would be the same as described under Alternative 1. Further, to ensure that any unevaluated, subsurface cultural resource sites are not inadvertently disturbed during construction activities, conservation and construction measures described for Alternative 1 would be implemented. Therefore, pending concurrence from SHPO, implementation of Alternative 2 would have no effects on historic properties and no significant impacts to cultural resources at NBVC SNI.

Santa Cruz Island

Under Alternative 2, development at SCrI would be the same as described under Alternative 1 with the exception that all work would be performed within the road bed and along the road shoulder. The ADI for Alternative 2 at SCrI would be the same as described under Alternative 1 for trenching. The ADI for the elevated channel would shift between 30 and 200 ft eastward, but no additional historical properties would be within it. Further, to ensure that any unevaluated, subsurface cultural resource sites are not inadvertently disturbed during construction activities, conservation and construction measures described for Alternative 1 would be implemented. Therefore, pending findings of the testing plan and forthcoming MOA between NPS and SHPO, implementation of Alternative 2 would have no adverse effects on historic properties and no significant impacts to cultural resources at SCrI.

3.3.2.4 Alternative 3

Point Mugu

Under Alternative 3, development at NBVC Point Mugu would be the same as described under Alternative 1. The APE for Alternative 3 at this installation would be the same as described under Alternative 1. Further, to ensure that any unevaluated, subsurface cultural resource sites are not inadvertently disturbed during construction activities, conservation and construction measures described for Alternative 1 would be implemented. Therefore, pending concurrence from SHPO, implementation of Alternative 3 would have no effects on historic properties and no significant impacts to cultural resources at NBVC Point Mugu.

San Nicolas Island

Under Alternative 3, development at NBVC SNI would be the same as described under Alternative 1. The APE for Alternative 3 at this installation would be the same as described under Alternative 1. Further, to ensure that any unevaluated, subsurface cultural resource sites are not inadvertently disturbed during construction activities, conservation and construction measures described for Alternative 1 would be implemented. Therefore, pending concurrence from SHPO, implementation of Alternative 3 would have no effects on historic properties and no significant impacts to cultural resources at NBVC SNI.

Santa Cruz Island

Under Alternative 3, the FOCUS-II cable and the water line would be installed in a trench along the entire route between the Prisoners Harbor landing site and the Navy Site. The ADI for this alternative would be slightly different than the preferred alternative. Due to the nature of the ground disturbance along Navy Road, it is likely that the proposed trenching could lead to direct impacts to deposits within the CA-SCrI-240-439 site and therefore may result in adverse effects to the site (if individually eligible); however, depending on the extent of direct impacts, the undertaking is not likely to result in an adverse effect to the Santa Cruz Island Archeological District.

There are three contributing elements of the Santa Cruz Ranching District within the ADI: a warehouse, a scale house, and Navy Road. The construction phase would create temporary impacts to the cultural landscape of the Ranching District, and all construction equipment would be removed and the existing visual environment would be restored following completion of construction activities. The proposed action includes the trenching and installation of a subsurface vault in the vicinity of the warehouse. The

trenching will be filled and compacted to match the existing contours and visual integrity of the Ranching District. The vault will be installed in a manner that minimizes its final profile, preserving the cultural landscape of the area. The scale house will not be affected by the proposed action.

If previously unknown, intact archeological deposits are discovered during construction activities, work in the immediate vicinity of discovery will stop and the Navy will either 1) follow stipulations identified in the MOA, or 2) in the absence of an MOA, comply with 36 CFR 800.13. The latter would involve assessing the deposits for integrity and significance in consultation with the Section 106 consultation parties and developing a plan for avoiding, minimizing, or mitigating adverse effects. Therefore, pending consultation with SHPO, implementation of Alternative 3 would have a potentially adverse effect on historic properties and potentially significant impacts on cultural resources.

3.3.2.5 Alternative 4

Point Mugu

Under Alternative 4, development at NBVC Point Mugu would occur in a smaller area than described in Alternative 1. The APE for Alternative 4 at this installation would include only the area within the vicinity of the Charlie Pad site, as no activities would be conducted at the Building 811 site. Further, to ensure that any unevaluated, subsurface cultural resource sites are not inadvertently disturbed during construction activities, conservation and construction measures described for Alternative 1 would be implemented. Therefore, pending concurrence from SHPO, implementation of Alternative 4 would have no effects on historic properties and no significant impacts to cultural resources at NBVC Point Mugu.

San Nicolas Island

Under Alternative 4, development at NBVC SNI would be the same as described under Alternative 1. The APE for Alternative 4 at this installation would be the same as described under Alternative 1. Further, to ensure that any unevaluated, subsurface cultural resource sites are not inadvertently disturbed during construction activities, conservation and construction measures described for Alternative 1 would be implemented. Therefore, pending concurrence from SHPO, implementation of Alternative 4 would have no effects on historic properties and no significant impacts to cultural resources at NBVC SNI.

Santa Cruz Island

Under Alternative 4, there would be no FOCUS-II activities at SCrI. As there would be no SCrI construction associated with this alternative, recorded historic properties or other cultural resources would not be affected by Alternative 4, and currently unknown subsurface cultural resources sites would not be inadvertently disturbed with this alternative. Therefore, implementation of Alternative 4 would have no effects on SCrI historic properties and no significant impacts to historic properties at SCrI.

Offshore Resources

Under Alternative 4, there would be no offshore cable alignments connecting NBVC Point Mugu and SCrI. The offshore cable alignments between NBVC Point Mugu and NBVC SNI would remain the same as Alternative 1. The same avoidance of submerged resources as described for Alternative 1 would be implemented. Therefore, pending concurrence from SHPO, implementation of Alternative 4 would have

no effects on offshore historic properties, no significant impacts to offshore cultural resources, and no significant harm to cultural resources within the U.S. EEZ.

3.3.2.6 Alternative 5 – The No-Action Alternative

Under the No-Action Alternative, the proposed action would not be implemented, and no underground fiber optic cable system would be installed. As there would be no construction associated with this alternative, recorded historic properties or other cultural resources would not be affected by the No-Action Alternative, and currently unknown subsurface cultural resources sites would not be inadvertently disturbed with this alternative. Therefore, implementation of the No-Action Alternative would have no effects on historic properties and no significant impacts to historic properties.

3.4 HAZARDOUS MATERIALS AND WASTE

3.4.1 Affected Environment

3.4.1.1 Definition of Resource

Hazardous materials are defined by 49 CFR § 171.8 as "hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR § 172.101), and materials that meet the defining criteria for hazard classes and divisions" in 49 CFR Part 173. Transportation of hazardous materials is regulated by U.S. Department of Transportation regulations at 49 CFR §§ 105–180.

Hazardous wastes are defined by the Resource Conservation and Recovery Act (RCRA) in 42 U.S.C. § 6903(5), 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 § 273. Special hazards are those substances that might pose a risk to human health and are addressed separately from other hazardous substances.

Solid wastes that do not contain hazardous components, as defined by RCRA, are not subject to the special management provisions associated with hazardous waste treatment and disposal. Non-hazardous solid wastes include municipal solid waste and industrial waste. Municipal solid waste consists of everyday discarded items including product packaging, grass clippings, furniture, clothing, bottles, food scraps, paper, appliances, paint, and batteries. Municipal solid waste is generated by homes, schools, hospitals, and businesses.

Industrial waste is defined as the solid component of the waste stream arising from commercial, industrial, government, public, or domestic premises that is not collected as municipal solid waste and does not contain listed waste, hazardous waste, or radioactive waste. Under the California Integrated Waste Management Act of 1989, industrial waste is further classified as construction and demolition waste or inert debris. Inert debris is defined as solid waste and recyclable materials that are source separated or separated for reuse and do not contain hazardous waste (as defined in California Code of Regulations, Title 22, §§ 66261.3 et. seq.) or soluble pollutants at concentrations in excess of applicable water quality. Inert debris may not contain any putrescible wastes. Gravel, rock, soil, sand, and similar materials, whether processed or not, that have never been used in connection with any structure, development, grading, or other similar human purpose, or that are uncontaminated, are not inert debris. Such materials may be commingled with inert debris.

Inert debris is further categorized as Type A or Type B inert debris. Type A inert debris contains components such as concrete, asphalt, or fiberglass. This category of waste can only be disposed of at facilities certified by the State of California. Type B inert debris is solid waste that is specifically

determined to be inert by the applicable Regional Water Quality Control Board, such as treated industrial wastes and de-watered bentonite-based drilling mud, but excluding Type A inert debris.

3.4.1.2 Regulatory Setting

As defined by the Comprehensive Environmental Response, Compensation and Liability Act of 1980 ([CERCLA], 42 USC §§ 9601 et seq., Sections 101[14] and 101[33]) and the Superfund Amendments and Reauthorization Act of 1986, (Public Law 99-499), a hazardous material is a substance, pollutant, or contaminant that, due to its quantity, concentration, or physical and chemical characteristics, poses a substantial present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. Hazardous materials are managed in accordance with Title III of the Superfund Amendments and Reauthorization Act, also known as the Emergency Planning and Community Right to Know Act (EPCRA). The EPCRA establishes different reporting and planning requirements for businesses that handle, store, or manufacture certain hazardous materials. These plans and reports provide federal, state, and local emergency planning and response agencies with information about the amounts of chemicals that businesses use, routinely release, and spill. Specific requirements of EPCRA include the following:

- Planning for emergency response (Sections 301-303);
- Reporting chemical inventory (Sections 311 and 312);
- Reporting ongoing releases of toxic chemicals (Section 313); and
- Reporting leaks and spills (Section 304).

3.4.1.3 Existing Conditions

<u>Point Mugu</u>

NBVC Point Mugu operates under a Hazardous Waste Management Plan (HWMP) (NAVFAC 2015) that provides guidance and direction for the use, storage, and compliance activities for hazardous materials and wastes at the base. The HWMP provides a comprehensive compilation of procedures and requirements that are mandated by law, directive, or regulation. The plan has a compliance orientation to ensure safe and efficient control, use, transport, and disposal of hazardous materials and waste.

The majority of hazardous materials used at NBVC Point Mugu are managed by the NBVC Environmental Division and stored at the Hazardous Material Minimization Center. Individual shops are authorized to store hazardous materials in small quantities. Generally, these shops are limited to storing one week's worth of hazardous materials needed for routine tasks. There are approximately 40 storage lockers at NBVC Point Mugu.

As indicated in Navy 2002, NBVC Point Mugu generated approximately 826,000 lb (375,000 kg) of hazardous waste in 1996. These wastes consisted primarily of contaminated jet fuel, waste rags, paint, solvents, spill residues and absorbent materials, corrosion prevention compound in aerosol cans, ethylene glycol, batteries, antifreeze, hydraulic fluid, photo processing waste materials, waste cleaning compounds, and debris materials.

Hazardous wastes are generated at most of the industrial shops at NBVC Point Mugu. There are approximately 40 satellite accumulation areas and three less-than-90-day accumulation areas on the base. Hazardous waste is collected at the accumulation sites by the NBVC hazardous waste management

contractor and transported to the less-than-90-day accumulation areas. The NBVC waste transport vehicles are equipped with spill containment systems and emergency spill kits. All hazardous waste is removed from the waste treatment yard and transported to an approved treatment, storage, and disposal (TSD) facility (Navy 2002).

San Nicolas Island

Some hazardous materials are shipped to and stored on NBVC SNI. Hazardous materials used on NBVC SNI are ordered through the NBVC Point Mugu Hazardous Materials Minimization Center and shipped to the island via barge or aircraft. Seven storage lockers are located on the island. The largest quantity of hazardous materials stored is in the form of fuel. Jet fuel and unleaded gasoline are shipped to the island by tanker barge.

NBVC SNI operates under the HWMP for NBVC (NAVFAC 2015). The plan provides guidance and direction for the use, storage, and compliance activities for hazardous materials and wastes at the island. There are satellite hazardous waste storage areas on SNI. Hazardous wastes are stored at these satellite accumulation areas prior to being transported to the less-than-90-day accumulation area on the island. From this accumulation area, the waste is shipped via freight barge to Port Hueneme. After arrival at Port Hueneme, the waste is transported to an approved TSD facility (Navy 2002).

Santa Cruz Island

There are no solid waste landfills, satellite hazardous waste storage areas, or waste management facilities on SCrI. All created wastes are recycled, when appropriate, or are transported off the island and disposed in a mainland facility. The construction contractor shall develop a waste management and disposal plan, with NPS input and approval. The following rules apply to all dumpsters or waste canisters brought to SCrI (NPS 2015):

- Dumpsters may only be used for construction and/or spill cleanup and will be located in a manner in which they will not be used for food materials;
- Under no circumstances shall dumpsters be transported to SCrI containing garbage. The inside and outside, including the wheels of the dumpsters shall be pressure washed and treated with disinfectant before leaving the mainland; and
- Dumpsters must be inspected, emptied, and cleaned before departing the mainland for SCrI.

On SCrI, fuel and hazardous materials would be stored outside the 500-year floodplain in areas approved by the NPS.

3.4.2 Environmental Consequences

3.4.2.1 Assessment Criteria

Navy policy is to comply with EPCRA as required by Executive Order 13148 and to encourage compliance with state and local EPCRA programs to the extent that resources allow and where such compliance does not interfere with command mission accomplishment or other legal obligations. Alternatives have been analyzed to determine any associated materials compliance with Federal and State regulations, and the potential for release as described below.

3.4.2.2 Alternative 1 – Preferred Alternative

Point Mugu

Hazardous materials associated with the proposed action include fuels, lubricants, and solvents used to operate and maintain the construction equipment. The construction crews will store and maintain these materials in accordance with Navy and NBVC protocols and will maintain a copy of material safety data sheets (MSDS) for each hazardous material stored and used on the project sites.

Hazardous wastes generated at the FOCUS-II project sites would include lubricants, solvents, and dirty rags. At the Building 811 and Charlie Pad sites, hazardous wastes generated during equipment maintenance and other construction activities would be accumulated and stored at each site in two 55-gallon (208 l) drums (one for liquids and one for rags). The construction crew will coordinate with the NBVC environmental office to ensure proper handling and storage of the waste and to obtain a waste manifest prior to transportation of the waste. Following completion of the construction activities, the drums would be transported to a hazardous waste accumulation site. From there, NBVC would transport the waste drums to an approved TSD facility.

During HDD operations, drilling fluid would be picked up by a sump pump and transferred to the solids control unit where the solids contained in the drilling fluid would be mechanically separated, allowing the drilling fluid to be recirculated down hole and used again. Once the drilling operations are completed at the Building 811 site, approximately 26,100 gal (98,700 l) of drilling fluid would be collected for disposal in 475 55-gallon (208 l) drums. Approximately 98.4 cubic yards (yd^3) (75.2 m^3) of drilling solids would be accumulated and handled as inert debris. The HDD operations at Charlie Pad would generate approximately 17,800 gal (67,400 l or 324 drums) of drilling fluid and 67.2 yd^3 (51.4 m^3) of drilling solids. The construction crew will coordinate with the NBVC environmental office to ensure proper handling and storage of the waste and to obtain a waste manifest prior to transportation of the waste.

The Navy will coordinate with the LARWQCB to determine if the drilling fluid and solids can be disposed of as Type A or Type B inert debris and identify the appropriate TSD facility to receive and dispose the drilling mud wastes. At the TSD facility the drilling fluid waste would have to be dewatered before it could be considered as Type B inert debris and disposed of as such.

San Nicolas Island

The proposed action would involve the same hazardous materials listed in the NBVC Point Mugu section above and would generate the similar hazardous waste streams. All hazardous materials use and storage on NBVC SNI would be conducted in accordance with Navy and NBVC protocols. The hazardous wastes generated during equipment maintenance and other construction activities would be stored on the construction site in two 55-gallon (208 l) drums. The construction crew will coordinate with the NBVC environmental office to ensure proper handling and storage of the waste and to obtain a waste manifest prior to transportation of the waste. Upon completion of FOCUS-II construction activities, the waste barrels would be transported to a hazardous waste accumulation site on the island prior to being shipped to Port Hueneme via barge. From Port Hueneme, the waste drums would be transported to an approved TSD facility.

During NBVC SNI HDD operations, approximately 10,500 gal (39,900 l or 192 drums) of drilling fluid would be collected for disposal, and approximately 39.7 yd^3 (30.4 m^3) of drilling solids would be generated. The Navy will coordinate with the LARWQCB to determine if the drilling fluid and solids can be disposed of as Type A or Type B inert debris and identify the appropriate TSD facility to receive, treat, and dispose the drilling fluid wastes.

Santa Cruz Island

The proposed action would involve the same hazardous materials listed in the NBVC Point Mugu section above and would generate the similar hazardous waste streams. All hazardous materials use and storage on SCrI would be conducted in accordance with Navy and NBVC protocols. The hazardous wastes generated during equipment maintenance and other construction activities would be stored on the construction site in two 55-gallon (208 l) drums. Upon completion of FOCUS-II construction activities, the waste barrels would be shipped to Port Hueneme via barge. From Port Hueneme, the waste drums would be transported to an approved TSD facility.

During SCrI HDD operations, approximately 4,450 gal (16,900 l or 81 drums) of drilling fluid would be collected for disposal, and approximately 16.8 yd^3 (12.8 m^3) of drilling solids would be generated. The Navy will coordinate with the CCRWQCB to determine if the drilling fluid and solids can be disposed of as Type A or Type B inert debris and identify the appropriate TSD facility to receive, treat, and dispose the drilling fluid wastes.

Under the proposed action, appropriate BMPs would be implemented to minimize the release of hazardous materials to the environment, and the hazardous and non-RCRA wastes generated would be handled in accordance with all federal, state, and local laws and regulations. Therefore, implementation of Alternative 1 would have no significant impacts from hazardous materials and waste.

Mitigation Measures

Implementation of Alternative 1 would not result in significant impacts with respect to hazardous materials or waste management; therefore no mitigation measures are proposed or required.

3.4.2.3 Alternative 2

Under Alternative 2, hazardous materials used and wastes generated would be identical to those associated with Alternative 1. Therefore, implementation of Alternative 1 would have no significant impacts from hazardous materials and waste.

Mitigation Measures

Implementation of Alternative 2 would not result in significant impacts with respect to hazardous materials or waste management; therefore no mitigation measures are proposed or required.

3.4.2.4 Alternative 3

Under Alternative 3, hazardous materials used and wastes generated would be nearly identical to those associated with Alternative 1. Hazardous materials including fuels, lubricants, and solvents would be used at the NBVC Point Mugu, NBVC SNI, and SCrI sites. The construction crews will store and maintain

these materials in accordance with Navy and NBVC protocols and will maintain a copy of MSDS for each hazardous material stored and used on the project sites.

Four drums of hazardous waste would be generated under this alternative: two drums (one for liquids and one for rags) would be generated at each project location site. The construction crew will coordinate with the NBVC environmental office to ensure proper handling and storage of the waste and to obtain a waste manifest prior to transportation of the waste. The waste from the Coast Guard Jetty site would be transported to Port Hueneme via barge prior to delivery to an approved TSD facility.

Once the drilling operations are completed at the Building 811 site, approximately 26,100 gal (98,700 l) of drilling fluid would be collected for disposal in 475 55-gallon (208 l) drums. Approximately 98.4 yd^3 (75.2 m^3) of drilling solids would be accumulated and handled as inert debris. The HDD operations at Charlie Pad would generate approximately 17,800 gal (67,400 l or 324 drums) of drilling fluid and 67.2 yd^3 (51.4 m^3) of drilling solids. During Coast Guard Jetty HDD operations, approximately 10,500 gal (39,900 l or 192 drums) of drilling fluid would be collected for disposal, and approximately 39.7 yd^3 (30.4 m^3) of drilling solids would be generated. The construction crew will coordinate with the NBVC environmental office to ensure proper handling and storage of the waste and to obtain a waste manifest prior to transportation of the waste. The Navy will coordinate with the LARWQCB to determine if the drilling fluid and solids can be disposed of as Type A or Type B inert debris and identify the appropriate TSD facility to receive, treat, and dispose the drilling fluid wastes.

During SCrI HDD operations, approximately 4,450 gal (16,900 l or 81 drums) of drilling fluid would be collected for disposal, and approximately 16.8 yd^3 (12.8 m^3) of drilling solids would be generated. The Navy will coordinate with the CCRWQCB to determine if the drilling fluid and solids can be disposed of as Type A or Type B inert debris and identify the appropriate TSD facility to receive, treat, and dispose the drilling fluid wastes.

Under Alternative 3, appropriate BMPs would be implemented to minimize the release of hazardous materials to the environment, and the hazardous and non-RCRA wastes generated would be handled in accordance with all federal, state, and local laws and regulations. Therefore, implementation of Alternative 3 would have no significant impacts from hazardous materials and waste.

Mitigation Measures

Implementation of the Alternative 3 would not result in significant impacts with respect to hazardous materials or waste management; therefore no mitigation measures are proposed or required.

3.4.2.5 Alternative 4

Under Alternative 4, there would be no project activities conducted at the Building 811 or Prisoners Harbor sites. Hazardous materials including fuels, lubricants, and solvents would be used at the Charlie Pad and Coast Guard Jetty sites. The construction crews will store and maintain these materials in accordance with Navy and NBVC protocols and will maintain a copy of MSDS for each hazardous material stored and used on the project sites.

Four drums of hazardous waste would be generated under this alternative: two drums (one for liquids and one for rags) would be generated at both the Charlie Pad and Coast Guard Jetty sites. The construction

crew will coordinate with the NBVC environmental office to ensure proper handling and storage of the waste and to obtain a waste manifest prior to transportation of the waste. The waste from the Coast Guard Jetty site would be transported to Port Hueneme via barge prior to delivery to an approved TSD facility.

The HDD operations at Charlie Pad would generate approximately 17,800 gal (67,400 l or 324 drums) of drilling fluid and 67.2 yd^3 (51.4 m^3) of drilling solids. During Coast Guard Jetty HDD operations, approximately 10,500 gal (39,900 l or 192 drums) of drilling fluid would be collected for disposal, and approximately 39.7 yd^3 (30.4 m^3) of drilling solids would be generated. The construction crew will coordinate with the NBVC environmental office to ensure proper handling and storage of the waste and to obtain a waste manifest prior to transportation of the waste. The Navy will coordinate with the LARWQCB to determine if the drilling fluid and solids can be disposed of as Type A or Type B inert debris and identify the appropriate TSD facility to receive, treat, and dispose the drilling fluid wastes.

Under Alternative 4, appropriate BMPs would be implemented to minimize the release of hazardous materials to the environment, and the hazardous and non-RCRA wastes generated would be handled in accordance with all federal, state, and local laws and regulations. Therefore, implementation of Alternative 4 would have no significant impacts from hazardous materials and waste.

Mitigation Measures

Implementation of the Alternative 4 would not result in significant impacts with respect to hazardous materials or waste management; therefore no mitigation measures are proposed or required.

3.4.2.6 Alternative 5 – The No-Action Alternative

Under the No-Action Alternative, the proposed action would not occur, and the existing conditions would remain unchanged. Therefore, no significant impacts with respect to hazardous materials or waste would occur.

Mitigation Measures

Implementation of the No-Action Alternative would not result in significant impacts with respect to hazardous materials or waste management; therefore no mitigation measures are proposed or required.

3.5 INFRASTRUCTURE AND UTILITIES

3.5.1 Affected Environment

3.5.1.1 Definition of Resource

For the purposes of this EA/OEA, infrastructure and utilities of concern include transportation of personnel, equipment, and goods to the project sites; road networks; and potable and non-potable water sources.

3.5.1.2 Existing Conditions

Point Mugu

Personnel and Materials Transport

The majority of personnel and materials transport to and from NBVC Point Mugu is carried out via the road network described below. Most ground transport approaches the base on the Pacific Coast Highway (California State Route 1). All vehicles enter NBVC Point Mugu through two guarded gates.

Contractor personnel do not routinely stay on base but lodge in the surrounding communities of Oxnard, Ventura, or Camarillo.

Supplies can also be delivered to NBVC Point Mugu by cargo aircraft landing at the airfield. Shuttle flights connect Point Mugu to SNI and Naval Air Weapons Station China Lake.

Road Networks

NBVC Point Mugu is served by an extensive road system, allowing access to and from base facilities. The Pacific Coast Highway forms the northeastern boundary of the base. The Ventura Freeway (U.S. Highway 101) is located approximately 6 mi (10 km) north of the base and is a major north-south route in the California highway system. Both the Pacific Coast Highway and Ventura Freeway connect Point Mugu to the Los Angeles area. Major roads that run from the Ventura Freeway south from Oxnard, Ventura, and Camarillo include Rice Avenue, Wood Road, Las Posas, and Lewis Road. Direct access to the base is from the frontage road that runs along the Pacific Coast Highway.

The base has four entrance gates: Gates 1, 2, 3, and 5. Two of these gates, Gates 2 and 3, are open for routine base traffic. The majority of traffic flows south to NBVC Point Mugu via the Pacific Coast Highway and Las Posas Road. Gate 2 is known as Main Gate, and Gate 3 is called Las Posas Gate. The Las Posas Gate is open 24 hours a day, and the Main Gate is open during normal business hours.

NBVC Mugu has over 50 mi (80 km) of paved roads. Primary roadways on the base include North Mugu Road, Main Road, Laguna Road, 11th Street, 13th Street and Beach Road. Beach Road is a designated ordnance transportation route. The primary access road to the HDD drilling sites is Laguna Road, which runs along Mugu Lagoon. Figure 3.5-1 provides an overview of the road network on and near NBVC Point Mugu.

Figure 3.5-1 Road Network in the Point Mugu Vicinity

Water

Potable water for NBVC Point Mugu is provided by the Port Hueneme Water Agency, which is the wholesale utility service for the City of Port Hueneme, the Channel Islands Community Services District and NBVC Point Mugu and Port Hueneme. The water agency serves a population of approximately 50,000 and has relatively fixed demand.

The distribution plant at the base is equipped with softening and chlorinating capabilities and two surge protection tanks with capacities of 50,000 and 200,000 gallons (190,000 and 760,000 l). The potable water distribution system supplies the entirety of NBVC Point Mugu, including the Channel Islands Air National Guard Station and Laguna Peak Facilities. The existing system has a capacity of 5.8 million gallons per day (gpd) (22 million liters per day [Lpd]). Average demand is roughly 1.6 million gpd (6.1 million Lpd).

<u>San Nicolas Island</u>

Personnel and Materials Transport

SNI is located approximately 65 mi (105 km) southwest of NBVC Point Mugu. The island is owned and operated by the Navy, and access is strictly controlled. Personnel access is granted for military-related activities and for pre-approved, non-military users for primarily scientific purposes. A scheduled contract aircraft shuttle operates between NBVC Point Mugu and SNI to bring personnel to the island.

Most equipment and material is transported to and from SNI via a contracted barge service, originating from NBVC Port Hueneme, with voyages scheduled every two weeks. The barges have a surface area for transport of materials of approximately 4,000 ft^2 (372 m^2) with a weight limit of 130,000 lb (59,000 kg). Barges are loaded and offloaded at the SNI barge pier. Some materials are transported to SNI via cargo air shipments. To reduce the potential introduction of ecologically harmful non-native flora or fauna, all barge and aircraft shipments to SNI will be conducted in accordance with NBVC Instruction 5090.14, *Biological Resources Security Requirements for Air and Barge Transport of All Cargo to San Nicolas Island, Naval Base Ventura County*. Specific biosecurity measures are described in the conservation measures to be implemented for Alternative 1 (see Section 2.1.3).

Road Networks

There are approximately 22 mi (35 km) of paved roads that generally run southeast to northwest along the axis of SNI. All vehicles on the island are government-owned or controlled. Traffic conflicts occur only when convoys transport ordnance or other hazardous materials. Non-participating vehicles are precluded from operating along roads occupied by the convoys. There is no public roadway on SNI.

Water

Fresh water is a limited resource on SNI and the island does not have any aquifers. There are seasonal water flows, but the water in these ephemeral streams is high in perchlorate and is not potable. The water is sometimes collected and used for construction purposes.

Numerous wells and catchments have been installed at various sites around SNI. Three wells are located in small buildings on the island. There are various types of water catchments on SNI designed to capture underground water seepage and spring water. The water collected from these systems is then collected in tanks and distributed through the water system after treatment. Water distribution is composed of a network of storage tanks, pumps, mains, valves, and hydrants. The main water tanks are located near Building 159.

Two reverse osmosis (RO) desalination units are located at near the jetty at Coast Guard Beach. Each unit has an output capacity of 1,250 gallons per hour (4,730 liters per hour). The raw source water is pumped from ten seawells on the beach. The desalination plant has a production limit of 20,000 to 25,000 gpd of fresh water. Fresh water produced from the RO units is stored in tanks adjacent to the pump house. One tank holds 50,000 gallons (189,000 l) and another can hold up to 10,000 gallons (37,850 l). The fresh water is then pumped to Tank 8 at the main water storage area.

Fresh water is also delivered from off-island sources. Water barges can be moored near the RO plant and off-loaded through a submarine water line to a storage tank near Building 196. A second delivery alternative is to deliver tanker trailers on freight barges.

<u>Santa Cruz Island</u>

Personnel and Materials Transport

Normally scheduled boat trips between Ventura Harbor and SCrI are conducted on Monday mornings and Friday afternoons. These personnel transport vessels are aviation rescue vessels (AVR) and can carry a maximum of 20 passengers and a total cargo of 3,500 lb (1,590 kg). As needed, additional connections between SCrI and the mainland can be arranged using contracted helicopter or boat services. Personnel arrive at the Prisoners Harbor Pier and transit to the Navy site via the Navy Road.

Living quarters for 20 personnel exist at the Navy Site. In addition to berthing, this building houses the messing facilities, lounge, and common head facilities. Meal services are not provided at SCrI, so contractors must bring their own provisions.

In addition to the AVR support, larger landing craft utility (LCU) vessels provide surface transport of materials to the SCrI Navy Site. The contract craft can carry larger cargo, such as fuel trucks, which cannot be delivered via AVR. The LCU craft can carry cargo up to the size of a semi-truck trailer.

LCU landing at SCrI is conducted at a beach site in the Prisoners Harbor area. To facilitate the cargo craft landing, the Navy must maintain this beach site by amassing naturally occurring cobblestones. This maintains the integrity of the beach and ensures safe landing of the cargo craft.

Road Networks

There are numerous unpaved roads on SCrI, totaling 20.2 mi (32.5 km). The main thoroughfare connecting Prisoners Harbor and the Navy Site is Navy Road. The approximately 7-mile (11-km) trip between the sites on Navy Road takes approximately 30 minutes.

As required by their lease agreement with TNC, the Navy maintains Navy Road and other associated service roads on SCrI. The Navy maintains passenger vehicles, a forklift, a bulldozer, a 5-ton 4-wheel drive truck, a 1,800-gallon (6,800 l) water truck used for firefighting, and carts on the island.

Water

Potable water on SCrI is a limited resource. There is a 30,000-gal (113,500-l) water storage tank located at the Navy Site. Any support services could utilize this water, but beyond that resource, any additional water must be delivered to SCrI. The well located near Prisoners Harbor does not have the production capacity to support the FOCUS-II drilling and installation activities. Prisoners Harbor is shallow in the vicinity of the landing site, making mooring a water barge difficult and hazardous to local sea grass beds. Considering this, seawater will be used for SCrI drilling operations.

3.5.2 Environmental Consequences

3.5.2.1 Assessment Criteria

Impacts on infrastructure, utilities, and transportation are evaluated for their potential to disrupt or improve existing levels of service and create additional requirements for energy (e.g., electric, central heating, natural gas, and liquid fuels), water, sanitary sewer/wastewater service, storm water drainage, solid waste management, and the transportation network. In general impacts could arise from needs created by either direct or indirect workforce and population changes related to proposed activities.

3.5.2.2 Alternative 1 – Preferred Alternative

Point Mugu

Personnel and Material Transport

Personnel and material would be transported to and from Point Mugu via local road networks. Personnel would lodge in surrounding communities of Oxnard or Ventura. Therefore, implementation of Alternative 1 would have no significant impacts on local transportation networks.

Road Networks

Under Alternative 1, personnel and material would be transported using the existing road networks in the vicinity of Point Mugu (Figure 3.5-1). The short-term increase in traffic during the drilling and cable installation operations would be insignificant compared to the existing traffic volume. Personnel and deliveries would be conducted through existing approved gates. Drilling operations at Building 811 would not affect local traffic. However, drilling at Charlie Pad would limit traffic on Beach Road to one lane. The construction crew will coordinate with NBVC to ensure that the FOCUS-II construction activities would not impede ordnance transportation on Beach Road. Therefore, implementation of Alternative 1 would have no significant impacts on local road networks.

Water

As a worst-case scenario, drilling operations would require 50,000 gal (189,000 l) of water per day. This would represent approximately 0.86 percent of the total capacity of the Port Hueneme Water Agency or an increase of approximately three percent over the average daily demand. This increased demand would be temporary in nature, lasting up to 60 days for the drilling operations at the Point Mugu sites. Therefore, implementation of Alternative 1 would have no significant impacts on local potable water supplies.

San Nicolas Island

Personnel and Material Transport

Personnel would be transported to and from SNI via the contract air shuttle between Point Mugu and SNI. The personnel would lodge at the Navy Gateway Inn and would have their meals at the SNI dining facilities. Coordination with NAWCWD and NAVFAC would be required to ensure that lodging and supplies would be available for the contractor staff.

Equipment and supplies would be transported to SNI via the contract barge services. It is assumed that the proposed action would require a portion of the barge deck surface for two round-trip voyages. Motor vehicles would be transported via the two barge shipments. Implementation of Alternative 1 would have no significant impacts on local transportation networks.

Road Networks

Under Alternative 1, equipment would be transported between the barge landing pier to the staging area near the Coast Guard Jetty. Contractor staff would utilize vehicles transported to SNI via barge shipments. The increase in traffic associated with the drilling and trenching operations would be insignificant compared to the existing traffic volume. No road traffic would be disrupted due to FOCUS-II installation operations at SNI. Therefore, implementation of Alternative 1 would have no significant impacts on local road networks.

Water

Water for drilling operations will be shipped to SNI via water barge. The water shipments would commence up to six weeks prior to drilling operations, so that water can be pumped to the water storage bladders near the drilling site. Accumulation and storage of at least 250,000 gal (946,000 l) would be required before drilling operations could commence. The water source used would be the same as that used for other fresh water shipments to SNI.

Contractors lodging on SNI would represent an increase in potable water consumption, but this would be insignificant compared to the SNI RO plant output capacity. Therefore, implementation of Alternative 1 would have no significant impacts on SNI potable water supplies.

Santa Cruz Island

Personnel and Material Transport

Personnel would primarily be transported to SCrI via the existing approved NPS transportation vendor or NPS vessels between Ventura Harbor and Prisoners Harbor. When needed, personnel would be transported to SCrI via chartered helicopter service. Contractors would lodge at the Navy Site quarters and would bring their own provisions. Project vehicles would be transported to SCrI via barge, and only approved drivers would be allowed to drive on SCrI roads.

It is assumed that two barge and five LCU round-trip shipments would be needed to complete the drilling and trenching operations at SCrI. Due to the need for oversized equipment and the number of articles, a large barge with an approximate surface area of 4,000 ft^2 (372 m^2) deck space (triple stack capability) would be used to deliver equipment to initiate the drilling operations. One round-trip delivery will be needed to start the operations, and one round-trip delivery will take the large equipment off SCrI. The

large barge shipments will come ashore via beach landings. To reduce the potential introduction of ecologically harmful non-native flora or fauna, all barge and aircraft shipments to SCrI will be conducted in accordance with the CINP Biosecurity Protocols (CINP 2014a). Specific biosecurity measures are described in the conservation measures to be implemented for Alternative 1 (see Section 2.1.3). Therefore, implementation of Alternative 1 would have no significant impacts on local transportation networks.

Road Networks

During the drilling and trenching operations, contracted staff would be required to drive the 7 mi (11.2 km) between the Navy Site and Prisoners Harbor as well as between the Navy Site and trenching operations sites. These trips would be conducted via project vehicles transported to SCrI via barge as described above. Prior to driving on SCrI, contractors would be required to attend safety awareness classes providing details regarding the specific hazards of the SCrI dirt roads and maintaining the Channel Islands National Park character by minimizing fugitive dust generation.

Drilling operations would not affect road traffic on SCrI, but the trenching would require temporary daily closure of portion of the Navy Road to non-authorized vehicles for the three-month duration. Hikers would be asked to take alternative routes to visit the SCrI sites. The trenching would be conducted within the roadway in a manner that will allow vehicles to pass the trenching operations to the greatest extent, and trenches would be filled in or covered every evening. There are secondary routes allowing access to all SCrI sites whenever vehicle passing the trenching operations is not possible. The road closure would be temporary in nature, and all road surfaces would be returned to their original state or better. Therefore, implementation of Alternative 1 would have no significant impacts on the SCrI road network.

Water

Limited resources and lack of delivery options would preclude use of potable water for drilling operations on SCrI. As a result, seawater will be pumped from Prisoners Harbor and used to generate drilling fluid.

Contractors lodging at the Navy Site would represent an increase in potable water consumption, but this would be insignificant compared to the water stored on the Navy Site and the water generated by the well output capacity. Once the water line is installed in the trenches, the efficiency of water delivery to the Navy Site would be improved as the current overland water line has many leaks. The new water line will also allow for NPS and TNC access to potable water at the manholes installed along the route. Therefore, implementation of Alternative 1 would have no significant impacts on SCrI potable water supplies.

Mitigation Measures

Implementation of Alternative 1 would not have significant impacts to infrastructure or utilities. Therefore, no mitigation measures are proposed or required.

3.5.2.3 Alternative 2

Point Mugu

Infrastructure and utilities requirements of Alternative 2 and Alternative 1 would be identical at the NBVC Point Mugu Building 811 and Charlie Pad sites. Therefore, implementation of Alternative 2 would have no significant impacts on Point Mugu infrastructure or utilities.

San Nicolas Island

The Alternative 2 infrastructure and utilities impacts would be identical to the infrastructure and utilities requirements associated with Alternative 1 on SNI. Therefore, implementation of Alternative 2 would have no significant impacts on SNI infrastructure or utilities.

Santa Cruz Island

The Alternative 2 infrastructure and utilities impacts would be nearly identical to the infrastructure and utilities requirements associated with Alternative 1 on SCrI. Therefore, implementation of Alternative 2 would have no significant impacts on SCrI infrastructure or utilities.

Mitigation Measures

There would be no significant infrastructure or utilities impacts associated with Alternative 2; therefore, no mitigation measures are proposed or required.

3.5.2.4 Alternative 3

Point Mugu

Infrastructure and utilities requirements of Alternative 3 and Alternative 1 would be identical at the NBVC Point Mugu Building 811 and Charlie Pad sites. Therefore, implementation of Alternative 3 would have no significant impacts on Point Mugu infrastructure or utilities.

San Nicolas Island

The Alternative 3 infrastructure and utilities impacts would be identical to the infrastructure and utilities requirements associated with Alternative 1 on SNI. Therefore, implementation of Alternative 3 would have no significant impacts on SNI infrastructure or utilities.

Santa Cruz Island

The Alternative 3 infrastructure and utilities impacts would be nearly identical to the infrastructure and utilities requirements associated with Alternative 1 on SCrI. Therefore, implementation of Alternative 3 would have no significant impacts on SCrI infrastructure or utilities.

Mitigation Measures

There would be no significant infrastructure or utilities impacts associated with Alternative 3; therefore, no mitigation measures are proposed or required.

3.5.2.5 Alternative 4

Point Mugu

Infrastructure and utilities requirements of Alternative 4 and Alternative 1 would be identical at the NBVC Point Mugu Charlie Pad site. There would be no construction activity at the Building 811 site. Therefore, implementation of Alternative 4 would have no significant impacts on Point Mugu infrastructure or utilities.

San Nicolas Island

The Alternative 4 infrastructure and utilities impacts would be identical to the infrastructure and utilities requirements associated with Alternative 1 on SNI. Therefore, implementation of Alternative 4 would have no significant impacts on SNI infrastructure or utilities.

Santa Cruz Island

There would be no activities conducted at SCrI under Alternative 4, including the installation of the new water line. Efficiency of water delivery would continue to degrade as leaks in the existing water line would increase. Therefore, implementation of Alternative 4 would have no significant impacts on SCrI infrastructure or utilities.

Mitigation Measures

There would be no significant infrastructure or utilities impacts associated with Alternative 4; therefore, no mitigation measures are proposed or required.

3.5.2.6 Alternative 5 – The No-Action Alternative

Under the No-Action Alternative, the proposed installation of FOCUS-II would not occur and existing conditions as described in Section 3.5.1.3 would remain unchanged, including use of the existing water line. Efficiency of water delivery would continue to degrade as leaks in the existing water line would increase. Therefore, implementation of the No-Action Alternative would have no significant impacts on SCrI infrastructure or utilities.

Mitigation Measures

Implementation of the No-Action Alternative would not result in significant impacts on infrastructure or utilities; therefore, no mitigation measures are proposed or required.

3.6 LAND AND WATER USE

3.6.1 Affected Environment

3.6.1.1 Definition of Resource

Land and water use comprises the natural conditions and/or human-modified activities occurring at a particular location. The terms "land use" or "water use" can also refer to the use of an area by recreational, commercial, and military users.

3.6.1.2 Existing Conditions

Point Mugu

Land Use

Point Mugu comprises approximately 4,490 ac (1,820 ha). Of this, approximately 1,990 ac (805 ha) have been developed and the rest remain in their natural state. Land use at Point Mugu is dominated by natural and operational constraints that require preservation of this open space. Included in the undeveloped area are 2,153 ac (871 ha) of designated wetlands, 200 ac (81 ha) of beach dunes, and 270 ac (109 ha) of grasslands. Much of the open land at Point Mugu is environmentally constrained due to the presence of sensitive environmental resources. Development is also limited by the existence of airfield safety clearance zones.

Land use at Point Mugu is grouped into ten categories: 1) Aircraft Operations, 2) Aircraft Maintenance, 3) Base Support, 4) Test and Evaluation, 5) Administration, 6) Community Support, 7) Housing, 8) Training, 9) Ordnance, and 10) Open Space. Approximately 890 ac (360 ha) are used for administration, operations, and training; 240 ac (97 ha) are used for military housing and recreation.

Aircraft operations and testing, evaluation, and training constitute a major land use of Point Mugu. Recommendations regarding land use compatibility in the immediate vicinity of Point Mugu are established by the Point Mugu Air Installation Compatible Use Zone (AICUZ) Program to prevent incompatible development in high noise exposure areas, to minimize public exposure to potential health and safety hazards associated with aircraft operations, and to protect the operational capability of the air installation.

The USACE has jurisdiction over the two major drainages to Point Mugu – Calleguas Creek and Revolon Slough – as well as Mugu Lagoon and adjacent wetlands.

Water Use

Point Mugu does not have a port and does not directly support ship activity. As described above, a large portion of Point Mugu is designated as wetland. Nearshore activity in the vicinity of Point Mugu includes surfing and swimming at a beach near Mugu Lagoon. However, Point Mugu is designated a classified or secure base, and public admittance is generally not allowed. A few beach areas are open to Department of Defense (DoD) employees, base contractors, and active duty, retired, or reserve personnel (Navy 2002).

San Nicolas Island

Land Use

Located approximately 57 NM (106 km) southwest of Point Mugu, SNI, an island of 14,500 ac (5,890 ha), is owned and operated by the Navy as a major element of the Sea Range. Most of SNI is used as a range instrumentation site to support Point Mugu Sea Range operations. SNI facilities support all aspects of range operations, including missile and target launches. All development on SNI is associated with the military, and land uses are considered either military support or open space. SNI has one minor population center, Nicktown, which is located on the north side of the island. No permanent residences are established on SNI; however, approximately 200 people live as part-time residents at Nicktown. There is no public access to SNI, and the population fluctuates almost daily with visitors from many different activities within the DoD. (Navy 2002)

There are over 150 buildings located on SNI with facilities to transport, house, and support personnel and related materials, in addition to a 10,000-ft (3-km) concrete or asphalt concrete runway and facilities to support testing operations. Adjoining the airfield are a control tower, hangars, ground control approach capabilities, and one fire station. Additional facilities include extensive range, support, and fuel storage facilities; machine/repair shops and storage buildings; and ordnance and launching facilities. (NBVC 2010)

Water Use

Due to the distance from the mainland, the area around SNI is primarily used by Navy vessels, commercial fishing boats, and sport fishing boats. Most types of inshore fisheries common in southern California can occur in the nearshore waters of SNI (Navy 2002). Occasional fisheries occurring near SNI include drift sea bass fishing, live fish trapping, hook and line bottom fishing (rock cod), hook and line trolling (halibut and sea bass), open-water trolling (albacore and swordfish), squid purse seining, and crab trapping. However, primary nearshore fisheries at SNI are urchins and lobster. These fisheries occur in less than 120 ft (36.6 m) of water around SNI; fall and winter are the most important seasons for these fisheries. Commercial passenger fishing vessels frequently offer one-day sport fishing excursions either from the Ventura or Santa Barbara harbors.

DoD employees, base contractors, and active duty personnel launch recreational fishing boats from Cissy Cove and fish nearby areas. SNI is surrounded by kelp forests, exhibits an upwelling of nutrients, and has numerous fishing spots along the shoreline. Many of the better areas to fish are identified by fishing signs. Some of the more common species include cabezon, California sheephead, rockfish, white seabass, and kelp (calico) bass. Fishermen must have a California ocean-fishing license to fish on SNI and abide by bag and size limits. The CDFW is responsible for enforcement of fishing regulations on SNI. Fishermen also must abide by SNI area closures due to environmental laws protecting certain wildlife and must respect cultural resources areas, such as Indian middens located near coastal areas. Environmental personnel post flyers in obvious locations around the island regarding fishing on SNI, including specific information on different species of fish and catch limits (NBVC 2010).

For safety purposes, restricted areas have been established in the waters around SNI, extending approximately 3 mi (4.8 km) from the shoreline. There are three sections: Alpha, Bravo, and Charlie

whose boundaries were amended in May 2014 (see Figure 3.6-1). Boats must remain at least 300 yd (274 m) from the shoreline of SNI at all times, and no boats are allowed to anchor within 300 yd (274 m) or land on SNI, except in an emergency. Individual sections of the restricted area can be closed during operations in the vicinity of SNI. No person, vessel, or other craft shall enter the restricted area or designated section(s) during closure periods unless authorized to do so by the Commanding Officer, NBVC or the Officer in Charge, SNI.

Santa Cruz Island

Land Use

SCrI, an island of 61,800 ac (25,000 ha), is approximately 25 mi (40 km) south-southeast of Point Mugu. The island was historically used for farming and ranching, dating back to 1853. In 1978, the Nature Conservancy (TNC) secured permanent protection of the eastern 74 percent of the island. In 1997, NPS acquired ownership of the western 26 percent of SCrI from TNC. The NPS-owned lands were added to CINP.

The Navy established an instrumentation site on SCrI in 1949 to support missile testing at Point Mugu. The Navy leases the Navy Site from the Nature Conservancy. The Navy Site is surrounded by NPS lands.

Five of the northern Channel Islands – Anacapa, Santa Cruz, Santa Rosa, San Miguel, and Santa Barbara – and the rocks, islets, submerged lands, and waters within 1 NM (1.85 km) of each island were designated by Congress as the CINP on March 5, 1980 (16 U.S.C. §410ff). Lands owned by the NPS are open to public visitor access and use. Visitors to SCrI can access the island through chartered boat services or via private watercraft. Chartered services are based in Santa Barbara and Oxnard. Passengers can load and unload at piers at Scorpion and Prisoners Harbor. Beach access is available at Scorpion, Smugglers Cove, and Prisoners Harbor.

There are numerous hiking trails on the island, and camping is allowed in designated campgrounds. Common visitor activities on SCrI include marine mammal and bird watching, photography, and hiking. The trail system on the NPS portion of SCrI is comprised of a combination of unmaintained and unimproved administrative roads. Camping on SCrI is available at Scorpion Ranch and Del Norte, with capacities of 240 and 16, respectively (NPS 2015). Figure 3.6-2 provides an overview of the roads and trails on SCrI as well as recreation sites on the island.

The pier at Prisoners Harbor was originally constructed in 1869 as part of the historic Ranch. over the years, the wharf was modified to facilitate transfer of cargo from vessels to the island. A major modification involved the installation of rails to move merchandise on flatcars from the wharf head to the warehouse. A later modification removed the rails when trucks.were used to.transter cargo. During the summer of 1993, limited repairs were made to the wharf as part of a larger maintenance effort. The repairs consisted of the replacement of three pilings, removal and replacement of deck planking, and installation of a rail on the wharf. (Navy 1994)

The pier continues to be used today as one of the two primary access points for SCrI public visitors. It is also used by both NPS and the Navy to offload cargo and other supplies onto the island. (NPS 2015)

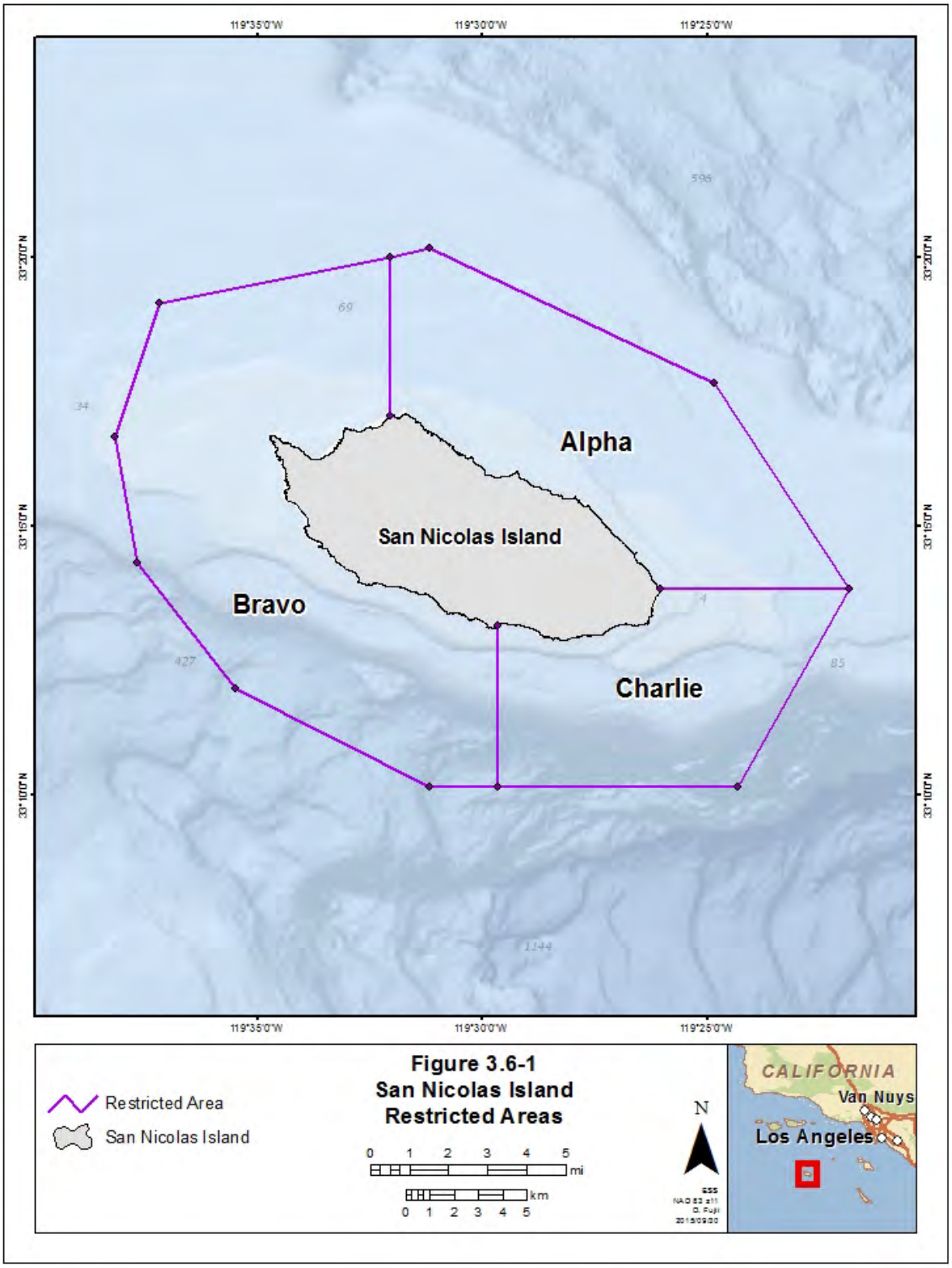

Figure 3.6-1
San Nicolas Island
Restricted Areas

119°42'0"W
119°40'0"W
119°38'0"W
119°36'0"W
119°34'0"W
119°32'0"W
34°5'30"N
34°3'0"N
34°0'30"N
33°58'0"N
33°55'30"N
Scorpion Campground
Scorpion Pier
Prisoners Harbor Pier
Del Norte Camp
Navy Road
Smugglers Cove
Road
Trail
Figure 3.6-2 Roads, Trails and Recreational Areas of CINP Santa Cruz Island
0 1 2 3 4 mi
0 1 2 3 4 5 km
N
CALIFORNIA
Van Nuys
Los Angeles

Water Use

The area off the SCrI coast is subject to ownership and management protocols of the State of California, the NPS, and NOAA. As described above, the submerged lands within 1 NM (1.85 km) of SCrI is designated as a portion of the CINP. The State of California waters extend 3 NM (5.56 km) from the high tide line of SCrI. Within the state waters, California has established four classifications of Marine Protected Areas (MPA):

- State Marine Reserve (SMR) – An MPA designation that prohibits damage or take of all marine resources (living, geologic, or cultural) including recreational and commercial take;
- State Marine Conservation Area (SMCA) – An MPA designation that may allow some recreational and/or commercial take of marine resources (restrictions vary);
- State Marine Conservation Area (No-Take) – An MPA designation that generally prohibits the take of living, geological, and cultural marine resources, but allows potentially affected and ongoing permitted activities such as dredging and maintenance to continue; and
- Special Closure – An area designated by the Fish and Game Commission that prohibits access or restricts boating activities in waters adjacent to sea bird rookeries or marine mammal haulout sites (restrictions vary).

Designated in 1980, the CINMS consists of an area of approximately 1,471 mi^2 (3,810 km^2) of coastal and ocean waters, and the submerged lands thereunder, off the southern coast of California. The Sanctuary boundary begins at the high tide line and extends seaward to a distance of approximately 6 NM (11.1 km) from the following islands and offshore rocks: San Miguel Island, Santa Cruz Island, Santa Rosa Island, Anacapa Island, Santa Barbara Island, Richardson Rock, and Castle Rock. In 2007, NOAA completed the Channel Islands MPA network, consisting of a total of ten marine reserves (no-take zones) and two marine conservation areas (limited take zones) within the CINMS, which was initiated by a unique, community-based process. NOAA and the CDFW cooperatively enforce the Channel Islands MPA network through a combination of federal and state regulations. (NOAA 2009)

The MPAs in the vicinity of SCrI include Scorpion SMR, Painted Cave SMCA, and Gull Island SMR. The offshore route will transit near the Scorpion SMR; however, the landing site near Prisoners Harbor is not close to any of these MPAs (Figure 3.2-9). The Anacapa SMR and SMCA are adjacent to the offshore route (Figure 3.2-9).

The waters surrounding SCrI are open to private and chartered boats. Water use activities in the vicinity of the island include recreational boating, recreational fishing, kayaking, and wildlife watching.

<u>Offshore Routes</u>

Submerged Land Use

The proposed action would include the offshore alignment corridors connecting the HDD exit sites offshore from NBVC Point Mugu, NBVC SNI, and SCrI. While the ocean floor within 3 NM (5.5 km) of shore is generally subject to the jurisdiction of the State of California as defined by the Submerged Lands Act (SLA, 43 U.S.C. 29), DoD activities within this zone are exempt from SLA. Unless the federal government consents to state regulation, its “activities ... are free from regulation by any state.” (Hancock

v. Train [1976] 426 U.S. 167, 178; see also, e.g., Blackburn v. United States [9th Cir. 1996] 100 F.3d 1426, 1435 [“States may not directly regulate the Federal Government's operations or property.”]).

As described above, certain activities that may affect the seafloor offshore SCrI do fall under the jurisdiction of the NPS (out to 1 NM [1.85 km] offshore) and the CINMS (out to 6 NM [11.1 km] offshore). The CINP is managed by NPS, and the CINMS is managed by NOAA. Existing DoD activities are exempted from CINMS regulations (15 CFR §922.72), though new activities, including those that require the preparation of an environmental assessment under NEPA, require consultation with NOAA under Section 304(d) of the Sanctuaries Act (16 USC 1434(d)).

Water Use

A large amount of ocean traffic occurs through the Point Mugu Sea Range; more than 7,000 vessel movements through the Sea Range have been estimated for a one-year period (Navy 2002). Of these, approximately 800 are a result of Navy activity. Shipping routes cross the Sea Range through the Santa Barbara Channel and through an area south of the Channel Islands.

NAWCWD utilizes the Sea Range for a variety of uses, although maritime transport and missile launches are two primary uses. Common types of vessels used in the Sea Range include range support boats, larger ships (i.e., cruisers, destroyers, and aircraft carriers), and surface targets.

Non-military activities can occur in all areas within the Sea Range. When U.S. Navy activities require exclusive use of an area, NAWCWPNS notifies mariners by issuing a Notice to Mariners (NOTMAR) and secures the area.

Maritime Shipping. A major shipping channel established by the U.S. Coast Guard is aligned just north of, and roughly parallel with, the northern Channel Islands. This channel is used by commercial cargo vessels traveling between northern Pacific and southern California ports, as well as by traffic destined for remote ports such as the Panama Canal or Asia.

Fishing. Commercial fishing, diving, and trapping occur at various locations off the coast of southern California, including portions of the Sea Range and the Channel Islands, which constitutes an extremely productive commercial fishing area. The nearshore waters along the coast from Ventura to Santa Barbara and the waters just off the Channel Islands contain giant kelp beds that provide habitats for numerous species; the majority of fish are caught within these areas. The top five fisheries based on commercial landings at Ventura Harbor are: squid, lobster, halibut, tuna, and sea cucumber (CDFG 2013).

Oil and Gas Production. Numerous oil platforms are located in the Santa Barbara Channel between Oxnard and Gaviota, both in state waters (out to 3 NM [5.6 km]) and federal waters (beyond 3 NM [5.6km]). There are four offshore drilling rigs (Grace, Gail, Gilda, and Gina) and a network of pipelines connecting the rigs and the mainland within 10 mi (16 km) of the FOCUS-II alignments connecting SCrI to NBVC Point Mugu and NBVC SNI. BOEM provides oversight and management of offshore energy resources. As shown on Figure 3.6-3, the FOCUS-II alignments would would remain at least 1 mi (1.6 km) distant from the offshore rigs and pipelines.

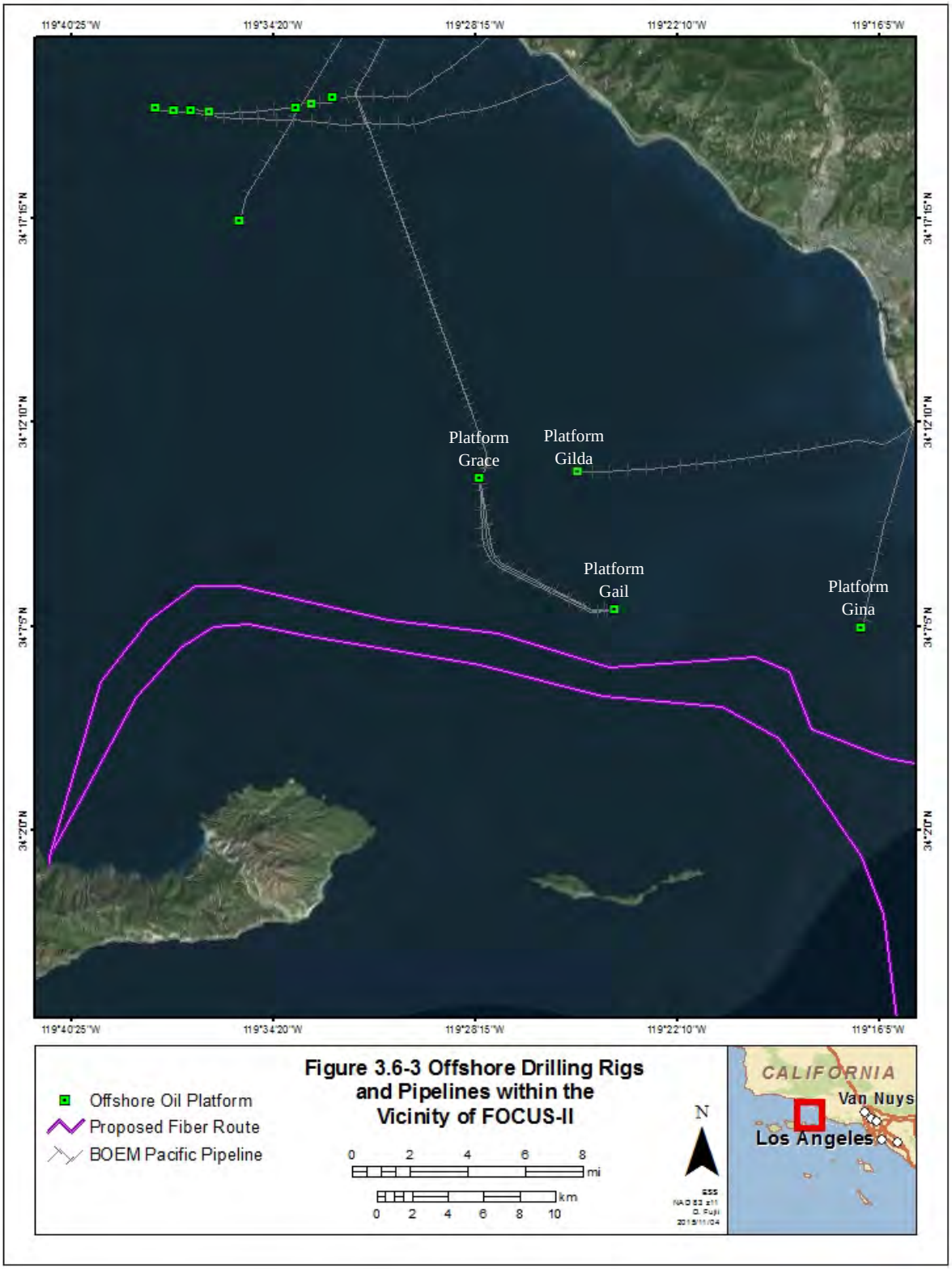

Figure 3.6-3 Offshore Drilling Rigs and Pipelines within the Vicinity of FOCUS-II

Coastal Zone Management Act Federal Consistency

The Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. §1451) encourages coastal states to be proactive in managing coastal zone uses and resources. CZMA established a voluntary coastal planning program and participating states submit a Coastal Management Plan to NOAA for approval. Under the CZMA, federal agency actions within or outside the coastal zone that affect any land or water use or natural resource of the coastal zone shall be carried out in a manner that is consistent to the maximum extent practicable with the enforceable policies of the approved state management programs. Each state defines its coastal zone in accordance with the CZMA.

As defined in Section 304 of the CZMA, the term "coastal zone" does not include "lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal Government" (16 U.S.C. §1453). NBVC Point Mugu and NBVC SNI are owned and operated by the Navy as a major elements of the Sea Range, and are therefore excluded from the coastal zone. Although the CINP, including the eastern portion of SCrI, is federal land and excluded from California's coastal zone; the CINP is geographically within the coastal zone. The coastal zone surrounding each site extends 3 NM (5.5 km) seaward from the high tide line and is under the jurisdiction of the State of California. The proposed action would be located within the interior of federally-owned lands and would include offshore actions that would be within the jurisdiction of the State of California. The actions on the upland areas would not be subject to the CZMA, while the offshore exit site and cable alignment would.

3.6.2 Environmental Consequences

3.6.2.1 Assessment Criteria

The primary factor considered in determining the significance of land and water use effects is the extent or degree to which the action alternatives would disrupt the current use of land and/or water or if they would result in conflicts with planned or adopted land use designations.

3.6.2.2 Alternative 1 – Preferred Alternative

Point Mugu

Land Use

The actions associated with Alternative 1 would be consistent with current land use at the Point Mugu sites, and the presence of drilling equipment would be temporary at each site (approximately 30 days). There would be temporary increase in traffic on Beach Road to each of the sites due to transport of construction equipment and heavy machinery. However this increase in traffic would not create conflicts with other users of Beach Road. Traffic would have to reduce speed in the vicinity of the Charlie Pad site, as it would be restricted to one lane. There would be no permanent land use changes associated with implementation of Alternative 1 at Point Mugu. Therefore, implementation of Alternative 1 would have no significant impacts on land use at Point Mugu.

Water Use

There would be a temporary disruption of the offshore areas near Point Mugu during the drilling and cable installation activities. However, public access to the nearshore areas off the Building 811 and Charlie Pad sites is restricted. Therefore implementation of Alternative 1 would have no significant impacts on water use near Point Mugu and would yield no significant harm on water use within the U.S. EEZ as defined by EO 12114.

San Nicolas Island

Land Use

Preferred alternative actions at the Coast Guard Jetty site would be consistent with current land use designations, and the presence of drilling equipment would be temporary at the site (approximately 30 days). There would be temporary increase in traffic on Beach Road between the Coast Guard Jetty site and the barge landing pier. However this increase in traffic would not create conflicts with other users of Beach Road. There would be no permanent land use changes associated with implementation of Alternative 1. Therefore, implementation of Alternative 1 would have no significant impacts on land use at SNI.

Water Use

Recreational use of the waters off the Coast Guard Jetty site would be restricted during drilling and cable installation operations. However, this would be temporary in nature. Therefore, implementation of Alternative 1 would have no significant impacts on water use near SNI and would yield no significant harm to water use within the U.S. EEZ as defined by EO 12114.

Santa Cruz Island

Land Use

Under Alternative 1, recreational use of the Prisoners Harbor Pier would be disrupted, but not eliminated, during the drilling operations, or for approximately 30 days. Recreational visitors to SCrI would still be allowed access to the Prisoners Harbor Pier, but the area west of the pier would be not be available for recreational use. The pier at Scorpion Anchorage would still be open for recreational users during this time. Disruption of access to the Prisoners Harbor Pier would only be for the duration of a single vessel landing. The Navy will coordinate with NPS and the public concessionaire to schedule such operations outside normal public access schedules and at no time will the pier be closed to public access while other NPS piers are closed. The trenching operations would close portions of Navy Road to vehicle access, but the Navy will coordinate with NPS to develop a plan to avoid limitations on recreational pedestrian access. Other hiking trails would also remain open. The installation of the elevated channel system may divert travel to other roads connecting to the well site. These closures would be temporary in nature and would not lead to permanent land use changes, and alternative areas would be available in the immediate vicinity. Prior to construction, the Navy will request a Right of Way from NPS and real estate agreement with TNC for access to and construction on their properties on SCrI. Therefore, implementation of Alternative 1 would have no significant impacts on land use at SCrI.

Water Use

Recreational use of the waters off the Prisoners Harbor site would be restricted, but not eliminated, during drilling and cable installation operations. However, this would be temporary in nature. All other waters around the eastern end of the island, including Scorpion Anchorage and Smugglers Cove, would remain open to recreational use (Figure 3.6-2). Therefore, implementation of Alternative 1 would have no significant impacts on water use at SCrI.

Submerged Land Use

Prior to installation of the FOCUS-II cables, the Navy will coordinate with the State of California, through the CZMA federal consistency review process. The Navy and CCC will ensure that the proposed action is consistent with the submerged land use for those areas that fall under the State's jurisdiction. For the submerged lands off the SCrI shore, the Navy will acquire a NPS right-of-way to ensure that the installation and operation of the FOCUS-II system is conducted in a manner that reduces impacts to the submerged lands along the proposed alignments.

The proposed action is not likely to result in permanent destruction or loss of Sanctuary resources but may injure Sanctuary resources, though any effect would be minor due to the limited area impacted, temporary nature of impacts and other factors. As such, the Navy will consult with NOAA's CINMS and request concurrence on potential impacts to Sanctuary resources.

The FOCUS-II cable alignments will pass through three federal offshore drilling units managed by BOEM. However, the cables would remain at least 1 mi (1.6 km) distant from any drilling rig or pipeline. The Navy will coordinate with BOEM prior to FOCUS-II installation activities. Therefore, implementation of Alternative 1 would have no significant impacts on submerged land use and would yield no significant harm to submerged lands within the U.S. EEZ as defined by EO 12114.

Coastal Zone Management Act Consistency Determination

The majority of the proposed action is located on NBVC property (Point Mugu and SNI), on NPS property (HDD site at Prisoner's Harbor and Navy Road), or on land under exclusive use to the Navy (the Navy Site under lease from TNC).

Accordingly, although these sites are considered federal property and therefore excluded from the coastal zone, the Navy nonetheless will conduct an effects analysis for purposes of federal consistency review under the CZMA. This will factually determine whether the action (even if conducted entirely within a federal enclave) would affect any coastal zone use or resource. The remaining portion of the proposed action, the cable on seafloor from HDD exit point out to 3 NM (5.6 km) from the shoreline, is within the coastal zone. The remaining cable routes outside 3 NM (5.6 km) will occur within federal waters.

The Navy has analyzed the potential effects of this alternative by evaluating reasonable foreseeable direct and indirect effects on coastal zone uses and resources. The Navy has determined that this alternative would have no effect on coastal zone uses or resources. The Navy will prepare a Coastal Consistency Determination and submit it to the CCC for concurrence.

Mitigation Measures

There would be no significant land or water use impacts associated with Alternative 1; therefore, no mitigation measures are proposed or required.

3.6.2.3 Alternative 2

Under Alternative 2, the same activities to those described in Alternative 1 would be conducted at NBVC Point Mugu, NBVC SNI, and SCrI. Any land and water use impacts would be temporary in nature. Therefore, implementation of Alternative 2 would have no significant impacts on land or water use and would yield no significant harm to water use within the U.S. EEZ as defined by EO 12114.

Mitigation Measures

There would be no significant land or water use impacts associated with Alternative 2; therefore, no mitigation measures are proposed or required.

3.6.2.4 Alternative 3

Under Alternative 3, activities very similar to those described in Alternative 1 would be conducted at NBVC Point Mugu, NBVC SNI, and SCrI. Any land and water use impacts would be temporary in nature. Therefore, implementation of Alternative 3 would have no significant impacts on land or water use and would yield no significant harm to water use within the U.S. EEZ as defined by EO 12114.

Mitigation Measures

There would be no significant land or water use impacts associated with Alternative 3; therefore, no mitigation measures are proposed or required.

3.6.2.5 Alternative 4

Under Alternative 4, activities identical to Alternative 1 would be conducted at NBVC Point Mugu and NBVC SNI, and no actions would be taken at SCrI. All NBVC Point Mugu and NBVC SNI land and water use associated with this alternative would be identical to Alternative 1. Any land and water use impacts would be temporary in nature. Therefore, implementation of Alternative 4 would have no significant impacts on land or water use and would yield no significant harm to water use within the U.S. EEZ as defined by EO 12114.

Mitigation Measures

There would be no significant land or water use impacts associated with Alternative 4; therefore, no mitigation measures are proposed or required.

3.6.2.6 Alternative 5 – The No-Action Alternative

Under the No-Action Alternative, the proposed installation of FOCUS-II would not occur and existing conditions would remain unchanged; therefore, no significant land or water use impacts would occur under the No-Action Alternative.

Mitigation Measures

There would be no significant land or water use impacts associated with the No-Action Alternative; therefore, no mitigation measures are proposed or required.

3.7 MARINE SEDIMENTS AND WATER QUALITY

3.7.1 Affected Environment

3.7.1.1 Definition of Resource

This section describes the general conditions, marine or nearshore water quality, and bathymetry and sediment quality within the Point Mugu Sea Range, Point Mugu, SNI and SCrI. The general description includes the extent of the area as well as currents. Water quality describes the chemical and physical composition of water as affected by natural conditions and human activities. Bathymetry describes the depth of the ocean floor, and sediment quality describes the composition of ocean bottom sediments.

3.7.1.2 Regulatory Setting

Water resource regulations focus on the right to use water and protection of water quality. The principal federal laws protecting water quality are the Clean Water Act (CWA), as amended (33 U.S.C. §§ 1251 et seq.) and the Safe Drinking Water Act (42 U.S.C. §§ 300f et seq.). Both laws are enforced by the USEPA. The CWA provides protection of surface water quality and preservation of wetlands.

At the state level, the Porter-Cologne Water Quality Control Act (California Water Code 13000- 13953.4) gives the SWRCB and nine Regional Water Quality Control Boards responsibility for protection of the waters within their regions. The regional boards are also responsible for implementing provisions of the CWA delegated to states, such as the National Pollutant Discharge Elimination System, which regulates discharge of pollutants from point sources. The SWRCB adopted the Water Quality Control Plan for Ocean Waters of California in 1974; the amended plan (The Ocean Plan) establishes beneficial uses and water quality objectives for waters of the Pacific Ocean adjacent to the California coast outside of enclosed bays, estuaries, and coastal lagoons (SWRCB 2012). The Ocean Plan prescribes effluent quality requirements and management principles for waste dischargers and specific waste discharge prohibitions. It also contains a prohibition against discharge of specific hazardous substances and sludge, bypass of untreated waste, and discharges that impact designated Areas of Special Biological Significance (ASBSs). However, the SWRCB may grant exceptions to allow a discharge into an ASBS provided that the exception will not compromise protection of ocean waters for beneficial uses, and that the public interest will be served (Navy 2002). The Navy will coordinate with the SWRCB to determine if an exception is required.

3.7.1.3 Existing Conditions

<u>Point Mugu</u>

General Description

Point Mugu is located on a broad coastal plain adjacent to the Pacific Ocean and the Mugu Lagoon, in Ventura County (see Figure 1-1). Surface currents in this area generally flow southeast along the coastline after mixing further offshore.

A significant water resource at Point Mugu is Mugu Lagoon, which is the largest surface water feature of Point Mugu and is one of the largest salt marshes in southern California, encompassing 350 acres (142 ha) of water and tidal flats. The lagoon runs parallel to the coast for 3.5 mi (5.6 km) and is never greater than 0.6 mi (1.0 km) wide. Mugu Lagoon is a significant ecological resource, is protected by the CWA,

and is adjacent to an ASBS. Unlike most lagoons along the California coast, it is relatively undisturbed and provides a habitat for a diverse assemblage of marine organisms (Section 3.2, *Biological Resources*). Mugu Lagoon is regionally significant as one of the largest lagoons left in southern California containing unique and sensitive resources.

Calleguas Creek, Oxnard Drainage Ditches No. 2 and No. 3, and storm events are important sources of fresh water in Mugu Lagoon, although the lagoon is primarily marine-dominated and tides are responsible for the majority of the day-to-day input and removal of materials. The volume of water moved in and out of the lagoon by tides, the tidal prism, is large compared to the volume retained at lowest level. Very little of the water departing the lagoon on the ebb tide is returned following the flood tide due to the persistent southeast longshore current. Currents are fast near the mouth of the lagoon due to the large tidal exchange and narrow sea opening. Away from the mouth, currents are slow and are likely not to cause much mixing.

Nearshore Water Quality

Water quality in the nearshore area of Point Mugu is dependent upon the presence of particulates and contaminants in the outflow from Mugu Lagoon. In general, dissolved oxygen levels are high and anaerobic conditions do not occur within the lagoon. Concentrations of other nutrients have not been studied. Water temperatures inside the lagoon are usually similar to those of the Sea Range, although they may be higher and much more variable in the lagoon's shallows and salt marsh ponds. The average water temperature for the June-September months is 66°F (19°C); the average water temperature for January is 55°F (13°C). Temperatures up to 85°F (29°C) have been recorded during low tide conditions on hot summer days. Salinities within the lagoon are also generally similar to those of the ocean, with an average daily salinity of about 34 parts per thousand. Due to the lack of fresh water surface flows, there is no reason to expect fresh water dilution except near the mouth of Calleguas Creek and during rainfall events.

Within the SCB, most of the marine water pollution stems from municipal discharges originating on the mainland. Another potential source of water pollution offshore comes from the oil and gas development industry. As activity increases from offshore oil and gas development, the potential for discharge into the Sea Range also increases. In recent years, the increased frequency and extent of regional beach and shellfish-bed closures, coupled with decreases in local fishing catches, are taken as signs of declining water quality (NOAA 2009). However, due to the large diluting volume of the ocean and circulation within the SCB, as stated above, water quality in the nearshore area of Point Mugu is most dependent upon the presence of particulates and contaminants in the outflow from Mugu Lagoon.

Nearshore Bathymetry and Sediments

Bathymetry near Point Mugu drops off steeply into subsurface canyons, reaching depths greater than 2,200 ft (670 m) within 6 NM (11 km). The area that borders Point Mugu adjacent to the ocean is dominated by sandy beach habitat. The topography of the sand beaches is strongly influenced by wave conditions. The beaches, composed of fairly coarse sand, are relatively steep. The foreshore extends out to a water depth of about 10 to 12 ft (3 to 4 m), where the slope of the bottom decreases substantially. This marks the point of transition from beach into shallow shelf. Sand dunes are also present along most of the beaches (Navy 2002).

Fresh Water

NBVC Point Mugu is located in the southeast corner of the Oxnard Plain. Perennial fresh water streams in the Oxnard Plain consist of Calleguas Creek and its tributaries, Revolon Slough, and Conejo Creek, located in the upper reaches of the watershed. These streams drain an area of 380 mi^2 (984 km^2), including mountainous areas and level floodplains in the southern portion of the Oxnard Plain (see Figure 3.7-1). These streams ultimately discharge to and serve as the primary source of fresh water input to Mugu Lagoon. The fitness of the resources at Mugu Lagoon depends in part on the fresh water inflows from the Calleguas Creek watershed. The watershed has been largely converted to agriculture and more recently, to urban development. Along with these changes have come flood control structures, sedimentation, non-native plant species, contaminants such as pesticides, fertilizers, and heavy metals, and changes in the hydrologic regimes. Calleguas Creek perennial flows are largely from discharges permitted through the EPA's National Pollutant Discharge Elimination System, including agricultural and urban runoff and irrigation return flows. Mugu Lagoon is included on the EPA's Section 303(d) list of impaired water bodies because a number of constituent concentrations are exceeded. The most significant sources of impairment are generally considered to be nonpoint sources of toxic pollutants and nitrogen compounds. As a result of listing, and in accordance with CWA regulations, the LARWQCB was tasked with developing technical total maximum daily loads (TMDLs) that will result in the achievement of water quality standards. The Calleguas Creek watershed has TMDLs for nutrients, salts, metals, trash, and legacy pesticides; sediment toxicity and siltation are also identified as impairments. Benchmark conditions for nitrogen, temperature, and dissolved oxygen must also be met. (NBVC 2013)

At present, multiple Calleguas Creek watershed management projects seek to improve the quality of the water flowing into Mugu Lagoon. The Calleguas Creek Watershed Committee works to develop comprehensive solutions to habitat, water quality, erosion, sedimentation, and flooding problems within the watershed. The Calleguas Creek Watershed Management Plan addresses strategies for resource management and protection, with the following land use and water quality focus areas: water resources and water quality; habitat, natural resources, and recreation; flood protection and sedimentation; and public outreach and education. Projects consist of implementing land treatment programs, working with local farmers, and improvements on the streambeds and streambanks. (NBVC 2013)

The majority of NBVC Point Mugu is located within the Calleguas Creek 100-year flood zone. NBVC has taken measures to prevent flooding, including installation of flood barriers surrounding the base. Drainage ditches also contribute fresh water to the lagoon. The ditches that drain nearby agricultural land and portions of the base are subject to tidal influence. Three tide gates installed in Oxnard Drainage Ditch 2 and Oxnard Drainage Ditch 3 control saltwater intrusion that may flood the ditches and upstream farmland. Because mild slopes characterize most of the base, the velocity of surface water flow is slow except during major storms. Large duck ponds, which provide fresh water through culverts and subsurface flow, are located north of the western portion of the base. (NBVC 2013)

The western arm of Mugu Lagoon receives the majority of surface water runoff from storm water at NBVC Point Mugu and an Oxnard drainage ditch. The drainage ditch transports agricultural and storm water runoff from off-base sources. The gradual slope and slow currents in the drainage ditches that empty into the western arm generally limit the carrying capacity for the sediment load. However, the volume of sediment transported to the lagoon and ocean from drainage ditches is unknown. (NBVC 2013)

Figure 3.7-1 Surface Water Resources of the Oxnard Plain

The eastern arm of Mugu Lagoon receives limited fresh water input from the adjoining Laguna Peak and Point Mugu State Park to the north. Runoff from those areas flows through a series of culverts south of Highway 1. The eastern arm of the lagoon connects to the central basin via tidal channels and flats that are constantly changing with tides, storm flows, and location of the inlet. During floods, especially those associated with high tides, the marshes on the eastern side of the lagoon are inundated with fresh water. The volume of sediment carried into the lagoon from these runoff sources is unknown. (NBVC 2013)

San Nicolas Island

General Description

The Channel Islands are located in a region of variable mixing between the cold waters of the California Current and the warm nearshore waters of the California Countercurrent. SNI is located far enough offshore and to the south that it is subjected both to the warmer waters of the California Countercurrent and to the colder waters of the California Current. In general, the circulation patterns around the island are similar to the patterns of the two major currents. However, some localized currents and eddies are caused by the island's shape and orientation. (Navy 2002)

The coldest sea surface temperatures occur in March (monthly average 57°F [14°C]), while the warmest temperatures occur in September (66°F [19°C]). Consequently, marine biota of the island has been termed "intermediate" because both cold and warm water species occur at the island. The island is relatively isolated from the effects of human activities that typically occur in the nearshore environments of the mainland. The dry season occurs between May and September, and the wet season occurs between November and March, when SNI receives 87 percent of its total rainfall. The existing beneficial uses for water resources at SNI include navigation, contact water recreation, non-contact water recreation, commercial and sport fishing, shellfish harvesting, and preservation of terrestrial and marine habitats and rare, threatened, or endangered species. Fresh water resources include all surface water and groundwater at SNI. (Navy 2002)

SNI is part of Ventura County and is situated in Watershed 11, which also includes Anacapa, Santa Barbara, San Clemente, and Santa Catalina islands. Ocean waters surrounding SNI and Begg Rock to a distance of 1 NM (1.9 km) offshore or to the 300-ft (91-m) isobath, whichever is greater, have been designated as an ASBS based on their relatively pristine water quality. Discharges incidental to military RDAT&E of, and training with, guided missiles and other weapons systems, fleet exercises, small-scale amphibious warfare training, and special warfare training are allowed within the ASBS. (SWRCB 2012)

Nearshore Water Quality

The quality of ocean water in the immediate area of SNI is relatively pristine. Receiving waters at Blue Whale Cove, located approximately 7 mi (11.3 km) west of the Coast Guard Jetty drilling site represent an area potentially impacted by launch-pad runoff. These waters exceeded the reporting limit for hexavalent chromium (0.01 mg/L) for both the six-month median (0.002 mg/L) and daily maximum (0.008 mg/L) objectives of the Ocean Plan, but were below the instantaneous maximum objective (0.02 mg/L). No other significant concerns were detected within Blue Whale Cove's receiving waters or sediment. Residual chlorine was the only constituent that did not meet Ocean Plan objectives at Corral Beach, located approximately 1.5 mi (2.4 km) from the drilling site (NAVFAC 2007). SNI's distance

from both the mainland and oil and gas developments in the SCB, combined with the large diluting volume of the ocean and the shelves and basins near the mainland where many pollutants settle, ensures high water quality at the island.

Most of the marine water pollution within the SCB area stems from municipal discharges originating on the mainland. Another potential source of water pollution offshore comes from the oil and gas development industry. As activity increases from offshore oil and gas development, the potential for discharge into the Sea Range also increases. In recent years, the increased frequency and extent of regional beach and shellfish-bed closures, coupled with decreases in local fishing catches, are taken as signs of declining water quality (NOAA 2009). However, the distance of SNI from the mainland, the large diluting volume of the ocean, and the shelves and basins near the mainland where many pollutants settle, ensure high water quality at the island.

Nearshore Bathymetry and Sediments

The bathymetry surrounding SNI is irregular in shape. The island is a pinnacle that is surrounded by water depths that quickly slope to greater than 5,200 ft (1,600 m) within 10 NM (18.5 km) of the southeastern portion of the island, whereas a shelf exists to the northwest of the island that gradually slopes to 400 ft (120 m) over 18 NM (33.5 km). The subtidal area nearest the island is characterized by sand, bedrock, or boulder. (Navy 2002)

Fresh Water

No fresh water or drinking water sources are present in the proposed project areas. The nearest fresh water stream on SNI is Tule Creek, which is situated 5.4 mi (8.7 km) from the Coast Guard Jetty drilling site.

<u>Santa Cruz Island</u>

General Description

Prevailing northwest winds dominate the southern California region. The east-west orientation of the shore and the mountainous Channel Islands create a corridor which channels the wind patterns into a more easterly direction, resulting in a divergence over the center of the channel. This creates a wind drift of warmer surface waters towards the mainland coast and towards the northerly edge of the Channel Islands, especially SCrI. (SWRCB 1979)

Nearshore Water Quality

Water quality within the Santa Cruz ASBS is generally good because of the isolated location. However, oil and tar deposition from natural seeps and ship traffic is chronic. Surface seawater temperature around SCrI generally ranges from 55ºF (13ºC) in winter to 65ºF (18ºC) in summer. (SWRCB 1979)

Nearshore Bathymetry and Sediments

The shelf along the northern coast of SCrI falls sharply in two stages. The first flows to the floor of the Santa Barbara Basin, within 0.75 mi (1.25 km) from shore. The bottom depth of this reach is 165 ft (50

m), flattening out into a 2.5-mi- (4-km-) wide ledge. The second stage drops another 500 ft (150 m) to the basin floor within 4.25 mi (6.8 km) of the shoreline. (SWRCB 1979)

The shelf of the southern side of SCrI is wider and extends deeper due to the slope of the Santa Cruz Basin. The 330-ft (100-m) isobaths is 2.75 mi (4.4 km) from shore. At approximately 3 mi (4.8 km) from shore, the shelf drops to a water depth of 800 ft (240 m). At 5 mi (8 km) from the southern shore, the depth is about 4,000 ft (1220 m), and this grade continues downward to the bottom of the Santa Cruz Basin with a maximum depth of 6,200 ft (1,880 m). (SWRCB 1979)

Fresh Water

The largest watershed on SCrI is the Central Valley, which runs east-west and drains at the base of the isthmus at Prisoners Harbor. The island is bisected by a mountain ridge that forms steep slopes forming subdrainages subject to slope failures and leading to sedimentation in the valleys. There are many intermittent streams in the Central Valley and its subdrainages. There are also many fresh water seeps and springs throughout the island. Water quality has been collected on NPS lands on SCrI. In the past, livestock and feral pigs likely were attracted to the springs and streams and probably negatively affected water quality through the addition of wastes and sediments. Sheep, pigs, and cattle have been removed from the island; however the associated changes in conditions that have led to the sedimentation above natural rates are still a concern for water quality. (NPS 2002)

SCrI has three persistent wetlands located at Prisoners Harbor, Scorpion Canyon, and Smugglers Canyon. During the ranching period on SCrI, wetlands were affected by dredging, grading of streambeds, and backfilling (CPUC 2012). The Navy well site is located near the Prisoners Harbor area and supplies drinking water to the Navy Site, which is stored in a 30,000-gal (114,000-l) tank near Building 4.

Offshore Routes

General Description

The Sea Range straddles Point Conception, which is considered a major geographic feature that affects marine water resources. The shape of California's coastline south of Point Conception creates a broad ocean embayment known as the Southern California Bight (SCB). It encompasses the area from Point Conception south to the U.S. Mexico border and is influenced by two major oceanic currents: the southward flowing, cold-water California Current and the northward flowing, warm-water California Countercurrent. North of Point Conception, the marine waters are under the influence of the cold California Current. South of Point Conception, the marine waters are influenced by both the California Current and the northward flowing, warm water California Countercurrent. These currents mix in the bight and strongly influence patterns of ocean water circulation and temperatures. (SWRCB 1979)

Marine Water Quality

Surface temperatures of waters along the coast of the SCB range from approximately 54°F (12°C) in the winter to 70°F (21°C) in the summer. Surface water temperatures can show seasonal variation in association with upwelling, climatic conditions, and latitude. The marine environment has a high hydrogen ion (pH) buffering capacity due to the presence of dissolved elements, particularly carbon and hydrogen, which maintain a pH between 7.5 and 8.5. Surface waters are usually saturated or

supersaturated with dissolved oxygen as a result of photosynthetic activity and wave mixing. Dissolved oxygen levels at the surface fluctuate between 5.4 and 5.9 milliliters per liter (ml/L), while levels at depths below the surface remain more constant, between 0.4 and 0.6 ml/L. Major nutrients include dissolved nitrogen (dominated by nitrate), phosphates, and silicates. (Navy 2002)

The State of California designated 34 coastal regions under the 1972 California Ocean Plan as State Water Quality Protection Area (formally known as ASBS), in an effort to preserve these unique and sensitive marine ecosystems for future generations. There are four ASBS located within or adjacent to the Sea Range (Figure 3.7-2):

- Latigo Point to Mugu Lagoon: Ocean water within a line originating from Latigo Point (eastern boundary), following the mean high-tide line to a distance of 3,280 ft (1,000 m) offshore or to the 100-ft (30-m) isobaths, whichever is greater, to a point lying due south of Laguna Point (western boundary), which is near Surfer's Point (SWRCB 2012); and
- SNI and Begg Rock: Waters surrounding SNI and Begg Rock to a distance of 1 NM (1.9 km) offshore or to the 300-ft (91 m) isobaths, whichever is greater. At the SNI and Begg Rock ASBS, discharges incidental to military research; development, testing and evaluation of, and training with, guided missile and other weapons systems, fleet training exercises, small-scale amphibious warfare training, and special warfare training are allowed (SWRCB 2012).
- The Santa Cruz Island ASBS covers an area of 101,000 acres (40,900 ha) and is officially designated as the waters surrounding SCrI to a distance of 1 NM (1.9 km) offshore or to the 300-foot (91-m) isobaths, whichever is the greater distance. The California Current is the eastern boundary current of the North Pacific Gyre. Circulation in the southern California borderland and continental shelf region is dominated by a large, counterclockwise coastal eddy. The effect of this eddy is to recycle water originally derived from the California Current (SWRCB 1979).
- Santa Barbara and Anacapa Islands: Waters surrounding these two islands to a distance of 1 NM (1.9 km) offshore (SWRCB 2012).

Most of the marine water pollution within the SCB area stems from municipal discharges. The distance from the mainland, the large diluting volume of the ocean, and the shelves and basins near the mainland where many pollutants settle ensure high water quality in the Sea Range (Navy 2002).

Marine Bathymetry and Sediments

Much of the ocean floor in the northern portion of the SCB consists of the Santa Barbara, Santa Cruz, and Santa Monica Basins (Navy 2002). The Santa Barbara Basin has a gradual slope that reaches depths of 1,970 ft (600 m). The relatively wide and irregular Santa Monica Basin has two submarine canyons with depths exceeding 2,300 ft (1,500 m). The Santa Cruz Basin also has a submarine canyon with depths greater than 4,920 ft (1,500 m). A relatively shallow island shelf approximately 330 ft (100 m) deep surrounds the islands, usually extending from 3 to 6 NM (6 to 11 km) from the island coast. Ocean depths quickly increase to more than 12,000 ft (3,700 m) west of a ridgeline that runs parallel to the SCB, approximately 25 to 50 NM (31 to 93 km) southwest of the Channel Islands. Sediment types in these areas are generally composed of 35 to 85 percent fines (silts and clays) and 15 to 65 percent sand. There are no apparent trends in sediment distribution with respect to size, water depth, or distance offshore (Navy 2002).

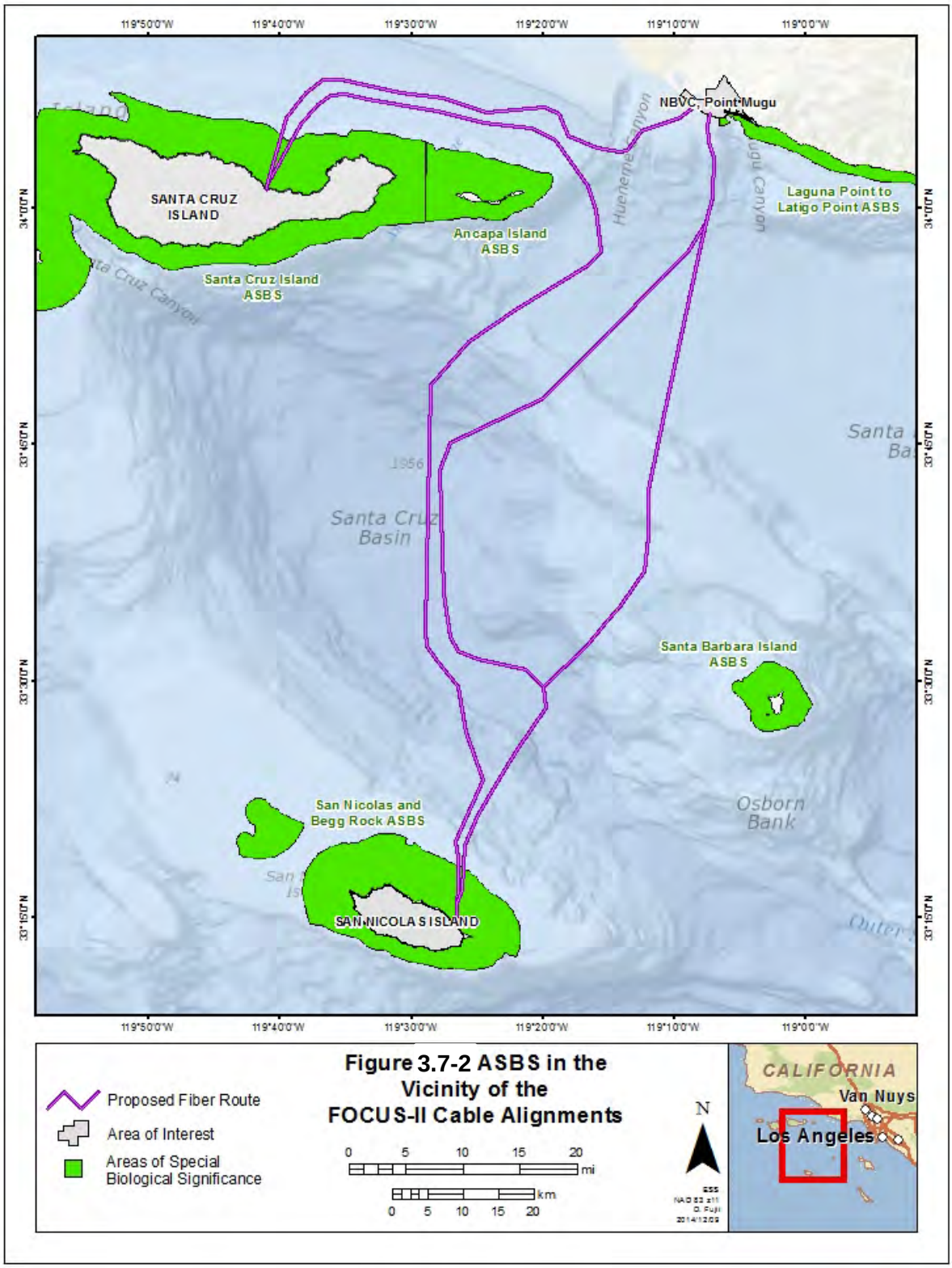

Figure 3.7-2 ASBS in the Vicinity of the FOCUS-II Cable Alignments

3.7.2 Environmental Consequences

3.7.2.1 Assessment Criteria

Proposed project activities were analyzed to determing with long-term irreversible changes to water chemistry, availability of fresh water supply, or overall water quality would occur. In addition, the potential impacts of any temporary water quality changes on living resources beyond those discussed in Section 3.2, *Biological Resources*, above.

3.7.2.2 Alternative 1 – Preferred Alternative

Marine Sediments and Water Quality and Sediments

Proposed project activities would not result in long-term changes to water chemistry (e.g., the pH, temperature, and dissolved oxygen levels), turbidity, or the amount of light in the water column within the project area, including the Latigo Point to Point Mugu ASBS, the SNI and Begg Rock ASBS, and the SCrI ASBS. Section 3.2, *Biological Resources*, discusses the potential biological impacts to the marine environment in detail.

Upon completion of drilling operations, an unavoidable release of drilling fluid would occur by seepage through fractures in the seabed and by pressure discharge when the drill bit penetrates the exit point. The drill pipe has an internal diameter of five in (13 cm), so the volume of material that could be released offshore due to hydrostatic pressure is up to 442 gal (1,671 l). In the unlikely event that the drill pipe fractures (a mechanical failure) at or near the lowest point in its trajectory and the drilling was near completion, the volume of mud contained in the HDD bore hole could migrate into the surrounding formation. This volume of material represents a worst-case release of up to 7,443 gal (28,174 l) into the surrounding geology at each HDD site. However, the drilling fluid would remain contained within the subsurface formation and would be unlikely to migrate to the surface or be released offshore. This volume would include approximately 27 ft^3 (less than 1 m^3) of cuttings. Bentonite clay used for directional drilling is a naturally occurring hydrated aluminosilicate composed of sodium, calcium, magnesium, and iron. Bentonite is derived from sediment deposits created by weathering of volcanic ash. The small amount of clay anticipated to exit the borehole is more dense than the surrounding sea water and will settle rapidly to the bottom. Neff (1987) concluded that “water column organisms will never be exposed to drilling fluids long enough and at sufficiently high concentrations to elicit any acute or sub-lethal responses...” Additionally, chronic tests of copepods, amphipods, bivalves and cod fry exposed to “water-based muds” at 10-103mg/l produced no observed effect (Kosheleva, et al. 1997). Therefore water-based bentonite clay mixture and cuttings from the seabed, it would be non-toxic to marine organisms or marine water quality. In addition, every reasonable effort would be made to minimize the unavoidable discharge of drilling fluid. All procedures in the project-specific spill prevention plan would be followed. The Navy will coordinate with the California SWRCB to determine whether the Navy will need to apply for an exception of the California Ocean Plan prohibition against direct discharges of waste to an ASBS.

In addition to release at the exit point, drill fluid may occasionally migrate to the ocean floor surface through fissures in the geologic formation. This phenomenon is called “frac-out.” By monitoring the mud system, HDD personnel can determine the correct properties and pressures needed for different formations. Loss of circulation due to frac-outs can be reduced or eliminated through implementation of proper HDD controls and procedures. Prior to commencement of drilling operations, the construction

contractor will develop a bentonite spill prevention plan (or frac-out plan) to establish the monitoring and response criteria that will minimize the release of drilling materials during the HDD process.

A two-part acrylic epoxy grout would be used for the cable anchor holes (1 in [2.5 cm] in diameter and 20 in [51 cm] deep) in the seabed. The volume of grout required would be approximately 7 in^3 (113 cm^3) per hole. It is estimated that approximately 200 to 500 holes could be required for stabilization purposes, resulting in a total of between 0.8 and 2.0 ft^3 (between 22,900 and 57,400 cm^3) of grout. This mixture would be placed in each hole; however, if some were to leak out, it is a fast-curing substance that solidifies within seconds after leaving the caulking gun and would not react with ocean water.

There would be a temporary increase in turbidity in the water columns near the exit points. The turbidity would be expected to settle and dissipate in a short amount of time. Only minimal sediment disturbance would occur along the sandy-bottom areas of the offshore cable alignment while the cable is lowered from the marine vessel and during plowing operations, and the disturbed sediments would quickly settle back to the bottom. No permanent source of turbidity would be associated with proposed cable maintenance and future repairs. Therefore, implementation of Alternative 1 would have no significant impact on marine sediments and water quality and would yield no significant harm to marine sediments and water quality within the U.S. EEZ as defined by EO 12114.

Fresh Water

Excess drilling fluid (drilling mud and cuttings) not recycled into the HDD borehole would be temporarily stored in the catch basins and then disposed at offsite locations. Any potential fuel or oil spill at the construction sites would be cleaned up in accordance with standard procedures for similar activities at Navy sites. The drilling fluid is non-toxic and would not affect water quality if it were to spill out of the catch basins. All procedures in the project-specific spill prevention plan would be followed. There are no groundwater wells, perennial streams, or wetlands in the vicinity of the Coast Guard Jetty site. However, there are wetlands in the near vicinities of the Charlie Pad and Prisoners Harbor drilling sites. Point Mugu and SNI fall within the LARWQCB, and SCrI is located within the CCRWQCB. The Navy will submit water quality certification applications to the LARWQCB and the CCRWQCB in compliance with Section 401 of the CWA. The Navy will also submit permit applications to the USACE in compliance with Section 404 of the CWA and Section 10 of the River and Harbors Act (under USACE Nationwide Permit 12). The Navy will coordinate with CDFW to determine if a Lake or Streambed Alteration Agreement is required.

If ground disturbance at the NBVC Point Mugu or NBVC SNI sites is greater than 2,500 ft^2 (232 m^2), the construction activities must comply with the requirements of the Phase II NPDES MS4 General Permit 2013-0001-DWQ. As the ground disturbance at SCrI would exceed one acre (0.40 ha), a storm water pollution prevention plan must be submitted to the SWRCB, and a storm water construction permit (2009-009-DWQ with amendments) must also be obtained. This plan will include erosion prevention and sediment control measures as well as other applicable BMPs that will be implemented during the trenching activities on Navy Road on SCrI. Through implementation of these BMPs and control measures Alternative 1 would have no significant impact on fresh water resources.

Mitigation Measures

Implementation of Alternative 1 would not result in significant impacts to marine sediments or water quality; therefore no mitigation measures are proposed or required.

3.7.2.3 Alternative 2

Under Alternative 2, actions taken at NBVC Point Mugu, NBVC SNI, and SCrI would be the same as Alternative 1. The same BMPs and spill prevention plans would be implemented. Therefore, implementation of Alternative 2 would have no significant impact on marine sediments or water quality and would yield no significant harm to marine sediments and water quality within the U.S. EEZ as defined by EO 12114.

Mitigation Measures

Implementation of Alternative 2 would not result in significant impacts on marine sediments or water quality; therefore, no mitigation measures are proposed or required.

3.7.2.4 Alternative 3

Under Alternative 3, actions taken at NBVC Point Mugu, NBVC SNI, and SCrI would be very similar to Alternative 1. The same BMPs and spill prevention plans would be implemented. Therefore, implementation of Alternative 3 would have no significant impact on marine sediments or water quality and would yield no significant harm to marine sediments and water quality within the U.S. EEZ as defined by EO 12114.

Mitigation Measures

Implementation of Alternative 3 would not result in significant impacts on marine sediments or water quality; therefore, no mitigation measures are proposed or required.

3.7.2.5 Alternative 4

Under Alternative 4, actions taken at NBVC Point Mugu and NBVC SNI would be very similar to Alternative 1. The same BMPs and spill prevention plans would be implemented. There would be no activities at SCrI. Therefore, implementation of Alternative 4 would have no significant impact on marine sediments or water quality and would yield no significant harm to marine sediments and water quality within the U.S. EEZ as defined by EO 12114.

Mitigation Measures

Implementation of Alternative 4 would not result in significant impacts on marine sediments or water quality; therefore, no mitigation measures are proposed or required.

3.7.2.6 Alternative 5 – The No-Action Alternative

Under the No-Action Alternative, the proposed installation of FOCUS-II would not occur and existing conditions would remain unchanged. No significant impacts to marine sediments and water quality would occur under the No-Action alternative.

Mitigation Measures

Implementation of either the No-Action Alternative would not result in significant impacts on marine sediments or water quality; therefore, no mitigation measures are proposed or required.

3.8 NOISE

3.8.1 Affected Environment

3.8.1.1 Definition of Resource

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, diminishes the quality of the environment, or is otherwise annoying. Response to noise varies by the type and characteristics of the noise source, distance between source and receptor, receptor sensitivity, and time of day. Noise receptors include humans as well as terrestrial and marine animals.

In-Air Noise

The physical characteristics of sound include its level, frequency, and duration. Sound is commonly measured with instruments that record instantaneous sound levels in decibels (dB), which are based on a logarithmic scale (e.g., a 10-dB increase corresponds to a 100-percent increase in perceived sound). A-weighted sound level measurements (dBA), which de-emphasize low and high frequencies and emphasize mid-range frequencies, are used to characterize sound levels that are heard especially well by the human ear. Average noise exposure over a 24-hour period is often presented as a community noise equivalent level (CNEL). The CNEL is the energy-averaged sound level of all sound exposure level values within a 24-hour period, with a 10-dB penalty assigned to noise events occurring between 10:00 PM and 7:00 AM to compensate for the increased annoyance associated with the occurrence of nighttime noise events. In addition, applications of the CNEL metric to measure noise levels in California include an additional 5-dB annoyance penalty for nighttime occurrences (Title 21, California Code of Regulations, §5001).

Underwater Noise

The units for sound in air and those for sound in water are different. The standard for atmospheric sound is dB with respect to 20 micro-Pascals (dB re 20 µPa); the standard for underwater sound is dB re 1 µPa. To make comparisons for noise levels, 26 dB must be subtracted from water-borne levels (re 1 µPa) to roughly estimate atmospheric noise levels (re 20 µPa) (Natural Resources Defense Council [NRDC] 1999). In this EA/OEA, all references to underwater sound are made in dB re 1 µPa. Sound travels as a series of disturbances compressing and relaxing the medium it travels through, whether air or water. The frequency of a sound wave is the number of disturbances, or cycles, that pass a fixed point per second. Cycles per second are referred to in units of hertz (Hz) or kilohertz (kHz, or 1,000 Hz). Low-frequency sound is considered to be below 1 kHz and is the type of noise produced by large ships and the vocalizations of large whales. Most marine mammals appear to hear or react to low-frequency sound (NRDC 1999). Mid-frequency noise is considered to be within the range of 1 to 10 kHz and is produced by marine mammals (primarily odontocetes, or toothed whales), precipitation, and tactical sonar. High-frequency noise is above 10 kHz and is produced by snapping shrimp, echolocation of marine mammals, ship depth finders, and fish-finding sonar.

3.8.1.2 Regulatory Setting

Noise standards and guidelines have been established at the federal, state, and local government levels to protect people from potential hearing damage as well as other impacts (i.e., annoyance) that can disrupt activities or alter quality of life. DoD lands are required to comply with federal noise standards and

guidelines, such as those set by the Noise Control Act of 1972, as amended (42 U.S.C. §§ 4901 *et seq.*). The Noise Control Act of 1972, as amended, provides a framework for the coordination of federal noise control research, establishes noise emission standards, and provides information to the public. Although the DoD is not subject to state and local noise ordinances, these ordinances are considered when determining the significance of a noise impact in order to avoid or minimize impacts to surrounding land uses, including sensitive receptors.

In accordance with DoD Instruction 4165.57, *Air Installations Compatible Use Zones (AICUZ)*, military installations with airfields are required to establish AICUZ Programs. The goals of the AICUZ Programs are to:

- Protect the health, safety, and welfare of those living and working near military fields; and
- Preserve the military flying mission.

Under the AICUZ Program, the DoD identifies noise zones and accident potential zones as planning tools for local planning agencies. The Federal Aviation Administration and DoD also encourage local communities to restrict development or land uses that could endanger aircraft in the vicinity of the airfield, including lighting (direct or reflected) that would impair pilot vision; towers, tall structures, and vegetation that penetrate navigable airspace or constructed near the airfield; uses that generate smoke, steam, or dust; uses that attract birds, especially waterfowl; and electromagnetic interference with aircraft communication, navigation, or other electrical systems.

3.8.1.3 Existing Conditions

<u>Point Mugu</u>

Point Mugu is surrounded by lands designated generally as residential, commercial, industrial, community services, open space, agriculture, and undeveloped. These surrounding areas are subject to noise from civilian and military aircraft operations, automobile traffic, and construction activities. The Point Mugu airfield supports an annual total of about 36,000 aircraft operations (NBVC 2011). Aircraft noise tends to be the dominant noise source in areas immediately adjacent to airfields and beneath primary flight corridors, although aircraft noise is typically also limited to these areas since it becomes indistinguishable as aircraft gain altitude. The off-base acreage exposed to CNEL values above 65 is about 1,800 acres (730 ha); most of this area is located under the approach and departure routes to the north (onshore) and south (offshore) of the base, although a portion also occurs along the western base boundary. Noise levels and land use compatibility in these areas are addressed in the AICUZ program. Due to the frequent loop patterns around the airfield, all project sites at Point Mugu are located within the 65-70 dB CNEL noise contour, and the area just offshore and south of the project sites is within the 70-75 dB CNEL noise contour.

Missile and target launches at Point Mugu are conducted at the Building 55 Launch Complex, Bravo Pad, and Charlie Pad. Measured missile launch noise durations at Building 55 range from 0.56 seconds to 2.11 seconds. Peak noise levels range from 161 dB re 20 µPa at 50 ft (15 m) to 115 dB re 20 µPa at 3,000 ft (900 m).

San Nicolas Island

Commuter-type aircraft use the SNI airfield several times each day, transporting personnel to and from Point Mugu. Since no year-round human residents occupy areas near the airfield, AICUZ studies have not been performed and baseline noise conditions are assumed to be dominated by F/A-18 aircraft activity. The highest noise levels (80-85 dB CNEL, on an average busy day) are found on or immediately adjacent to the runway. Noise contours would be similar to those of Point Mugu, although they would also be reduced due to the limited number of flights occurring at the island.

Aircraft overflights in support of test operations also occur at various locations away from the airfield at SNI. An F/A-18 overflight for a captive-carry sortie, flown 500 knots (930 km/hr) produced an A-weighted sound pressure level (SPL) at 500 ft (150 m) of 107 dB re 20 μPa. The A-weighted SEL was 109 db re $(20\ \mu Pa)^2 s$.

Santa Cruz Island

The existing ambient noise sources of the Channel Islands National Park, including SCrI, include noise from outdoor activities, ranger stations, campgrounds, visitors, research staff, and residents. The noise sources include people talking, equipment operations, wildlife, recreational activities, and waves crashing. Ambient noise levels typically range from 20 to 70 dBA (California Public Utilities Commission [CPUC] 2012).

3.8.2 Environmental Consequences

3.8.2.1 Assessment Criteria

The primary factor considered in determining the significance of noise effects includes the extent or degree to which implementation of the proposed action would affect baseline noise environments. Both in-air and underwater noise effects are addressed in this section.

Impacts due to vibrations associated with HDD and other construction activities are not analyzed in this EA/OEA, as the vibrations generated by the construction equipment would be similar to current operations. To provide points of reference, Table 3.8-1 provides typical vibration levels for construction equipment at a distance of 33 ft (10 m). As shown in the table, vibration levels due to drilling rig operations are generally one quarter of back hoe operations.

Table 3.8-1 Typical Vibration Levels for Construction Equipment

Equipment	Peak Particle Velocity at 10 m (in mm/sec)
Backhoe	2.1
Excavator with hammer attachment	6.0
HDD drilling rig	0.5

Source: RTA 2001

3.8.2.2 Alternative 1 – Preferred Alternative

In-Air Noise

Implementation of the proposed action would involve temporary increases in noise levels but would not involve any new, permanent sources of noise at Point Mugu, SNI, and SCrI. Noise generated would be

representative of construction activities and operation of heavy equipment such as a drill rig and portable crane. Use of such equipment would generate noise greater than the ambient noise levels. Table 3.8-2 provides a summary of typical noise levels associated with construction equipment at a distance of 50 ft (15 m). Construction noise typically attenuates at a rate of approximately six dB per doubling distance. Therefore truck noise level of 88 dB at 50 ft would result in a noise level of approximately 82 dB at 100 ft (30 m) and 76 dB at a distance of 200 ft (61 m) (FTA 2006).

A drill rig would generate about 80 to 100 dBA while a portable crane would generate a noise level of approximately 83 dBA (sound levels at a distance of 50 feet [15 m]). Average noise levels are not known for the use of the specific construction equipment over an extended period of time. Thus, comparison of these noise levels with averaged aircraft-generated noise associated with airfield activities (see Section 3.8.1.3) is not presented here. However, the drilling activities would be temporary, lasting about 30 days (including setup and demobilization time). Noise from these activities would be similar to occasional construction vehicle and industrial noise that occurs at or near the drilling sites. Although noise levels in the vicinity of the project area would increase temporarily, they would return to their ambient levels following completion of drilling and trenching. Therefore, noise associated with the proposed action would not substantially change the in-air noise environment at the FOCUS-II project sites.

Table 3.8-2 Typical Noise Levels of Construction Equipment

Equipment Type	Noise Level (dBA at 50 ft)
Truck	88
Backhoe	80
Bulldozer	85
Grader	85
Crane (movable)	83
Pump	67
Generator	81
Compressor	72
Pneumatic tools	85
Jack hammers and rock drills	88

Source: FTA 2006.

Underwater Noise

Underwater noise levels produced by the drilling machinery itself and by the drill bit as it passes through the sub-bottom rock are likely to be quite low. The borehole would be only 8 in (20 cm) in diameter, and most of it would be drilled from 20 to 50 ft (6 to 15 m) below the ocean bottom. In comparison, the bore holes made by oil drilling rigs are much larger. Based on an analysis by Malme and Mlawski (1979), underwater noise levels from drill rigs on natural and artificial islands in the Beaufort Sea are low. Noise is transmitted very poorly from the drilling machinery through land into water. Most noise produced by drilling rigs on two gravel islands was below 200 Hz in frequency and lessened to ambient levels within about 0.9 mi (1.5 km) (Malme and Mlawski 1979). Noise levels at distances as close as 1,476 ft (450 m) from two man-made islands in water 39-49 ft (12-15 m) deep were very low and comparable to median ambient levels expected for calm sea states (Davis et al. 1985; Johnson et al. 1986). Drilling produced underwater with median broadband (20-1,000 Hz) levels at 0.3 mi (0.5 km) were 8-10 dB higher.

Broadband received noise levels at 328 ft (1,000 m) from a drill rig, while drilling on an artificial island were about 90 to 100 dB re 1 μPa (Blackwell and Greene 2002).

Sound measurements have also been made for large boring machines with rotating cutter heads that are used to drill tunnels for undersea roads, railways, and sewage outfalls. Malme and Krumhansl (1993) measured sounds in the water above a 50-head Robbins machine boring a tunnel 26 ft (8 m) in diameter that was 262 ft (80 m) below the ocean bottom. Measurements and modeling showed that the combination of sound spreading outward and also being absorbed by the rock resulted in machine noise levels similar to those of normal harbor traffic sources. At a distance of 0.9 mi (1.5 km), received broadband sound levels were about 138 dB re 1μPa.

The peak source level for drilling activities is related to the force applied to the cutter head (Ross 1976; Malme and Krumhansl 1993). Thus, it is expected that the noise produced by the drilling of a 9-in (23-cm) hole would be substantially below that produced by an oil well drilling operation and very much below that produced by a large tunnel boring machine.

The SPL of the spectrum for hydraulic drills that would likely be used to install the seafloor bolts has been measured from about 10 hertz (Hz) to 40 kilohertz (kHz) by several studies (Navy 2003; John J. McMullen 1984). The greatest SPLs occur between 1 kHz and 6.5 kHz. At these frequencies, the mean SPL reported 169 decibels (dB) re: 1 μPa at 6 ft (1.8 m) from the drill. However, more recent studies have reported somewhat lower SPLs. A study by Health and Safety Executive noted the sound pressure level from a Stanley hand drill underwater of 159 dB re 1μPa at 1 m (Anthony, Wright, and Evans 2009). A 2004 review of offshore wind farm-related underwater noise sources reported an average for a variety of hand-held tools of 161 dB re 1μPa at the source (Nedwell and Howell 2004). A recent environmental impact assessment reported that rock socket drilling and drilling for the installation of large piles showed loudest measurement of 163 dB re 1μPa at the source (Nedwell et al. 2003; Ward 2012). Given the information in these reports, the Navy will assume an approximate level of 163 dB re 1μPa at the source for the hand drills to be used for installing the seafloor bolts.

The hydraulic drill is expected to produce sound that has no physical effects on marine mammal hearing, but can be greater than 120 dB re: 1 μPa. The hydraulic drill will be used in the presence of people and operating equipment and vessels. The hydraulic drill would be used for short, punctuated periods—several minutes at a time—instead of a sustained period of time.

Therefore, noise associated with the proposed action would not substantially change the underwater noise environment near the HDD exit point. Although perceptible noise would be generated by the HDD, these noise levels would be minimal and would return to their ambient levels upon completion of HDD activities.

Therefore, implementation of Alternative 1 would have no significant impact on the in-air and underwater noise environments.

<u>Mitigation Measures</u>

Implementation of Alternative 1 would not result in significant impacts to the in-air or underwater noise environments of the Sea Range; therefore no mitigation measures are proposed or required.

3.8.2.3 Alternative 2

Noises generated by implementation of Alternative 2 would be identical to Alternative 1. Noises generated under these alternatives would not substantially change the in-air and underwater environments near the FOCUS-II project sites. Therefore, implementation of Alternative 2 would have no significant impact on the in-air and underwater noise environments.

Mitigation Measures

Implementation of Alternative 2 would not result in significant impacts to the in-air or underwater noise environments of the Sea Range; therefore no mitigation measures are proposed or required.

3.8.2.4 Alternative 3

Noises generated by implementation of Alternative 3 would be nearly identical to Alternative 1. Noises generated under these alternatives would not substantially change the in-air and underwater environments near the FOCUS-II project sites. Therefore, implementation of Alternative 3 would have no significant impact on the in-air and underwater noise environments.

Mitigation Measures

Implementation of Alternative 3 would not result in significant impacts to the in-air or underwater noise environments of the Sea Range; therefore no mitigation measures are proposed or required.

3.8.2.5 Alternative 4

Noises generated by implementation of Alternative 4 would be very similar to Alternative 1. Noises generated under these alternatives would not substantially change the in-air and underwater environments near the FOCUS-II project sites. No impacts would occur at SCrI. Therefore, implementation of Alternative 4 would have no significant impact on the in-air and underwater noise environments.

Mitigation Measures

Implementation of Alternative 4 would not result in significant impacts to the in-air or underwater noise environments of the Sea Range; therefore no mitigation measures are proposed or required.

3.8.2.6 Alternative 5 – The No-Action Alternative

Under the No-Action Alternative, the proposed installation of FOCUS-II would not occur and existing conditions as described in Section 3.8.1.3 would remain unchanged. No significant impacts to the in-air or underwater noise environments would occur under the No-Action alternative.

Mitigation Measures

Implementation of the No-Action Alternative would not result in significant impacts to the in-air or underwater noise environments of the Sea Range; therefore no mitigation measures are proposed or required.

3.9 SAFETY

3.9.1 Affected Environment

3.9.1.1 Definition of Resource

Safety is defined as the protection of workers and the public from hazards. The total accident spectrum encompasses not only injury to personnel, but also damage or destruction of property or products. For worker safety, the boundary of the immediate work area defines the region of influence. For public safety, the region of influence varies depending on the nature of the operation; this area may extend for miles beyond the source of the hazard.

The primary safety issues associated with the proposed action include those inherent to construction projects including operation of heavy equipment, trenching and confined space, and proper use of personal protective equipment. The safety policy of NAWCWD is to take every reasonable precaution in the planning and execution of all operations that occur on the Sea Range, NBVC Point Mugu, SNI, and SCrI to prevent injury to people and damage to property. This involves implementing extensive measures for risk mitigation as well as increased range control in the areas determined to have the highest risk to public safety.

3.9.1.2 Regulatory Setting

The Occupational Safety and Health Administration (OSHA) is responsible for protecting worker health and safety in non-military workplaces. Relevant regulations are found at 20 C.F.R. § 1910. Protection of public health and safety is a responsibility of the USEPA as mandated through a variety of laws, including the Resource Conservation and Recovery Act (42 U.S.C. §§ 6901 et seq.); the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. §§ 9601 et seq., Sections 101[14] and 101[33]) and the Superfund Amendments and Reauthorization Act of 1986, (Public Law 99-499); the CWA; and the CAA. Additional safety responsibilities are mandated by the Department of Transportation, whose regulations can be found at 49 C.F.R. Parts 300-399.

The sections below provide an overview of existing safety and occupational health policies and procedures in place at the Sea Range. Key among these directives are OPNAVINST 5100.23G, *The Navy Safety and Occupational Health Program Manual* (30 Dec 2005) and DoD Directive 3200.11, *Use, Management, and Operation of Department of Defense Major Range and Test Facilities* (27 December 2007).

3.9.1.3 Existing Conditions

Sea Range safety policy, procedures, and guidance are covered in NAVAIR Instruction 3700.3, *Range Safety Policy* (NAVAIR 2007). This document defines range safety requirements, criteria, the safety planning process, and operational procedures. Although the Commander of NAWCWD has the ultimate responsibility for range safety, the authority for execution of these safety programs is delegated to the Sea Range Safety Officer in the Range Safety Office.

The Building 811 site is located within the explosive safety quantity distance (ESQD) arc of a nearby storage bunker. The Charlie Pad site has potential to fall within ESQD arcs of operations conducted at

nearby facilities. As such, the construction activities at these landing sites would be subject to explosives safety site approval.

Public access and proximity to the Sea Range is a principal safety consideration since most of the waters of the Sea Range are open to the public. NAWCWD controls the 36,000 mi^2 (93,200 km^2) of SUA associated with the Sea Range. In addition, the airspace over the Point Mugu airfield, beach, and to 3 NM (5.6. km) offshore is a Restricted Area, and non-participating aircraft are precluded from entering this space.

Access to SNI is strictly controlled. Access is granted for military-related activities and for pre-approved, non-military users, primarily for RDAT&E purposes. Three surface restricted water areas are located around SNI: Alpha, Bravo, and Charlie (Figure 3.6-1). In addition, NAWCWD has established two airspace Restricted Areas over SNI that extend 3 NM (5.6 km) around the island. The two areas are divided by a line that extends from the north side to the south side of SNI where the Bravo boundaries intersect the shorelines; they extend from the surface to 100,000 ft (30.5 km).

Members of the public can access SCrI via private and concession operated boats. Public access to SCrI is limited to the eastern portion of the island, which includes the Prisoners Harbor area and Navy Road. The western nine-tenths of the island are owned by TNC, and public access is not allowed without approval. Personal vehicles are not allowed on SCrI; only government personnel or approved drivers are allowed to operate vehicles on the island.

3.9.2 Environmental Consequences

3.9.2.1 Assessment Criteria

The potential impacts from the Proposed Action were analyzed by considering any impacts associated with human health and safety. This analysis examines how the proposed activies would impact public health and safety and worker health and safety by contact with contaminated materials, ordnance, and explosives safety arcs.

3.9.2.2 Alternative 1 – Preferred Alternative

The safety of members of the public would be ensured through the implementation of public access measures described in the existing conditions section above. Construction activities would be in accordance with Navy, NAWCWD, and NBVC regulations and plans. Construction contractors will develop site-specific safety plans, including procedures for job hazard analysis, vehicle and equipment maintenance, and proper use of personal protective equipment. These documents will be developed for each phase of construction, including the offshore cable laying operations. A rescue plan is required for all water operations, with specifications for the retrieval and rescue of offshore personnel. All personnel on the construction sites will be briefed on the safety plans.

NAWCWD will coordinate with NBVC and will apply for explosive safety site approval as needed. This approval application would be subject to review by the Naval Ordnance Safety and Security Activity (NOSSA). Where applicable, construction activities would be conducted in compliance with limitations and restrictions detailed in the explosive safety site approval process. These measures could include personnel training, maintaining an appropriate distance from explosive materials, as well as other measures identified through the site approval coordination. Additionally, cable-laying vessels will

communicate with other mariners in the area regarding the offshore cable installation activities, requesting that boats maintain a safe distance from the cable-laying vessel and cable being installed. Therefore, implementation of Alternative 1 would have no significant impacts on the safety of personnel or members of the public.

Mitigation Measures

Implementation of Alternative 1 would result in no significant safety impacts to the public or personnel. Therefore, no mitigation measures are proposed or required.

3.9.2.3 Alternative 2

The safety impacts to the public and personnel associated with Alternative 2 would be identical to those of Alternative 1. Therefore, implementation of Alternative 2 would have no significant impacts on the safety of personnel or members of the public.

Mitigation Measures

Implementation of Alternative 2 would result in no significant safety impacts on the public or personnel. Therefore, no mitigation measures are proposed or required.

3.9.2.4 Alternative 3

The safety impacts to the public and personnel associated with Alternative 3 would be nearly identical to those of Alternative 1. Therefore, implementation of Alternative 3 would have no significant impacts on the safety of personnel or members of the public.

Mitigation Measures

Implementation of Alternative 3 would result in no significant safety impacts on the public or personnel. Therefore, no mitigation measures are proposed or required.

3.9.2.5 Alternative 4

The safety impacts to the public and personnel associated with Alternative 4 would be very similar to those of Alternative 1, with no impacts at SCrI. Therefore, implementation of Alternative 4 would have no significant impacts on the safety of personnel or members of the public.

Mitigation Measures

Implementation of Alternative 4 would result in no significant safety impacts on the public or personnel. Therefore, no mitigation measures are proposed or required.

3.9.2.6 Alternative 5 – The No-Action Alternative

Under the No-Action Alternative, no FOCUS-II construction and installation activities would occur. Therefore, no significant safety impacts on the public or personnel would occur.

Mitigation Measures

Implementation of the No-Action Alternative would not result in significant safety impacts on the public or personnel. Therefore, no mitigation measures are proposed or required.

3.10 TOPOGRAPHY, GEOLOGY, AND SOILS

3.10.1 Affected Environment

3.10.1.1 Definition of Resource

Geological resources are generally defined as the geology, soils, and topography of a given area. The geology of an area includes bedrock materials and mineral deposits. Soil refers to unconsolidated earthen materials overlying bedrock or other parent material. Topography is typically described with respect to the elevation, slope, aspect, and surface features found within a given area.

3.10.1.2 Existing Conditions

Point Mugu

Point Mugu is situated on the southern portion of the Oxnard Plain, a low-lying, near-level area with a very slight overall upward trend toward the north. The Oxnard Plain is composed largely of floodplain and marine sedimentary deposits. Unconsolidated sediments underlie Point Mugu to a water depth of 1,500 ft (460 m). Sedimentary deposition in the form of fluvial (river), tidal, and beach processes continue to dominate the geologic setting of Point Mugu. Surface elevations at Point Mugu have an average upward slope of approximately one ft (0.3 m) of elevation per 500 ft (1 m per 500 m) of distance from the tidal flats surrounding Mugu Lagoon. Most of the land within Point Mugu is less than 10 feet (3 m) above mean sea level (msl). The nearshore environment is dominated by sandy beaches, the topography of which is strongly influenced by ocean wave and wind action. (Navy 2002)

The soils at Point Mugu generally fall into four categories: fill material, coastal beach sands, tidal flats, and the loamy sands and silty clay loams typical of the Oxnard Plain. Fill material constitutes a large portion of the base soils, but its properties are not well documented. Most of the fill was dredged out of Mugu Lagoon and is presumed to have properties similar to the other soils at Point Mugu. Generally, soils at Point Mugu exhibit poor drainage and slow runoff characteristics, which contribute to ponding and occasional flooding. The erosion hazard is slight, except for the coastal beaches (Navy 2002). The three alternative landing sites are located in tidal flat soils, with coastal beach sands between the drilling sites and the shoreline. (Navy 2002)

San Nicolas Island

SNI is a mesa with a gentle downward slope on the north side, and a steep downward slope on the south side. The long axis of the island is oriented northwest-southeast. The average surface elevation is 500 ft (152 m) above msl, with a maximum elevation of 908 ft (277 m) above msl. The most notable geographic feature of SNI is a series of well-defined marine terraces that are visible on the north side of the island (Navy 2002). Elevations of the terraces range from below sea level to approximately 900 ft (274 m) above msl. Topography on the island is further shaped by surface water runoff to the ocean. The ridgeline between the north and south sides of the island creates a north-south drainage divide for most of the length of the island. The steep southern slopes are deeply incised by the V-shaped canyons of ephemeral drainages. On the broader northern slopes, runoff creates steep walled gullies on the hillsides before spreading out on the marine terraces into indistinct channels among the dunes. The northwestern portion of the island also contains areas of dune topography with elevations in the range of 100 to 200 ft (30 to 60 m) above msl. (Navy 2002)

The SNI soils are predominantly sedimentary in origin with sandstone as their major constituent; the soils also tend to contain a large concentration of ocean salts. These soils are composed of wind-deposited, quartzitic sands that are highly prone to both water (from coastal waves and alluvial processes) and wind erosion. Coast Guard Beach and its vicinity (including the proposed drilling site and staging area) are characterized by wide, previously disturbed beachfronts. The existing SNI landing site and the HDD site on the south side of SNI are located in coastal beach sands. The sand at these drilling sites is coarse with little rock.

Santa Cruz Island

SCrI is the largest of the four northern Channel Islands (Santa Cruz Island, Anacapa Island, Santa Rosa Island, and San Miguel Island). These four islands represent the south-westernmost expression of the Transverse Mountain Range. SCrI has a distinctive coastal geometry, including a thin low-elevation "neck" connecting the western mountains to the eastern mountains. The island has a significantly longer north-south axis in the west, with the exception of a thin peninsula extending off its northwest corner.

The island is bisected by the Santa Cruz Island Fault. This left lateral strike slip fault bounds a prominent strike valley in the central and eastern portions of the island and shows abundant evidence for late Quaternary slip (Pinter et al. 1998). Geologic units exposed south of the fault consist of pre-Jurassic metamorphic rocks and Tertiary volcaniclastic rocks. The geology north of the fault is dominated by two Miocene formations: the Santa Cruz Island Volcanics and the Monterrey Formation (Weaver and Meyer 1969). Diablo Peak rises to an elevation of 2,450 ft (747 m) and is part of the translated terrain, aligning with the peaks of the northern Channel Islands. These peaks are a submerged western extension of the Santa Monica Mountains.

SCrI soils predominantly range from shallow, to deep, to bedrock and are loamy to clayey in texture (argixerolls). Heavy clay soils with high shrink/swell characteristics (vertisols) also occur on the island. On the east end of the island, portions of the Monterey formation are chalky in nature as they are composed largely of calcium carbonate. When occurring on slopes greater than 15 percent, vertisols are prone to piping and slumping, with sinkholes developing in some areas. The majority of the Monterey shale on SCrI is siliceous and weathers into loamy soils lacking high shrink/swell characteristics. (Pinter et al. 1998)

The proposed landing site and the SCrI soils between Prisoners Harbor and the Navy Site are in the isthmus region of the island and are predominantly comprised of Monterey shale. This includes the roads connecting the Navy Site to the Prisoners Harbor. (NPS 2015)

3.10.2 Environmental Consequences

3.10.2.1 Assessment Criteria

The protection of unique geological features, minimization of soil erosion, and changes to sediment quality are considered when evaluating the potential impacts of an action on geological resources. Generally, geological resource impacts can be avoided or minimized if proper construction techniques, erosion control measures, and structural engineering components are incorporated into project design.

3.10.2.2 Alternative 1 – Preferred Alternative

Point Mugu

At the HDD sites, there would be temporary disturbance to the soils at the previously disturbed sites, near Building 811 and Charlie Pad. Proposed construction activities include:

- Excavation for purposes of anchoring the drill rigs and creating a catch basins for cuttings;
- Site grading to create flat staging areas for drilling; and
- Backfilling the anchor holes and catch basins upon completion of drilling operations.

These activities could temporarily increase erosion on the sandy soils in the vicinity of the drilling sites. However, erosion would be minor, as standard erosion control measures would be implemented. The anchor holes and catch basins would be backfilled with original soils upon completion of drilling operations. Drilling operations would be temporary, lasting approximately 30 days at each site.

Installation of the onshore alignment would use existing infrastructure to the maximum extent possible, reducing the amount of soil disturbance. Under Alternative 1, there would be approximately 100 ft (30 m) of trenching between Building 811 and an existing manhole system. There would be approximately 100 ft (30 m) of trenching required to connect Charlie Pad to existing manhole infrastructure as well.

Considering the short-term nature of the ground disturbance and erosion control measures that would be implemented, preferred alternative actions at NBVC Point Mugu would not lead to significant impacts on geological resources.

San Nicolas Island

On NBVC SNI, the HDD site would lead to temporary disturbance of the soils on the previously disturbed Coast Guard Jetty site. Proposed construction would include the same activities as at the Point Mugu sites, which would lead to a temporary increase in erosion in the vicinity of the drilling site. The anchor holes and catch basins would be backfilled with original soils upon completion of drilling operations. Drilling operations would be temporary, lasting approximately 30 days at each site.

Under Alternative 1, there would be approximately 500 ft (152 m) of trenching connecting the drilling site to an existing concrete vault. At the vault, the two sea cables would be spliced into an existing 24-fiber cable, connecting to Building 127. No further ground disturbance would be needed beyond the concrete vault.

Considering the short-term nature of the ground disturbance and erosion control measures that would be implemented, preferred alternative actions at NBVC SNI would not lead to significant impacts on geological resources.

Santa Cruz Island

There would be temporary disturbance of soils at the HDD site near the Prisoners Harbor Pier. The activities would include those listed for the Point Mugu activities. Trenching along Navy Road and area to the east of the unnamed road from the well site back to Navy Road would include areas of steep slope, requiring additional erosion controls measures and BMPs. Included in these BMPs would be the

requirement that backfilled trenches be compacted to conditions as close to the original state as possible. Additionally, all manholes and vaults along the trenching route will be installed using BMPs such as silt screens and barriers to minimize erosion impacts. All installation activities will be conducted in accordance with all applicable state and Department of Defense construction codes and regulations to ensure that long-term erosion effects would be minimized.

Considering the short-term nature of the ground disturbance and erosion control measures that would be implemented to minimize long-term effects, preferred alternative actions at SCrI would not lead to significant impacts on geological resources.

Offshore Cable Alignments

The specific subsurface geology at the HDD exit sites is unknown but is likely to be sedimentary bedrock, similar to the composition of subsurface geology at the nearshore portion of the existing FOCUS-II onshore landing sites.

The surface geology of the subtidal area nearest the SNI landing site (less than 100 ft [30 m]) is characterized by sand, bedrock, or boulders. Sediment thickness maps show rock outcrop, hard-ground bottom with less than 3 ft (1 m) of sediment around approximately half of SNI. The remaining area, immediately adjacent to the island, has approximately 10-ft- (3-m-) deep sediment deposits (Navy 2002). The portion of the offshore cable alignment from the proposed exit point to the existing FOCUS cables consists primarily of sandy bottom with occasional rock outcroppings.

The construction crew would closely monitor the pressure during drilling; they would also monitor the exit point closely at the completion of the hole to ensure that drilling ceases as quickly as possible after the exit point has been penetrated. Therefore, marine sediments would not be adversely affected by any discharge occurring during or upon completion of the proposed drilling activities. Therefore, impacts on geological resources along the offshore cable alignments would not be significant.

Therefore, implementation of Alternative 1 would have no significant impact on topography, geology, or soils.

Mitigation Measures

Implementation of Alternative 1 would result in no significant geological impacts. Therefore, no mitigation measures are proposed or required.

3.10.2.3 Alternative 2

Geological resource conditions for Alternative 2 would be the same as those associated with Alternative 1. As a result, geological resource impacts would be the same as those described for Alternative 1. Therefore, implementation of Alternative 2 would have no significant impacts on topography, geology, or soils.

Mitigation Measures

Implementation of Alternative 2 would result in no significant geological impacts. Therefore, no mitigation measures are proposed or required.

3.10.2.4 Alternative 3

Geological resource conditions for Alternative 3 would be similar to those associated with Alternative 1. As a result, geological resource impacts would be the same as those described for Alternative 1. Therefore, implementation of Alternative 3 would have no significant impacts on topography, geology, or soils.

Mitigation Measures

Implementation of Alternative 3 would result in no significant geological impacts. Therefore, no mitigation measures are proposed or required.

3.10.2.5 Alternative 4

Geological resource conditions for Alternative 4 would be similar to those associated with Alternative 1. As a result, geological resource impacts would be the same as those described for Alternative 1 with the exception of SCrI, where there would be no impacts. Therefore, implementation of Alternative 4 would have no significant impacts on topography, geology, or soils.

Mitigation Measures

Implementation of Alternative 4 would result in no significant geological impacts. Therefore, no mitigation measures are proposed or required.

3.10.2.6 Alternative 5 – The No-Action Alternative

Under the No-Action Alternative, there would be no HDD operations, trenching for installation of onshore cable alignments, or offshore installation of fiber optic cable. Therefore, there would be no significant impacts on topography, geology, or soils under the No-Action Alternative.

Mitigation Measures

Implementation of the No-Action Alternative would result in no significant geological impacts. Therefore, no mitigation measures are proposed or required.

3.11 VISUAL RESOURCES

3.11.1 Affected Environment

3.11.1.1 Definition of Resource

Visual resources are generally defined as the natural and built features of a landscape that may be viewed by the public and contribute to the visual quality and character of an area. Visual resources form the overall impression that an observer has of an area or its landscape character. Distinctive landforms, water bodies, vegetation, and man-made features that contribute to an area's aesthetic qualities are elements that contribute to an area's visual character. Visual quality is generally defined as the visual significance or appeal of a landscape based on cultural values and the landscape's intrinsic physical elements (USACE 1988).

Several federal agencies have established terminologies and criteria useful for visual resource management and assessment. These include:

- Bureau of Land Management, *Manual 8400 Visual Resource Management* (BLM 1984);
- U.S. Forest Service, *Landscape Aesthetics: A Handbook for Scenery Management*, Agricultural Handbook Number 701 (USFS 1995);
- Federal Highway Administration, *Visual Impact Assessment for Highway Projects*, Publication No. FHWA-HI-88-054, (FHWA 1981); and
- U.S. Army Corps of Engineers, Visual Impact Assessment Procedures for U.S. Army Corps of Engineers, (USACE 1988).

Based on the above sources, generally, the appearance of the landscape is described using the dominance elements of form, line, color, and texture, as appropriate. These dominance elements are the basic components used to describe visual character and quality for most visual assessments.

To assess impacts a proposed action may have on visual resources, three criteria are applied: visual sensitivity, viewer sensitivity, and viewer exposure.

Visual sensitivity is a measure of a viewer interest and concern for the visual quality of the landscape and potential changes to it. Visual sensitivity is determined based on the types of viewers, activities they may be engaged in, and the expressed or anticipated level of public interest and concern for visual resources and quality. Viewer exposure considers the numbers of viewers and the frequency and duration of views.

Viewer sensitivity varies for individuals and groups, depending on the activities viewers are engaged in, their values and expectations related to the appearance and character of the landscape, and their potential level of concern for changes to the landscape. High viewer sensitivity is typically assigned to viewer groups engaged in recreational or leisure activities, those traveling on scenic routes for pleasure, viewers experiencing or traveling to or from projected natural or historical areas, or viewers experiencing views from resorts or their residences. Low viewer sensitivity is typically assigned to viewer groups engaged in work activities or commuting to or from work.

Viewer exposure varies for any particular view location or travel route depending on the number or volume of viewers, the frequency of views (i.e., how often is the view experienced), and the duration of the views (i.e., the length of time the view is experienced). Viewer exposure would typically be highest

for views frequently experienced by large number of people for long periods. Other factors, such as viewing angle and viewer position relative to a feature or area, can also be contributing factors to viewer exposure.

3.11.1.2 Affected Environment

Point Mugu

Building 811 Site

The Building 811 site is located near the southwest corner of the NBVC Point Mugu installation. On-installation land use of the site includes airfield operations and munitions storage. Off-installation land use in the area includes two game reserves to the north of the NBVC Point Mugu boundaries. The site and its surroundings are characterized by the wetlands northeast of Beach Road, the Building 811 storage building, the Point Mugu Airfield, and the rock revetment southwest of the site. The wetlands, buildings, and rock revetment provide a diverse combination of color, form, and texture. Access to the site is provided by the paved two-lane Ditch and Beach Roads. As the site is located on station, public access to the site is restricted.

This site is not visible from the established communities of Port Hueneme and Oxnard, which would have high viewer sensitivity. The 811 Building site would not be visible to boaters off the NBVC Point Mugu shore due to the rip rap sea wall. Views of the project site would only be from users of nearby buildings or users of Ditch and Beach Roads. Viewers working on the installation are considered to have moderate concern for changes to the landscape on the installation and, thus, have moderate viewer sensitivity. Figures 3.11-1 and 3.11-2 provide views from the Building 811 site.

Figure 3.11-1. Building 811 HDD Site Facing Southeast down Beach Road

Figure 3.11-2. Building 811 Site Facing Northeast towards Laguna Peak

Charlie Pad Site

The Charlie Pad site is located in the south-central area of the NBVC Point Mugu installation. On-installation land use of the site and its vicinity is generally weapons and targets launching and testing. The site and its surroundings are characterized by the wetlands and Mugu Lagoon to the north, beach and the Pacific Ocean to the south, and test facilities in the vicinity.

The most visually prominent landmarks in the area include Anacapa Island, Santa Cruz Island, and offshore drilling rigs to the west of the site and Laguna Peak northeast of the site. The offshore features are visible for many miles outside the project area due to their height and strong contrast in color, form, and texture relative to the surrounding water landscape and blue sky. Laguna Peak is distinct due to its strong contrast in height, color, and unique facilities located on its peak.

There is one group with high viewer sensitivity in the vicinity of the Charlie Pad site, recreational users with base access located at the Point Mugu RV Park approximately 1.1 mi (1.7 km) to the east. However, the Charlie Pad site is not visible from this vantage. The Charlie Pad site would not be visible to nearby communities (i.e., Oxnard, Port Hueneme, and Camarillo). Views of the project site would only be from users of nearby military facilities or offshore boaters. These viewers are considered to have moderate concern for changes to the landscape on the installation and, thus, have moderate viewer sensitivity. Figures 3.11-3 and 3.11-4 provide representative views from the Charlie Pad site.

Figure 3.11-3. View to the West near the Charlie Pad Site

Figure 3.11-4. View of Laguna Peak from the Charlie Pad Site

San Nicolas Island

Coast Guard Jetty Site

The Coast Guard Jetty site is located on the northeast coast of SNI. The on-installation land use in the area is military testing and installation utilities. The site is characterized as Coreopsis Shrub, bluffs overlooking the Pacific Ocean, disturbed land, and beach environment. Access to the site is provided by Beach Road, a two-lane paved road.

The most visually prominent landmarks in the area include the bluffs overlooking the Pacific Ocean, elephant seals occupying the beach north of the project site, and a tank farm to the east of the equipment staging area. On clear days, the Santa Monica Mountains can be seen approximately 100 mi (160 km) to the northeast. The bluffs provide a distinct view due to the strong contrast in color and texture with the beach surroundings, the ocean, and the blue sky. Views of the elephant seals are unique due to number of animals present and their rareness on the mainland.

Due to its remoteness and visitor controls in place, the Coast Guard Jetty site is not visible to any high sensitivity viewers. Views of the project site would only be from users of nearby military facilities or travelers on Beach Road. These viewers are considered to have moderate concern for changes to the landscape on the installation and, thus, have moderate viewer sensitivity. Figures 3.11-5 through 3.11-7 provide views from the equipment staging area. Figures 3.11-8 through 3.11-13 represent typical views from the Coast Guard Jetty HDD site.

Figure 3.11-5. View Southwest from Coast Guard Jetty Site Staging Area

Figure 3.11-6. View Northeast from Coast Guard Jetty Staging Area

Figure 3.11-7. NBVC SNI Tank Farm from Coast Guard Staging Area

Figure 3.11-8. View of the Coast Guard Jetty HDD Site Facing East

Figure 3.11-9. Coast Guard Jetty HDD Site Facing Southeast

Figure 3.11-10. Road Connecting HDD Site to Staging Area Facing South

Figure 3.11-11. Elephant Seals Northeast of HDD Site

Figure 3.11-12. Coreopsis Shrub North of HDD Site

Figure 3.11-13. Bluff Overlook Northwest of HDD Site

Santa Cruz Island

Prisoners Harbor Landing Site

The Prisoners Harbor landing site is near the northeast corner of the NPS-owned lands on SCrI. The area is characterized by natural and manmade features. The predominant natural features include the Pacific Ocean, bluffs overlooking the ocean, and diverse vegetation. Manmade features include the Prisoners Harbor Pier, buildings, unpaved roads, picnic tables, vehicles, and introduced eucalyptus trees.

The site is visited by high sensitivity viewers including recreational visitors to the island and employees of the NPS, TNC, and the Navy. Therefore, the Prisoners Harbor area is considered to have a high visual sensitivity. Prominent landmarks of the area include the pier, the historic NPS-owned warehouse, the area canyons and bluffs, and vistas of the Pacific Ocean. Figures 3.11-14 through 3.11-18 provide typical views from the Prisoners Harbor HDD site.

Figure 3.11-14. Prisoners Harbor Pier from the HDD Site

Figure 3.11-15. Prisoners Harbor HDD Site Facing West

Figure 3.11-16. Prisoners Harbor HDD Site Facing Northwest

Figure 3.11-17. View East of Prisoners Harbor Pier

Figure 3.11-18. View South of Prisoners Harbor HDD Site

Elevated Channel Connecting Well Site to Navy Road

The majority of the corridor connecting the well site to Navy road is restricted to personnel working for the Navy, NPS, and TNC. The well site itself is characterized by a storage building, the well site, solar panels, vehicles parked at the site, and views of the Cañada del Puerto. Only a small portion of the unnamed roads connecting to Navy Road is visible from recreational visitors hiking along Navy Road towards the Del Norte Camp and other sites of interest. This area is considered an area of high viewer sensitivity. Figures 3.11-19 and 3.11-20 provide views of the well site. Figures 3.11-21 through 3.11-25

provide views of the road adjacent to the elevated channel corridor, connecting the well site to Navy Road. As discussed below, the hillside route for the elevated channel in Alternative 1 is not generally visible to the public.

Figure 3.11-19. The Well Site

Figure 3.11-20. Storage Building and Solar Panel near the Well Site

Figure 3.11-21. View North along Navy Road

Figure 3.11-22. View South along Unnamed Road Connecting to Well Site

Figure 3.11-23. View from CV-2 Location

Figure 3.11-24. View North from Well Site towards Navy Road

Figure 3.11-25. Southwest View from Navy Road

Navy Road Corridor to the Navy Site

The 6.8-mi (11-km) stretch of Navy Road connecting concrete vault CV-3 to the Navy Site mainly follows ridgelines with vistas of native and invasive vegetation species, bluffs and valleys of SCrI, and views of the Pacific Ocean. This corridor is used mainly by NPS and Navy employees. The road is used occasionally by recreational hikers, accessing the Del Norte Camp and other sites on SCrI. Figures 3.11-26 through 3.11-28 provide typical views from Navy Road. Figures 3.11-29 through 3.11-31 provide typical views in the vicinity of the Navy Site.

Figure 3.11-26. Typical View from Navy Road

Figure 3.11-27. Fennel near Navy Road Shoulder

Figure 3.11-28. Pacific Ocean Vista from Navy Road

Figure 3.11-29. Navy Site from Navy Road

Figure 3.11-30. Building 4 at Navy Site

Figure 3.11-31. View South from Navy Site

3.11.2 Environmental Consequences

3.11.2.1 Assessment Criteria

The existing visual character and quality and viewer sensitivity in a given project area provide the baseline for determining impacts to visual resources from implementation of a proposed action. Visual impacts are assessed based on the level of contrast of this action with existing conditions and their visibility and proximity to sensitive viewers. For the purposes of impact analysis, visual contrast is assessed based on a projects contrast in form, line, color, and texture with landscape features of topography, water, vegetation, and structures.

The degree of contrast that would be introduced by the project is assessed using the following ratings, as defined by the Bureau of Land Management Manual Handbook 8431-1 (BLM 1986):

- Strong: the element contrast demands attention, will not be overlooked, and is dominant in the landscape;
- Moderate: the element contrast begins to attract attention and begins to dominate the characteristic landscape;
- Weak: the element contrast can be seen but does not attract attention; and
- None: the element contrast is not visible or perceived.

In addition to contrast, impacts are also assessed in terms of glare introduced by the project actions. Glare is reflective light that can be visually unpleasant or possibly unsafe due to the potential for temporary blindness. Glare may be caused by light from artificial sources or the sun reflecting off of light colored or smooth surfaces such as metal, glass, water, or polished stone. Glare intensity varies depending on the source and intensity of light, time of day, time of year, angle of reflectance, weather, atmospheric conditions, color and texture of the material surface finish, length of exposure, nature and sensitivity of

receptors, and other factors. Due to the high number of variables, glare is not measured quantitatively, but rather is assessed qualitatively in this visual impacts assessment.

3.11.2.2 Alternative 1 – Preferred Alternative

Point Mugu

Under Alternative 1, construction activities would include HDD operations and trenching at the Building 811 and Charlie Pad sites. The project would not be easily visible to sensitive viewers outside or on the NBVC Point Mugu installation and would be considered a moderate concern for changes to the landscape on the installation. Equipment used at each site would include a drilling rig, a mud pump unit, a mud filtering system, a catch basin for drilling mud, a hydraulic power unit, a drill rig control station, a pipe rack for cable conduits, an excavator, and a tool van. During the construction, the equipment's height, form, lines, and color would result in weak contrast with the existing landscape, in that the element contrast will be seen but will not attract attention. There is some potential for glare to be produced off the construction equipment, but the effects of this are expected to be minor due to the temporary nature of the construction activities (approximately 30 days at each site) and the low number of on-installation viewers near the project sites.

Following construction activities the project sites would be returned to their original state; therefore, there would be no permanent impacts to visual resources. Given the construction activities' weak contrast with the existing landscape, minor potential for glare, and temporary nature of the project impacts, implementation of Alternative 1 would have no permanent or significant visual resources impacts at NBVC Point Mugu.

San Nicolas Island

Under Alternative 1, construction activities would include HDD operations and trenching at the Coast Guard Jetty site. The project would not be visible to sensitive viewers outside the installation and would be considered a moderate concern for changes to the landscape on the installation. Equipment used at each site would include a drilling rig, a mud pump unit, a mud filtering system, a catch basin for drilling mud, a hydraulic power unit, a drill rig control station, a pipe rack for cable conduits, an excavator, and a tool van. During the construction, the equipment's height, form, lines, and color would result in weak contrast with the existing landscape, in that the element contrast will be seen but will not attract attention. There is some potential for glare to be produced off the construction equipment, but the effects of this are expected to be minor due to the temporary nature of the construction activities (approximately 30 days at the site) and the low number of on-installation viewers near the project site.

Following construction activities the project site would be returned to its original state; therefore, there would be no permanent impacts to visual resources. Given the construction activities' weak contrast with the existing landscape, minor potential for glare, and temporary nature of the project impacts, implementation of Alternative 1, would have no permanent or significant visual resources impacts at NBVC SNI.

Santa Cruz Island

On SCrI, construction equipment would be visible to sensitive viewers from the Prisoners Harbor Pier and along the trenching and elevated channel corridors along Navy Road and the unnamed roads

connecting to the well site. The equipment's height, form, lines, and color would result in moderate contrast to the existing landscape due to the sensitive viewers' proximity to the project site and the contrast would attract attention and could begin to dominate the characteristic landscape of the Prisoners Harbor area. There is some potential for glare to be produced off the construction equipment, but the effects of this are expected to be minor due to the temporary nature of the construction activities and the valley characteristics of the Prisoners Harbor area that would restrict the angle of reflectance for much of the typical day. The vaults and manholes placed within the roadbed would not extend above the roadbed, would be neutral in color and would not alter the overall viewshed or public experience.

Following construction activities, the HDD site and trenching corridors would be returned to their original state. There would be the installation of a permanent feature along the 1,150 ft (350 m) elevated channel corridor. The majority of this channel would be behind low brush and large trees. The elevated channel will stand approximately 1.6 ft (0.5 m) high and will be neutral in color to blend in with the existing vegetation as much as possible (Figure 2-11). Due to its location away from the roadside, height, form, lines, and color the elevated channel system would result in weak contrast with the existing landscape, in that the element contrast will be seen but will not attract attention from the existing landscape. Furthermore, the elevated channel and stakes will have low potential to cause glare due to the materials that comprise the system. It is unlikely that the elevated channel would be significantly visible from areas where the public can access. Therefore, implementation of Alternative 1 would not have significant impacts to the visual resources of SCrI.

3.11.2.3 Alternative 2

Point Mugu

Alternative 2 activities at NBVC Point Mugu would be identical to those described in Alternative 1. Therefore, there would be no permanent or significant visual resources impacts at NBVC Point Mugu due to implementation of Alternative 2.

San Nicolas Island

Alternative 2 activities at NBVC SNI would be identical to those described in Alternative 1. Therefore, there would be no permanent or significant visual resources impacts at NBVC SNI due to implementation of Alternative 2.

Santa Cruz Island

Under Alternative 2, construction equipment would be visible to sensitive viewers from the Prisoners Harbor Pier and along the trenching corridor along Navy Road and the unnamed road connecting to the well site. The equipment's height, form, lines, and color would result in moderate contrast to the existing landscape due to the sensitive viewers' proximity to the project site and the contrast would attract attention and could begin to dominate the characteristic landscape of the Prisoners Harbor area. There is some potential for glare to be produced off the construction equipment, but the effects of this are expected to be minor due to the temporary nature of the construction activities and the valley characteristics of the Prisoners Harbor area that would restrict the angle of reflectance for much of the typical day.

Following construction activities, the HDD site and trenching corridors would be returned to their original state. A permanent feature would be installed along the 1,800-ft (550-m) elevated channel corridor.

Approximately 939 ft (283 m) of the elevated channel would be visible to sensitive viewers using Navy Road. While the elevated channel will stand 2.5 ft (0.76 m) high and will be neutral in color to blend in with the existing vegetation as much as possible (Figure 2-11), it would remain visible along the roadside and change the existing conditions. Therefore, implementation of Alternative 2 would have potentially significant impacts to the visual resources of SCrI.

3.11.2.4 Alternative 3

Point Mugu

Alternative 3 activities at NBVC Point Mugu would be identical to those described in Alternative 1. Therefore, there would be no permanent or significant visual resources impacts at NBVC Point Mugu due to implementation of Alternative 3.

San Nicolas Island

Alternative 3 activities at NBVC SNI would be identical to those described in Alternative 1. Therefore, there would be no permanent or significant visual resources impacts at NBVC SNI due to implementation of Alternative 3.

Santa Cruz Island

Under Alternative 3, construction equipment would be visible to sensitive viewers from the Prisoners Harbor Pier and along the trenching corridor along Navy Road and the unnamed road connecting to the well site. The equipment's height, form, lines, and color would result in moderate contrast to the existing landscape due to the sensitive viewers' proximity to the project site and the contrast would attract attention and could begin to dominate the characteristic landscape of the Prisoners Harbor area. There is some potential for glare to be produced off the construction equipment, but the effects of this are expected to be minor due to the temporary nature of the construction activities and the valley characteristics of the Prisoners Harbor area that would restrict the angle of reflectance for much of the typical day.

Following construction activities, the HDD site and trenching corridors would be returned to their original state and no elevated channel would be installed; therefore, there would be no permanent impacts to visual resources. The construction activities would generate moderate contrast to high sensitivity viewers over a short period of time and would have limited potential to generate glare. Therefore, implementation of Alternative 3 would not have significant impacts to the visual resources of SCrI.

3.11.2.5 Alternative 4

Point Mugu

Alternative 4 activities at NBVC Point Mugu would be similar to those described in Alternative 1. However, there would be no construction activities conducted at the Charlie Pad site. The construction equipment's height, form, lines, and color would result in weak contrast with the existing landscape, in that the element contrast will be seen but will not attract attention. There is some potential for glare to be produced off the construction equipment, but the effects of this are expected to be minor due to the temporary nature of the construction activities (approximately 30 days at each site) and the low number of on-installation viewers near the project sites.

Following construction activities the project sites would be returned to their original state; therefore, there would be no permanent impacts to visual resources. Given the construction activities' weak contrast with the existing landscape, minor potential for glare, and temporary nature of the project impacts, there would be no permanent or significant visual resources impacts at NBVC Point Mugu due to implementation of Alternative 4.

San Nicolas Island

Alternative 4 activities at NBVC SNI would be identical to those described in Alternative 1. Therefore, there would be no permanent or significant visual resources impacts at NBVC SNI due to implementation of Alternative 4.

Santa Cruz Island

Under Alternative 4, there would be no construction or operational activities conducted at SCrI. Therefore, implementation of Alternative 4 would have no visual resources impacts at SCrI.

3.11.2.6 Alternative 5 – The No-Action Alternative

Under the No-Action Alternative, the proposed activities would not be implemented at NBVC Point Mugu, NBVC SNI, or SCrI. The existing visual resources would not change; therefore, the No-Action Alternative would have no impacts to visual resources.

CHAPTER 4 CUMULATIVE IMPACTS

CEQ regulations implementing the procedural provisions of NEPA define cumulative impacts as:

> *"…the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (40 C.F.R. 1508.7)*

Each resource, ecosystem, and human community must be analyzed in terms of its ability to accommodate additional effects, based on its own time and space parameters. Therefore, cumulative effects analysis normally will encompass a Region of Influence (ROI) or geographic boundaries beyond the immediate area of the proposed action, and a time frame including past actions and foreseeable future actions, to capture these additional effects.

For the proposed action to have a cumulatively significant impact on an environmental resource, two conditions must be met. First, the combined effects of all identified past, present, and reasonably foreseeable projects, activities, and processes on a resource, including the effects of the proposed action, must be significant. Second, the proposed action must make a substantial contribution to that significant cumulative impact. In order to analyze cumulative effects, a cumulative effects region must be identified for which effects of the proposed action and other past, present, and reasonably foreseeable actions would occur.

For purposes of this cumulative effects analysis, the ROI includes the drilling sites and cable alignment corridors at Point Mugu, San Nicolas Island, and Santa Cruz Island as defined in Section 2.1.3 of this EA/OEA. This analysis depends on the availability of data and the relevance of effects of past, present, and future actions. Although certain data (e.g., extent of forest cover) may be available for extensive periods in the past (i.e., decades), other data (e.g., water quality) may be available for much shorter periods. Because specific information and data on past projects and action are usually scarce, the analysis of past effects is often qualitative (CEQ 1997).

Table 4-1 lists the past, present, and reasonably foreseeable future actions within the ROI that have had, continue to have, or would be expected to have some impact on the natural and human environment. The projects in this table are limited to those implemented in the last five years or those with ongoing contributions to environmental effects. Projects with measureable contributions to impacts within the ROI for a resource area were included in the cumulative analysis.

Table 4.1 Reasonably Foreseeable Actions on the Sea Range

Project Title	Project Description	Project Timeframe		
		Past	Present	Future
Laser Testing on the Sea Range	Laser testing and training under various weather conditions on the Point Mugu Sea Range and SNI (including Tender Beach), and includes lasers integrated onto aircraft, ships, and land-based platforms.		✓	✓
San Nicolas Island Reverse Osmosis and Brine and Filter Backwash Discharge	The proposed project consists of increasing brine and filter backwash discharge at the existing reverse osmosis facility. Proposes to increase generation rates to 216,000 gallons (818,000 liters) per day.		✓	✓
SNI Natural Resource Management Program	Development of SNI INRMP to describe existing and anticipated Navy operations and recommendations to protect and enhance environmental resources.	✓	✓	✓
Integrated Natural Resource Management Plan Naval Base Ventura County Point Mugu and Special Areas California	Development of an INRMP for all lands owned, leased, withdrawn, or otherwise used for military training by NBVC, with the exception of NBVC SNI and NBVC Port Hueneme.	✓	✓	✓
Development of Wind Energy Facilities on SNI	Construction of up to 11, 155-ft (47-m) tall, 100-kilowatt wind turbines; an energy storage system; and underground utility conduit connections on SNI. Seven wind turbines and the underground utility connections were completed in July 2016.		✓	✓
SNI Directed Energy Testing Site	Construction and operation of Directed Energy Test Facilities at Tender Point at SNI. Components of the proposed action include a shooter site (location where laser and HPM equipment would be placed for testing and training), a target site (location of laser and HPM targets), and four calibration target sites.		✓	✓
Countermeasures Testing on the Sea Range	Countermeasures testing and training on the Sea Range consisting of five components: lethal and non-lethal directed energy (i.e., high-energy lasers [HEL] and high-power microwave systems), small arms, missiles, flares, and electronic support systems.		✓	✓
San Nicolas Island Roads and Airfield Repair	Maintenance and improvement of mission-critical infrastructure project at NBVC SNI, which includes repairing the roads and the airfield.		✓	✓
Collection of Sea Lions from SNI	Space and Naval Warfare Systems Command program obtaining a sufficient number of California sea lions to support the mission requirements of the Navy Marine Mammal Program.	✓	✓	✓
West Coast Home Basing of the MQ-4C UAS at NBVC Point Mugu, California	Establishing facilities and functions to support the west coast home basing and maintenance of four MQ-4C Triton Unmanned Aircraft Systems (Triton UAS), which were formerly known as the Broad Area Maritime Surveillance UAS (BAMS UAS), at NBVC Point Mugu.		✓	✓

Table 4.1 Reasonably Foreseeable Actions on the Sea Range cont'd

Project Title	Project Description	Project Timeframe		
		Past	Present	Future
Expansion of Unmanned Systems on the Sea Range	An extension of the Navy's UAS RDAT&E operations and training capability, and the introduction of unmanned maritime system operations are proposed for the Sea Range. The proposed action includes construction of new support facilities at NBVC Point Mugu and SNI.		✓	✓
FOCUS Cable Repair, San Nicolas Island, California	Repair of the existing FOCUS-I system by the installation of a new landing for the FOCUS-I cable on the northeast side of SNI near the Coast Guard Jetty.	✓		
NBVC Shoreline Protection	Improvements to shoreline revetments and other resources to protect mission-critical infrastructure and valuable ecological resources along the most at-risk locations of the NBVC Point Mugu coastline.		✓	✓
Conduct Restoration Planning for an Omega 707 Air Tanker Crash Site	The Navy intends to conduct restoration planning and prepare a Damage Assessment Restoration Plan (DARP). This DARP will have the goal of quantifying injuries to natural resources and potential remedies to these injuries attributed to a May 2011 air tanker crash in Mugu Lagoon.		✓	✓
NPS Channel Islands National Park General Management Plan	Determination of lands within the Channel Islands National Park appropriate for wilderness designation. The project also identifies the land management principles and guidelines to be implemented to preserve the designated wilderness areas.	✓	✓	✓
Management of Non-Native Argentine Ants on SCrI	Prevention of additional introduction or human-assisted spread of Argentine ants on SCrI. The project also identifies methods for control and/or elimination of current infestations of Argentine ants.		✓	✓

4.1.1 Air Quality

The proposed action would conform to the applicable State Implementation Plan and would not trigger a conformity determination under Section 176(c) of the CAA. The Navy has prepared a Record of Non-Applicability for CAA Conformity in the SCCAB (Appendix A). Moreover, these negligible impacts, when added to the impacts from the other listed projects, would account for a very small percentage increase of overall air emissions budgets for the air basin. As a result, the emissions associated with the proposed action would not have a cumulative impact on air quality.

The potential effects of GHG are global by nature, as individual GHG emission sources are generally not large enough to have an appreciable effect on climate change. An appreciable impact on climate change would only occur when proposed project GHG emissions are combined with GHG from other GHG emissions on a global scale. The proposed action would generate 3,404 metric tons (3,753 tons) of CO_{2e}, which is approximately 14 percent of the 25,000 metric tons (27,600 tons) the CEQ advises federal agencies to use as an indicator threshold for significant effects. Considering this, the proposed action would not yield GHG emissions that would be a significant contributor to global climate change.

4.1.2 Biological Resources

Implementation of the proposed action would have no effect on sensitive plant species and no significant effect to threatened or endangered animals. Hence there is no potentially significant interaction with the effects of actions on the native plants and animals of Point Mugu, SNI, SCrI, and the Sea Range. This project, with its minimal impacts to natural resources for project sites, should not have a cumulative effect on natural resources due to activities conducted by the Navy or other agencies. Therefore, when combined with the effects of other past, present, and foreseeable project activities, implementation of the proposed action of either action alternative is unlikely to have any additional cumulative effect on plant and animal populations at Point Mugu, SNI, and SCrI.

4.1.3 Cultural Resources

Implementation of the proposed action would not adversely impact cultural resources. The proposed action would result in disturbance of known archaeological sites at SCrI. However, monitoring and mitigation measures ensure that impacts would be reduced to the fullest extent feasible. There would be no adverse effect to sites at NBVC Point Mugu and NBVC SNI. The Navy's cultural resource management program assures that potentially significant cultural resources are protected and are not subject to incremental degradation. Therefore, the proposed action, when combined with other past, present, and foreseeable activities, would not result in cumulative impacts to cultural resources.

4.1.4 Hazardous Materials and Waste Management

Implementation of the proposed action would not result in significant hazardous material and waste management impacts. Appropriate BMPs would be implemented to minimize the release of hazardous materials to the environment, and the hazardous and non-RCRA wastes generated would be handled in accordance with all federal, state, and local laws and regulations. The waste generated during the proposed construction activity is insignificant when compared to existing waste generation levels at NBVC Point Mugu and NBVC SNI. The volume of waste generated during SCrI activities would be low and well-managed. Therefore, the proposed action when combined with other past, present, and foreseeable activities, would not result in cumulative impacts on hazardous materials and waste management.

4.1.5 Infrastructure and Utilities

Implementation of the proposed action would not adversely impact infrastructure and utilities at the three onshore project sites or offshore resources of the Sea Range. Transportation along the Beach Road Corridors at Point Mugu and SNI will be temporarily impacted during drilling and trenching operations, but alternative routes are available for both.

The trenching operations would close portions of Navy Road to vehicle access, but the Navy will coordinate with NPS to develop a plan to avoid limitations on recreational pedestrian access. Other hiking trails would also remain open. The installation of the elevated channel system may divert travel to other roads connecting to the well site. These closures would be temporary in nature and would not lead to permanent infrastructure or utility changes.

Sea level rise may expose some of the trench-buried fiber optic cables at NBVC Point Mugu, NBVC SNI, and SCrI; however, the cable in these low-lying areas would be armored sea cables and would not be

affected by exposure to the elements. Exposure of the fiber optic cables would not affect existing infrastructure and utilities at the project sites. Therefore, the proposed action when combined with other past, present, and foreseeable activities, would not result in cumulative impacts on infrastructure and utilities.

4.1.6 Land and Water Use

Implementation of the proposed action would not result in significant land and water use impacts. Existing land use designations would not change as a result of the proposed action, and the existing land uses within the project area would continue to be used for the same purposes. The proposed action would impose temporary restrictions on the public's right of access to the sea offshore in the vicinity of the HDD sites at Point Mugu and SCrI.

For safety purposes, restricted areas have been established in the waters around SNI, extending approximately 3 mi (4.8 km) from the shoreline. Boats must remain at least 300 yd (274 m) from the shoreline of SNI at all times, and no boats are allowed to anchor within 300 yd (274 m) or land on SNI, except in an emergency. Individual sections of the restricted area can be closed during operations in the vicinity of SNI. No person, vessel, or other craft shall enter the restricted area or designated section(s) during closure periods unless authorized to do so by the Commanding Officer, NBVC or the Officer in Charge, SNI.

The proposed action would be consistent with the provisions of the California Coastal Act. The CCC's concurrence with the negative determination will be added once received by the Navy. The concurrence letter would indicate that proposed construction activities at Port Mugu, SNI, and SCrI would have no effects on the coastal zone of California. Therefore, the proposed action, in conjunction with other past, present, and foreseeable activities, would not result in significant cumulative impacts on coastal zone resources.

The proposed action would not significantly affect coastal resources and their uses. Therefore, implementation of the proposed action, or either action alternative when combined with other past, present, and foreseeable actions would not result in cumulative impacts on airspace, land, or water use.

4.1.7 Marine Sediments and Water Quality

The proposed action would have only short-term, localized effects, if any, on sediment and water quality. Due to the limited scope of potential sediment and water quality impacts associated with the proposed action, the action would have only minor, temporary effects, if any, and would not measurably add to quantities of pollutants in the marine environment. Therefore, there would be no cumulative impact on marine sediments and water quality.

4.1.8 Noise

The proposed action would have only short-term, localized noise effects. Moreover, these short-term impacts, when added to the impacts from the other listed projects, would account for a relatively small change to the overall noise environment. As a result, the proposed action would not have a significant cumulative impact on noise.

4.1.9 Safety

Implementation of public access controls would ensure that the safety of members of the public would not be affected by the proposed action activities. As a result, implementation of the proposed action would not have a cumulative effect on public safety. Construction activities would be conducted in accordance with Navy, NAWCWD, and NBVC regulations and plans, ensuring that project personnel's safety would be protected. As a result, the proposed actions would not significantly impact the safety of members of the public or personnel conducting the proposed action construction activities.

4.1.10 Topography, Geology, and Soils

The proposed action would have only short-term, localized effects, if any, on geology and soils. Such effects are limited to ground disturbance during operation and occasional maintenance activities. Due to the limited scope of potential impacts associated with the proposed action, the action would have only minor, temporary effects, if any, and would not measurably add to effects from other activities. Therefore, there would be no cumulative impact on topography, geology, and soils.

4.1.11 Visual Resources

Implementation of the proposed action would have temporary visual resource impacts at the NBVC Point Mugu, NBVC SNI, and SCrI sites. There would be no long-term visual resource impacts at NBVC Point Mugu and NBVC SNI, as all construction areas would be returned to their original state. There would be the installation of a permanent feature along the 1,150 ft (350 m) elevated channel corridor on SCrI. A small portion of the elevated channel at its start and end points would be visible to hikers using Navy Road. The majority, however, will be located along the slope base, behind brush and trees and likely not visible from hiking trails and the Navy Road. Where visible, the elevated channel will stand 2.5 ft (0.76 m) high and will be neutral in color to blend in with the existing vegetation as much as possible. Due to its height, form, lines, and color the elevated channel system would result in weak contrast with the existing landscape, in that the element contrast will be seen but will not attract attention from the existing landscape. Furthermore, the elevated channel and stakes will have low potential to cause glare due to the materials that comprise the system. Therefore, there would be no cumulative visual resource impacts.

CHAPTER 5 OTHER CONSIDERATIONS REQUIRED BY NEPA

5.1 CONSISTENCY WITH OTHER FEDERAL, STATE, AND LOCAL LAWS, PLANS, AND REGULATIONS

Implementation of the alternatives would comply with existing federal regulations and state, regional, and local policies and programs, while maintaining the Navy's mission. The project would be completed in accordance with the environmental compliance requirements provided in Table 5-1.

5.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT 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, fuel, and other natural or cultural resources. These resources are non-retrievable in that they would be used for this project when they could have been used for other purposes. Human labor is also considered a non-retrievable resource. Another topic that falls under this category is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

Under the proposed action, construction activities associated with the FOCUS replacement would be conducted on the Sea Range, Point Mugu, SNI, and SCrI. The construction project would not result in a significant irreversible or irretrievable commitment of resources. Fuel for the necessary heavy equipment, vessels, motorized vehicles, and electric generators would be a commitment of resources; however, the use of fuel for the construction project would have a negligible impact on fossil fuel resources and human labor associated with Navy mission operations on the Sea Range.

5.3 UNAVOIDABLE ADVERSE IMPACTS THAT CANNOT BE AVOIDED OR ARE NOT AMENABLE TO MITIGATION

This EA/OEA identified adverse effects on cultural resources, associated with the implementation of the proposed action. However, mitigation measures identified through consultation with SHPO would be implemented. Therefore, there are no probable adverse environmental that cannot be avoided or are not amenable to mitigation.

Table 5-1 Summary of Environmental Compliance for the Proposed Action

Plans, Policies, and Controls	Responsible Agency	Status of Compliance
Clean Air Act (CAA) (42 U.S.C. §§7401 et seq.) CAA General Conformity Rule (40 C.F.R. §93[B]) State Implementation Plan (SIP)	USEPA	The proposed action would not conflict with attainment and maintenance goals established in SIPs. A CAA conformity determination will not be required because emissions attributable to the alternatives, including the proposed action, would be below *de minimis* thresholds.
Clean Water Act (CWA) (33 U.S.C. 1251 et seq.)	USACOE	The Navy will submit permit applications to the USACE in compliance with Section 404 of the CWA and Section 10 of the River and Harbors Act (under USACE Nationwide Permit 12)
NEPA of 1969 (42 U.S.C. §§4321, et seq.) Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 C.F.R. §§1500–1508) Navy Procedures for Implementing NEPA (32 C.F.R. §775) Navy	Navy	This EA/OEA has been prepared in accordance with NEPA, Council on Environmental Quality regulations, and the Navy's NEPA procedures. The proposed action would not result in significant impacts, and thus an EIS/OEIS is not required.
Endangered Species Act (ESA) (16 U.S.C. §§1531 et seq.)	USFWS	The proposed action would have no effect on federally-listed species. No further consultation with the USFWS is required.
Marine Mammal Protection Act (MMPA) (16 U.S.C. §§1361–1407)	NMFS	The proposed action is not expected to result in injury or harassment of any marine mammal as defined by the MMPA.
Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§703–712)	USFWS	The proposed action would not have a significant impact on migratory birds and would comply with applicable requirements of the MBTA.
National Historic Preservation Act (36 C.F.R. §800)	Navy/NPS/ SHPO	Pending findings of testing plan implementation and a MOA between NPS and SHPO, the proposed action would have no adverse effect on cultural resources.
Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §§1801–1891)	NMFS	The proposed action may adversely affect EFH, though any effect would be minor due to the limited area impacted, temporary nature of impacts and other factors. Therefore, EFH consultation with NMFS is required.
Coastal Zone Management Act (CZMA) (16 U.S.C. 1456, 15 C.F.R. part 930)	NOAA	A federal action is subject to CZMA federal consistency requirements if the action will have any reasonably foreseeable direct or indirect effect on any costal use or resource. The proposed action has no such reasonably foreseeable effects.
Sanctuaries Act (16 U.S.C. §1461 et seq.)	NOAA	The proposed action may affect Sanctuary Resources, though any effect would be minor due to the limited area impacted, temporary nature of impacts and other factors. Therefore, consultation with NOAA is required.
EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (58 FR 7269 [16 February 1994])	Navy	The proposed action would not result in any disproportionately high and adverse human health or environmental effects on minority or low-income populations.

5.4 RELATIONSHIP BETWEEN SHORT-TERM USE OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

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 a single development option reduces future flexibility in pursuing other options, or that giving over a parcel of land or other resource to a certain use often eliminates the possibility of other uses for that site.

The proposed action would, reversibly, dedicate areas of land, equipment, and other resources to a particular use during a limited period of time. These resources would not be available for other productive uses throughout the duration of construction of FOCUS-II. However, these impacts are considered negligible, as the facilities and geographic areas associated with the proposed action are designated for and have historically accommodated the types of uses proposed. Therefore, the proposed action would not result in any impacts that would reduce environmental productivity or permanently narrow the range of beneficial uses of the environment.

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CHAPTER 7 LIST OF PREPARERS

This report was prepared by Epsilon Systems Solutions, Inc. for NAWCWD. Members of the professional staff are listed below:

Project Oversight – NAVAIR Ranges Sustainability Office, Point Mugu, CA

John Ugoretz, Marine Biologist/Project Manager

Gina Smith, Environmental Planner

Grace Smith, Terrestrial Biologist

Lisa Thomas, Archaeologist

John Burke, Terrestrial Biologist

Claudia Makeyev, Terrestrial Biologist

Project Technical Advisors – Naval Undersea Warfare Center, Newport Division, RI

Michelle Bones, Technical Subject Matter Expert (SME)

Russell Racette, Technical SME

Tom Szlyk, Technical SME

Document Preparation – Epsilon Systems Solutions, Inc., Ridgecrest, CA (unless noted)

Colleen Delaney, PhD (California State University – Channel Islands), Archaeologist

Mark Dimsha, NEPA Specialist/Project Manager

David Fujii, GIS Technician

Becki Graham, Technical Editor

Danny Heilprin (ECORP Consulting), Marine Biologist

Amanda Martinez, Archaeologist

Jennifer Perry, PhD (California State University – Channel Islands), Archaeologist

Justin Pooley, GIS Technician

Robert Yohe, PhD, Archaeologist

Navy Review Team

Corey Bouvier, NAWCWD Office of Counsel, Point Mugu, CA

Catherine Creese, Assistant Director, Naval Seafloor Cable Protection Office, Washington, DC

Jim Danza, Asset Management/Planning Branch Manager, NBVC, Point Mugu, CA

Lorie Duplantier, Environmental Planner, NBVC, Point Mugu, CA

Steve Granade, Environmental Engineer, NBVC, Point Mugu, CA

William Hoyer, Natural Resources Manager, NBVC, San Nicolas Island, CA

Hasan Jafar, Air Quality Program Manager, NBVC, Point Mugu, CA

Chad Lousen, NEPA Planner, NBVC, Point Mugu, CA

Tom McLeod, Explosive Safety Officer, NBVC, Point Mugu, CA

Joseph Montoya, Environmental Planning and Conservation Branch Manager, NBVC, Point Mugu, CA

Martin Ruane, Natural Resources Program Manager, NBVC, Point Mugu, CA

LCDR Gretchen D. Sosbee, U.S. Navy Judge Advocate General's Corps, San Diego, CA

Allyson Swaney, NAWCWD Office of Counsel, Point Mugu, CA

Valerie Vartanian, Natural Resources Manager, NBVC, Point Mugu, CA

Marvin Woods, Safety and Health Technician, NBVC, Point Mugu, CA

APPENDIX A AIR QUALITY CALCULATIONS AND RECORD OF NON-APPLICABILITY

RECORD OF NON-APPLICABILITY (RONA)

From:

To:

Subj: Fiber Optics Communications Undersea System (FOCUS) Replacement

Ref: (a) U.S. Environmental Protection Agency, Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule, published in the Federal Register on 30 November 1993 (40 CFR Parts 6, 51, and 93)

(b) U.S. Environmental Protection Agency, Revisions to the General Conformity Regulations; Final Rule, published in the Federal Register on 5 April 2010 (40 CFR Parts 51 and 93)

(c) OPNAV M 5090.1, Environmental Readiness Program Manual, 10 January 2014

(d) Navy Guidance for Compliance with the Clean Air Act General Conformity Rule, 30 July 2013

1. The references (a), (b), (c), and (d) provide implementing guidance for documenting Clean Air Act (CAA) Conformity Determination requirements. The General Conformity Rule applies to federal actions proposed within areas which are designated as either non-attainment or maintenance areas for a National Ambient Air Quality Standard (NAAQS) for any of the criteria pollutants.

2. Activities associated with the Proposed Action would be conducted at NBVC Point Mugu and NBVC San Nicolas Island (SNI), both in Ventura County, and on Santa Cruz Island (SCrI) in Santa Barbara County. Effective 19 June 2008, Ventura County has been reclassified as a “serious” nonattainment area for the federal 8-hour O_3 standard (*de minimis* thresholds are 50 tons/year for VOCs and NO_X) and is in attainment of all other criteria pollutants. Ventura County is classified as a nonattainment area for the state O_3, $PM_{2.5}$, and PM_{10} standard.

Although NBVC SNI is part of Ventura County, the USEPA has determined that SNI is separate and distinct from the South Central Coast Air Basin (SCCAB) which includes the Ventura County Air Pollution Control District (VCAPCD). SNI is in attainment/unclassified of the NAAQS for all criteria pollutants therefore, the provisions of the General Conformity Rule and *de*

minimis thresholds do not apply to proposed activities conducted on SNI. Due to the lack of major emitting sources on SNI in conjunction with predominantly strong winds from the northwest, the likelihood of pollutants remaining in the ambient air of the island is very low.

SCrI is located within Santa Barbara County, which is part of the SCCAB. Santa Barbara County is in attainment or unclassifiable/attainment status of the NAAQS for all criteria pollutants. As such, the provisions of the General Conformity Rule and *de minimis* thresholds do not apply to proposed activities conducted at SCrI.

3. An emissions analysis for the installation of Fiber Optic Communications Undersea System (FOCUS) connecting NBVC Point Mugu, NBVC SNI, and SCrI is presented in the pages below. *de minimis* thresholds do not apply to actions taken on SNI and SCrI since the islands and the offshore regions proposed for the FOCUS installation are considered in attainment/unclassified for the NAAQS. However, emissions estimates for the proposed action events at all three sites have been compared to *de minimis* thresholds of a basic nonattainment area for planning purposes. *de minimis* thresholds for criteria pollutants would not be exceeded as a result of implementation of the Proposed Action and a formal Conformity Determination is not considered necessary.

4. To the best of my knowledge, the information presented in this RONA is correct and accurate, and I concur in the finding that implementation of the Proposed Action does not require a formal CAA Conformity Determination.

_____

Name
Title

FIBER OPTICS COMMUNICATIONS UNDERSEA SYSTEM REPLACEMENT EMISSIONS ANALYSIS FOR CLEAN AIR ACT CONFORMITY APPLICABILITY

INTRODUCTION

The U.S. Environmental Protection Agency (USEPA) published *Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule*, in the Federal Register on 30 November 1993 (40 CFR Parts 6, 51, and 93). USEPA published *Revisions to the General Conformity Regulations; Final Rule*, in the Federal Register on 5 April 2010 (40 CFR Parts 51 and 93). The U.S. Navy published Navy Guidance for Compliance with the Clean Air Act General Conformity Rule, dated 30 July 2013. These publications provide implementing guidance to document Clean Air Act Conformity Determination requirements. Regulations within the General Conformity Rule 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 implementation plan. It is the responsibility of the federal agency to determine whether a federal action conforms to the applicable implementation plan, before the action is taken (40 CFR Part 1 51.850[a]).

The General Conformity Rule applies to federal actions proposed within areas which are designated as either non-attainment or maintenance areas for a NAAQS for any of the criteria pollutants. Former non-attainment areas that have attained a NAAQS are designated as maintenance areas. Emissions of pollutants for which an area is in attainment are exempt from conformity analyses.

Activities associated with the Proposed Action would be conducted at Naval Base Ventura County (NBVC) Point Mugu and NBVC San Nicolas Island (SNI), both in Ventura County, and on Santa Cruz Island (SCrI) in Santa Barbara County. Effective 19 June 2008, Ventura County has been reclassified as a "serious" nonattainment area for the federal 8-hour O_3 standard (*de minimis* thresholds are 50 tons/year for VOCs and NO_X) and is in attainment of all other criteria pollutants. Ventura County is classified as a nonattainment area for the state O_3, $PM_{2.5}$, and PM_{10} standard.

Although NBVC SNI is part of Ventura County, the USEPA has determined that SNI is separate and distinct from the South Central Coast Air Basin (SCCAB) which includes the Ventura County Air Pollution Control District (VCAPCD). SNI is in attainment/unclassified of the NAAQS for all criteria pollutants therefore, the provisions of the General Conformity Rule and *de minimis* thresholds do not apply to proposed activities conducted on SNI. Due to the lack of major emitting sources on SNI in conjunction with predominantly strong winds from the northwest, the likelihood of pollutants remaining in the ambient air of the island is very low.

SCrI is located within Santa Barbara County, which is part of the SCCAB. Santa Barbara County is in attainment or unclassifiable/attainment status of the NAAQS for all criteria pollutants. As such, the provisions of the General Conformity Rule and *de minimis* thresholds do not apply to proposed activities conducted at SCrI.

An emissions analysis for the installation of a replacement FOCUS is provided below. Emissions estimates for the Proposed Action have been compared to *de minimis* thresholds of a nonattainment area. *de minimis* thresholds for criteria pollutants would not be exceeded as a result of implementation of the Proposed Action and a formal Conformity Determination is not considered necessary.

PROPOSED ACTION

Action Proponent: Naval Air Warfare Center Weapons Division (NAWCWD).

Location: The Point Mugu Sea Range, NBVC Point Mugu, NBVC SNI, and SCrI, California

Proposed Action Name: Directed Energy Test Site, San Nicolas Island

Proposed Action Summary: NAWCWD proposes to replace the existing FOCUS-I between NBVC Point Mugu and NBVC SNI and the microwave communications system link between NBVC Point Mugu and SCrI with a single new system. This new system, FOCUS-II, will connect NBVC Point Mugu, NBVC SNI, and SCrI via new undersea fiber optic cables. Onshore activities will include horizontal directional drilling from the onshore landing sites to offshore exit sites and installation of fiber optic cables in conduits. Offshore activities will include laying cable between offshore exit sites, connecting to onshore transition cables, and stabilization of the fiber optic cables on the seafloor.

Air Emissions Summary: Emission sources associated with the Proposed Action involve construction activities and operations. Annual emissions from all construction activities were calculated by assuming that all activities would occur within one 12-month period. Based on the air quality analysis for the Proposed Action, the maximum estimated emissions would be below conformity *de minimis* levels. Table 1 provides a summary of the air emissions associated with the proposed action for the onshore area at Point Mugu out to an offshore distance of 3 nautical miles (NM), which are subject to the General Conformity Rule. Since SNI, SCrI, and the offshore regions proposed for FOCUS-II installation are considered in attainment/unclassified for the NAAQS, the provisions of the General Conformity Rule do not apply. Tables 2 through 5 provide summaries of the emissions at SNI, SCrI, and within the offshore regions, which are not subject to the General Conformity Rule.

Affected Air Basin: South Central Coast Air Basin

Table 1 Point Mugu Sites Emissions (within 3 NM) – Proposed Action

Component	Pollutant (tons/year)					
	VOCs	CO	NO_X	SO_X	PM_{10}	CO_{2e}
Building 811 Site						
Site preparation	0.00223	0.00833	0.0163	0.00003	0.00104	3.02
Drilling operations	0.0559	0.182	0.347	0.00059	0.0197	51.4
Trenching/cable installation	0.00144	0.00945	0.00961	0.00002	0.00602	1.69
On-road vehicles	0.00335	0.0240	0.0179	0.00007	0.00102	7.14
Offshore cable installation	0.824	19.6	2.31	--	0.0165	223
Subtotal	**0.887**	**19.8**	**2.70**	**0.00071**	**0.0443**	**286**
Charlie Pad Site						
Site preparation	0.00891	0.0329	0.0652	0.00012	0.00372	12.0
Drilling operations	0.0559	0.182	0.347	0.00059	0.0197	51.4
Trenching/cable installation	0.00361	0.0236	0.0240	0.00004	0.00690	3.96
On-road vehicles	0.00335	0.0240	0.0179	0.00007	0.00102	7.14
Offshore cable installation	0.824	19.6	2.31	--	0.0165	223
Subtotal	**0.896**	**19.9**	**2.76**	**0.00082**	**0.0478**	**298**
Total for Point Mugu Operations	**1.78**	**39.7**	**5.46**	**0.0015**	**0.0921**	**584**
de minimis threshold	50 *	N/A	50 *	N/A	N/A	N/A
Exceeds *de minimis* threshold?	No	No	No	No	No	No

Note: * Effective June 19, 2008, Ventura County (excluding SNI) has been classified as a "serious" nonattainment area for the 8-hour federal O_3 standard; VOCs and NO_X are precursors to the formation of O_3.

Table 2 San Nicolas Island Emissions (within 3 NM) - Alternative 1

Component	Pollutant (tons/year)					
	VOCs	CO	NO_X	SO_X	PM_{10}	CO_{2e}
Site preparation	0.00297	0.0110	0.0217	0.00004	0.00138	4.02
Drilling operations	0.0559	0.182	0.347	0.00059	0.0197	51.4
Trenching/cable installation	0.00144	0.00945	0.00961	0.00002	0.00602	1.69
On-road vehicles	0.00112	0.00800	0.00597	0.00002	0.00034	2.38
Supply barge	0.00098	0.00583	0.0181	0.00090	0.00004	0.875
Offshore cable installation	1.01	23.9	2.83	--	0.0201	273
Total	**1.07**	**24.1**	**3.23**	**0.0016**	**0.0476**	**333**

Note: The General Conformity Rule is not applicable since SNI is in attainment/unclassified of the NAAQS for all criteria pollutants. Emissions are presented for planning purposes only.

Table 3 Santa Cruz Island Emissions (within 3 NM) - Alternative 1

Component	Pollutant (tons/year)					
	VOCs	CO	NO_X	SO_X	PM_{10}	CO_{2e}
Site preparation	0.0297	0.0110	0.0217	0.00004	0.00138	4.02
Drilling operations	0.105	0.457	0.956	0.00193	0.0346	106
Trenching/cable installation	0.0571	0.372	0.377	0.00068	0.116	59.2
On-road vehicles	0.00323	0.0279	0.00526	0.00006	3.77	6.11
Supply barge	0.00086	0.0109	0.0163	0.00190	0.00005	0.159
Offshore cable installation	1.01	23.9	2.83	--	0.0201	273
Total	**1.21**	**24.8**	**4.21**	**0.00461**	**3.94**	**448**

Note: The General Conformity Rule is not applicable since SCrI is in attainment/unclassified of the NAAQS for all criteria pollutants. Emissions are presented for planning purposes only.

Table 4 Alternative 1 Emissions (3 < x < 12 NM)

Component	Pollutant (tons/year)					
	VOCs	CO	NO_X	SO_X	PM_{10}	CO_{2e}
SNI supply barge	0.00294	0.0175	0.0544	0.00270	0.00012	0.262
SCrI supply barge	0.00203	0.0109	0.0380	0.00443	0.00011	0.371
Offshore cable installation	3.30	78.2	9.26	--	0.0658	893
Total	**3.30**	**78.2**	**9.35**	**0.0071**	**0.0660**	**894**

Note: *de minimis* thresholds do not apply to offshore (>3 nm) emissions.

Table 5 Alternative 1 Emissions (> 12 NM)

Component	Pollutant (tons/year)					
	VOCs	CO	NO_X	SO_X	PM_{10}	CO_{2e}
SNI supply barge	0.00587	0.0350	0.109	0.00540	0.00024	0.525
Offshore cable installation	5.49	130	15.4	--	0.110	1,490
Total	**5.50**	**130**	**15.5**	**0.0054**	**0.110**	**1,490**

Note: *de minimis* thresholds do not apply to offshore (>3 nm) emissions.

Emission Calculations – Proposed Action

Onshore Operations

Emission Factors – From SCAQMD Off-Road Mobile Source Emission Factors for Fleet Year 2017

Grading Equipment

	max hp	TOC	CO	NOX	SOX	PM10	CO2	CH4
Rubber tired dozer	500	2.66E-01	1.10E+00	2.09E+00	2.60E-03	8.49E-02	2.65E+02	2.40E-02
Grader	500	1.50E-01	5.34E-01	1.11E+00	2.30E-03	4.00E-02	2.29E+02	1.35E-02
Loader	500	1.51E-01	5.41E-01	1.13E+00	2.30E-03	4.05E-02	2.37E+02	1.37E-02
Dump Truck	500	1.75E-01	5.68E-01	1.10E+00	2.70E-03	3.97E-02	2.72E+02	1.58E-02

Drilling Equipment

	max hp	TOC	CO	NOX	SOX	PM10	CO2	CH4
HDD rig (small)	175	5.19E-02	7.54E-01	3.59E-01	1.60E-03	1.21E-02	1.41E+02	4.70E-03
HDD rig (large)	500	9.55E-02	5.51E-01	5.04E-01	3.10E-03	1.45E-02	3.11E+02	8.60E-03
Mud pump	120	7.60E-02	4.80E-01	5.72E-01	9.00E-04	4.00E-02	7.79E+01	6.90E-03
Generator	250	9.26E-02	3.99E-01	1.10E+00	2.40E-03	3.07E-02	2.13E+02	8.40E-03
Slurry plant	120	1.33E-01	4.48E-01	7.59E-01	7.00E-04	7.35E-02	6.07E+01	1.20E-02
Shale shaker	50	1.65E-01	4.11E-01	3.30E-01	4.00E-04	3.75E-02	3.03E+01	1.49E-02
Crane	250	8.30E-02	2.57E-01	6.83E-01	1.30E-03	2.35E-02	1.12E+02	7.50E-03

Trenching Equipment

	max hp	TOC	CO	NOX	SOX	PM10	CO2	CH4
Backhoe	120	7.60E-02	5.04E-01	4.84E-01	9.00E-04	3.40E-02	7.36E+01	6.90E-03
Ditch Witch	50	5.21E-02	2.57E-01	2.08E-01	3.00E-04	1.28E-02	2.50E+01	4.70E-03
Loader	175	9.54E-02	6.23E-01	6.57E-01	1.20E-03	3.62E-02	1.06E+02	8.60E-03
Grader	175	1.14E-01	7.30E-01	7.78E-01	1.40E-03	4.29E-02	1.24E+02	1.02E-02

EFs for On-Road Vehicles

Scenario Year: **2017**

All model years in the range 1973 to 2017

Passenger Vehicles (pounds/mile)	
CO	5.38E-03
NOx	5.13E-04
ROG	6.01E-04
SOx	1.08E-05
PM10	9.45E-05
PM2.5	6.19E-05
CO2	1.11E+00
CH4	5.30E-05

Delivery Trucks (pounds/mile)	
CO	9.98E-03
NOx	1.07E-02
ROG	1.50E-03
SOx	2.72E-05
PM10	4.31E-04
PM2.5	3.46E-04
CO2	2.84E+00
CH4	6.66E-05

Scenario Year: **2017**

All model years in the range 1973 to 2017

HHDT-DSL (pounds/mile)	
CO	6.51E-03
NOx	1.69E-02
ROG	1.45E-03
SOx	4.03E-05
PM10	8.49E-04
PM2.5	6.97E-04
CO2	4.21E+00
CH4	6.72E-05

HHDT-DSL, Exh (pounds/mile)	
PM10	7.09E-04
PM2.5	6.51E-04

Fugitive Dust assumed values

Soil % silt, s	8
Soil % moisture, M	2
Fraction of TSP, J	0.5
Mean vehicle speed, S	5
Dozer path width (ft)	10
Drop height (ft)	3

Grading = 0.0306 x S^2 in lb/hr

Dozing = 0.75 x s^1.5/M^1.4 in lb/VMT

Trenching = 0.75 x 0.0021 x d^0.7 x M^0.3

Grading	0.765	lb/hr	4	hr/acre	3.06	lb/acre
Dozing	6.43E+00	lb/VMT	0.83	VMT/acre	5.34	lb/acre
Trenching	4.18E-03	lb/ton			2.11	lb/day

Support vessel (assume rigid hull inflatable boat with 240 hp engine

		EF in lb/hp-hr		VOC	NOX	CO	PM	CO2	Class
RIB	260 hp	diesel	OB	7.78E-03	1.28E-02	2.65E-01	1.32E-05	1.85E+00	MO4D

EF in lb/hr

	VOC	NOX	CO	PM	CO2
RIB	1.01E+00	1.67E+00	3.45E+01	1.72E-03	2.40E+02

Barge shipments - assume barge uses tug boat with 2500 hp main engine and 150 hp auxiliary engine

EF (g/hp-hr)

Engine	Fuel	# active	VOC	CO	NOX	SOX	PM10	CO2
Main	D	1.00E+00	1.80E-01	1.17E+00	3.90E+00	5.00E-03	5.00E-03	1.79E+00
Aux	D	2.00E+00	3.60E-01	1.33E+00	3.90E+00	5.00E-03	5.00E-03	1.79E+00

Source: EPA Nonroad Engine Guidelines

EF (lb/hr)

Engine	# active	VOC	CO	NOX	SOX	PM10	CO2
Main	1	3.97E-01	2.58E+00	8.60E+00	2.00E-01	1.11E-02	9.88E+00
Aux	2	1.19E-01	4.40E-01	1.29E+00	3.00E-01	1.67E-03	1.23E+00

Forklift to unload barge

EF (lb/hr)

hp	TOC	CO	NOX	SOX	PM10	CO2	CH4
175	4.25E-02	3.32E-01	2.69E-01	6.00E-04	1.46E-02	5.61E+01	3.80E-03

As defined in AP-42, 13.2.2 Unpaved Roads

Fugitive dust EF (lb/VMT) = [k(s/12)^a * (S/30)d]/(M/0.5)^0.2

k = 1.8, s=8, S=20mph, d=0.5, M=2, c=0.2

EF = 0.743 lb/VMT

Landing craft assume 2 diesel engines (470 hp each)

EF (lb/hr)

Engine	# active	VOC	CO	NOX	SOX	PM10	CO2
DD	2	1.38E-02	3.88E-02	3.28E-01	1.08E-01	2.75E-04	3.71E+00

Building 811 Site – Onshore Emissions

Site Preparation (grading & bulldozing)

Grading Equipment	days	hr/ day	TOC	CO	NOX	SOX	PM10	CO2	CH4	FD (PM)
Rubber tired dozer	1	6	1.60E+00	6.58E+00	1.25E+01	1.56E-02	5.09E-01	1.59E+03	1.44E-01	5.34E-01
Grader	1	6	8.98E-01	3.21E+00	6.68E+00	1.38E-02	2.40E-01	1.37E+03	8.10E-02	3.06E-01
Loader	1	6	9.08E-01	3.25E+00	6.77E+00	1.38E-02	2.43E-01	1.42E+03	8.22E-02	
Dump Truck	1	6	1.05E+00	3.41E+00	6.62E+00	1.62E-02	2.38E-01	1.63E+03	9.48E-02	
	Total	lb	4.45E+00	1.64E+01	3.26E+01	5.94E-02	2.07E+00	6.02E+03	4.02E-01	8.40E-01
	Total	ton	2.23E-03	8.22E-03	1.63E-02	2.97E-05	1.04E-03	3.02E+00	2.01E-04	

FD = fugitive dust

Drilling ops

Drilling Equipment	days	hr/ day	TOC	CO	NOX	SOX	PM10	CO2	CH4
HDD rig (small)									
HDD rig (large)	30	8	2.29E+01	1.32E+02	1.21E+02	7.44E-01	3.48E+00	7.46E+04	2.06E+00
Mud pump	30	8	1.82E+01	1.15E+02	1.37E+02	2.16E-01	9.60E+00	1.87E+04	1.66E+00
Generator	30	10	2.78E+01	1.20E+02	3.30E+02	7.20E-01	9.21E+00	6.39E+04	2.52E+00
Slurry plant	30	8	3.20E+01	1.07E+02	1.82E+02	1.68E-01	1.76E+01	1.46E+04	2.88E+00
Shale shaker	30	8	3.96E+01	9.86E+01	7.92E+01	9.60E-02	9.00E+00	7.27E+03	3.58E+00
Crane	30	5	1.25E+01	3.86E+01	1.02E+02	1.95E-01	3.53E+00	1.68E+04	1.13E+00
Support vessel	5	4	2.02E+01	3.34E+01	6.90E+02		3.44E-02	4.80E+03	
	Total	lb	1.12E+02	3.64E+02	6.94E+02	1.18E+00	3.94E+01	1.03E+05	1.01E+01
	Total	ton	5.59E-02	1.82E-01	3.47E-01	5.90E-04	1.97E-02	5.14E+01	5.05E-03

Trenching/cable installation

Trenching Equipment	days	hr/ day	TOC	CO	NOX	SOX	PM10	CO2	CH4	FD (PM)
Backhoe	2	8	1.22E+00	8.07E+00	7.74E+00	1.44E-02	5.44E-01	1.18E+03	1.10E-01	1.06E+01
Ditch Witch										
Loader	2	4	7.63E-01	4.99E+00	5.26E+00	9.60E-03	2.90E-01	8.48E+02	6.88E-02	1.53E-01
Grader	2	4	9.08E-01	5.84E+00	6.22E+00	1.12E-02	3.43E-01	9.92E+02	8.16E-02	1.53E-01
	Total	lb	2.89E+00	1.89E+01	1.92E+01	3.52E-02	1.20E+01	3.02E+03	2.61E-01	1.09E+01
	Total	ton	1.44E-03	9.45E-03	9.61E-03	1.76E-05	6.02E-03	1.69E+00	1.30E-04	5.43E-03

On-road vehicles

Vehicle	# vehicles	days	miles/ day	TOC	CO	NOX	SOX	PM10	CO2	CH4
Passenger vehicles	5	35	30	3.16E+00	2.82E+01	2.69E+00	5.67E-02	4.96E-01	5.81E+03	2.78E-01
Delivery vehicle	4	10	30	1.80E+00	1.20E+01	1.28E+01	3.27E-02	5.18E-01	3.41E+03	8.00E-02
Semi-trucks	10	4	30	1.74E+00	7.81E+00	2.03E+01	4.84E-02	1.02E+00	5.05E+03	8.07E-02
		Total	lb	6.70E+00	4.80E+01	3.58E+01	1.38E-01	2.03E+00	1.43E+04	4.39E-01
		Total	ton	3.35E-03	2.40E-02	1.79E-02	6.89E-05	1.02E-03	7.14E+00	2.19E-04

Charlie Pad Site – Onshore Emissions

Site Preparation (grading & bulldozing)

Grading Equipment	days	hr/ day	TOC	CO	NOX	SOX	PM10	CO2	CH4	FD (PM)
Rubber tired dozer	3	8	6.38E+00	2.63E+01	5.01E+01	6.24E-02	2.04E+00	6.36E+03	5.76E-01	1.60E+00
Grader	3	8	3.59E+00	1.28E+01	2.67E+01	5.52E-02	9.60E-01	5.50E+03	3.24E-01	9.18E-01
Loader	3	8	3.63E+00	1.30E+01	2.71E+01	5.52E-02	9.72E-01	5.69E+03	3.29E-01	
Dump Truck	3	8	4.21E+00	1.36E+01	2.65E+01	6.48E-02	9.53E-01	6.53E+03	3.79E-01	
	Total	lb	1.78E+01	6.58E+01	1.30E+02	2.38E-01	4.92E+00	2.41E+04	1.61E+00	2.52E+00
	Total	ton	8.91E-03	3.29E-02	6.52E-02	1.19E-04	3.72E-03	1.21E+01	8.04E-04	1.26E-03

Drilling ops

Drilling Equipment	days	hr/ day	TOC	CO	NOX	SOX	PM10	CO2	CH4
HDD rig (small)									
HDD rig (large)	30	8	2.29E+01	1.32E+02	1.21E+02	7.44E-01	3.48E+00	7.46E+04	2.06E+00
Mud pump	30	8	1.82E+01	1.15E+02	1.37E+02	2.16E-01	9.60E+00	1.87E+04	1.66E+00
Generator	30	10	2.78E+01	1.20E+02	3.30E+02	7.20E-01	9.21E+00	6.39E+04	2.52E+00
Slurry plant	30	8	3.20E+01	1.07E+02	1.82E+02	1.68E-01	1.76E+01	1.46E+04	2.88E+00
Shale shaker	30	8	3.96E+01	9.86E+01	7.92E+01	9.60E-02	9.00E+00	7.27E+03	3.58E+00
Crane	30	5	1.25E+01	3.86E+01	1.02E+02	1.95E-01	3.53E+00	1.68E+04	1.13E+00
Support vessel	5	4	2.02E+01	3.34E+01	6.90E+02		3.44E-02	4.80E+03	
	Total	lb	1.12E+02	3.64E+02	6.94E+02	1.18E+00	3.94E+01	1.03E+05	1.01E+01
	Total	ton	5.59E-02	1.82E-01	3.47E-01	5.90E-04	1.97E-02	5.14E+01	5.05E-03

Trenching/cable installation

Trenching Equipment	days	hr/ day	TOC	CO	NOX	SOX	PM10	CO2	CH4	FD (PM)
Backhoe	5	8	3.04E+00	2.02E+01	1.94E+01	3.60E-02	1.36E+00	2.94E+03	2.76E-01	1.06E+01
Loader	5	4	1.91E+00	1.25E+01	1.31E+01	2.40E-02	7.24E-01	2.12E+03	1.72E-01	1.53E-01
Grader	5	4	2.27E+00	1.46E+01	1.56E+01	2.80E-02	8.58E-01	2.48E+03	2.04E-01	1.53E-01
	Total	lb	7.22E+00	4.72E+01	4.81E+01	8.80E-02	1.38E+01	7.54E+03	6.52E-01	1.09E+01
	Total	ton	3.61E-03	2.36E-02	2.40E-02	4.40E-05	6.90E-03	3.77E+00	1.85E-01	5.43E-03

On-road vehicles

Vehicle	# vehicles	days	miles/ day	TOC	CO	NOX	SOX	PM10	CO2	CH4
Passenger vehicles	5	35	30	3.16E+00	2.82E+01	2.69E+00	5.67E-02	4.96E-01	5.81E+03	2.78E-01
Delivery vehicle	4	10	30	1.80E+00	1.20E+01	1.28E+01	3.27E-02	5.18E-01	3.41E+03	8.00E-02
Semi-trucks	10	4	30	1.74E+00	7.81E+00	2.03E+01	4.84E-02	1.02E+00	5.05E+03	8.07E-02
		Total	lb	6.70E+00	4.80E+01	3.58E+01	1.38E-01	2.03E+00	1.43E+04	4.39E-01
		Total	ton	3.35E-03	2.40E-02	1.79E-02	6.89E-05	1.02E-03	7.14E+00	2.19E-04

San Nicolas Island Emissions

Site Preparation (grading & bulldozing)

Grading Equipment	days	hr/ day	TOC	CO	NOX	SOX	PM10	CO2	CH4	FD (PM)
Rubber tired dozer	1	8	2.13E+00	8.78E+00	1.67E+01	2.08E-02	6.79E-01	2.12E+03	1.92E-01	7.10E-01
Grader	1	8	1.20E+00	4.28E+00	8.91E+00	1.84E-02	3.20E-01	1.83E+03	1.08E-01	4.07E-01
Loader	1	8	1.21E+00	4.33E+00	9.03E+00	1.84E-02	3.24E-01	1.90E+03	1.10E-01	
Dump Truck	1	8	1.40E+00	4.54E+00	8.83E+00	2.16E-02	3.18E-01	2.18E+03	1.26E-01	
	Total	lb	5.94E+00	2.19E+01	4.35E+01	7.92E-02	1.64E+00	8.02E+03	5.36E-01	1.12E+00
	Total	ton	2.97E-03	1.10E-02	2.17E-02	3.96E-05	1.38E-03	4.02E+00	2.68E-04	5.59E-04

Drilling ops

Drilling Equipment	days	hr/ day	TOC	CO	NOX	SOX	PM10	CO2	CH4
HDD rig (small)									
HDD rig (large)	30	8	2.29E+01	1.32E+02	1.21E+02	7.44E-01	3.48E+00	7.46E+04	2.06E+00
Mud pump	30	8	1.82E+01	1.15E+02	1.37E+02	2.16E-01	9.60E+00	1.87E+04	1.66E+00
Generator	30	10	2.78E+01	1.20E+02	3.30E+02	7.20E-01	9.21E+00	6.39E+04	2.52E+00
Slurry plant	30	8	3.20E+01	1.07E+02	1.82E+02	1.68E-01	1.76E+01	1.46E+04	2.88E+00
Shale shaker	30	8	3.96E+01	9.86E+01	7.92E+01	9.60E-02	9.00E+00	7.27E+03	3.58E+00
Crane	30	5	1.25E+01	3.86E+01	1.02E+02	1.95E-01	3.53E+00	1.68E+04	1.13E+00
Support vessel	5	4	2.02E+01	3.34E+01	6.90E+02		3.44E-02	4.80E+03	
	Total	lb	1.12E+02	3.64E+02	6.94E+02	1.18E+00	3.94E+01	1.03E+05	1.01E+01
	Total	ton	5.59E-02	1.82E-01	3.47E-01	5.90E-04	1.97E-02	5.14E+01	5.05E-03

Trenching/cable installation

Trenching Equipment	days	hr/ day	TOC	CO	NOX	SOX	PM10	CO2	CH4	FD (PM)
Backhoe	5	8	3.04E+00	2.02E+01	1.94E+01	3.60E-02	1.36E+00	2.94E+03	2.76E-01	1.06E+01
Ditch Witch										
Loader	5	4	1.91E+00	1.25E+01	1.31E+01	2.40E-02	7.24E-01	2.12E+03	1.72E-01	2.03E-01
Grader	5	4	2.27E+00	1.46E+01	1.56E+01	2.80E-02	8.58E-01	2.48E+03	2.04E-01	1.53E-01
	Total	lb	7.22E+00	4.72E+01	4.81E+01	8.80E-02	1.38E+01	7.54E+03	6.52E-01	1.09E+01
	Total	ton	3.61E-03	2.36E-02	2.40E-02	4.40E-05	6.92E-03	3.78E+00	3.26E-04	5.45E-03

On-road vehicles

Vehicle	# vehicles	days	miles/ day	TOC	CO	NOX	SOX	PM10	CO2	CH4
Passenger vehicles	5	35	10	1.05E+00	9.41E+00	8.98E-01	1.89E-02	1.65E-01	1.94E+03	9.28E-02
Delivery vehicle	4	10	10	6.01E-01	3.99E+00	4.28E+00	1.09E-02	1.73E-01	1.14E+03	2.67E-02
Semi-trucks	10	4	10	5.81E-01	2.60E+00	6.76E+00	1.61E-02	3.40E-01	1.68E+03	2.69E-02
		Total	lb	2.23E+00	1.60E+01	1.19E+01	4.59E-02	6.77E-01	4.76E+03	1.46E-01
		Total	ton	1.12E-03	8.00E-03	5.97E-03	2.30E-05	3.39E-04	2.38E+00	7.31E-05

Barge shipments and loading/unloading

	hr	TOC	CO	NOX	SOX	PM10	CO2	CH4
Barge main engine	36	1.43E+01	9.28E+01	3.10E+02	7.20E+00	4.00E-01	3.56E+02	0.00E+00
Barge aux engine	36	4.28E+00	1.58E+01	4.64E+01	1.08E+01	6.00E-02	4.44E+01	0.00E+00
Forklift	24	1.02E+00	7.97E+00	6.44E+00	1.44E-02	3.50E-01	1.35E+03	9.12E-02
Total	lb	1.96E+01	1.17E+02	3.62E+02	1.80E+01	8.10E-01	1.75E+03	9.12E-02
Total	ton	9.79E-03	5.83E-02	1.81E-01	9.01E-03	4.05E-04	8.75E-01	4.56E-05

Santa Cruz Island Emissions

Site Preparation (grading & bulldozing)

Grading Equipment	days	hr/ day	TOC	CO	NOX	SOX	PM10	CO2	CH4	FD (PM)
Rubber tired dozer	1	8	2.13E+00	8.78E+00	1.67E+01	2.08E-02	6.79E-01	2.12E+03	1.92E-01	7.10E-01
Grader	1	8	1.20E+00	4.28E+00	8.91E+00	1.84E-02	3.20E-01	1.83E+03	1.08E-01	4.07E-01
Loader	1	8	1.21E+00	4.33E+00	9.03E+00	1.84E-02	3.24E-01	1.90E+03	1.10E-01	
Dump Truck	1	8	1.40E+00	4.54E+00	8.83E+00	2.16E-02	3.18E-01	2.18E+03	1.26E-01	
	Total	lb	5.94E+00	2.19E+01	4.35E+01	7.92E-02	1.64E+00	8.02E+03	5.36E-01	1.12E+00
	Total	ton	2.97E-03	1.10E-02	2.17E-02	3.96E-05	1.38E-03	4.02E+00	2.68E-04	5.59E-04

Drilling ops

Drilling Equipment	days	hr/ day	TOC	CO	NOX	SOX	PM10	CO2	CH4
HDD rig (small)	40	8	1.66E+01	2.41E+02	1.15E+02	5.12E-01	3.87E+00	4.51E+04	1.50E+00
HDD rig (large)									
Mud pump	40	8	2.43E+01	1.54E+02	1.83E+02	2.88E-01	1.28E+01	2.49E+04	2.21E+00
Generator	40	10	3.70E+01	1.60E+02	4.40E+02	9.60E-01	1.23E+01	8.52E+04	3.36E+00
Slurry plant	40	8	4.26E+01	1.43E+02	2.43E+02	2.24E-01	2.35E+01	1.94E+04	3.84E+00
Shale shaker	40	8	5.27E+01	1.32E+02	1.06E+02	1.28E-01	1.20E+01	9.70E+03	4.77E+00
Crane	40	5	1.66E+01	5.14E+01	1.37E+02	2.60E-01	4.70E+00	2.24E+04	1.50E+00
Support vessel	5	4	2.02E+01	3.34E+01	6.90E+02		3.44E-02	4.80E+03	
	Total	lb	2.10E+02	9.14E+02	1.91E+03	2.37E+00	6.92E+01	2.12E+05	1.72E+01
	Total	ton	1.05E-01	4.57E-01	9.56E-01	1.19E-03	3.46E-02	1.06E+02	8.59E-03

Trenching/cable installation

Trenching Equipment	days	hr/ day	TOC	CO	NOX	SOX	PM10	CO2	CH4	FD (PM)
Backhoe	85	8	4.89E+01	3.25E+02	3.12E+02	5.80E-01	2.19E+01	4.74E+04	4.44E+00	1.70E+02
Ditch Witch	5	8	1.97E+00	9.73E+00	7.89E+00	1.14E-02	4.85E-01	9.47E+02	1.78E-01	1.00E+01
Loader	80	4	2.89E+01	1.89E+02	1.99E+02	3.64E-01	1.10E+01	3.21E+04	2.61E+00	3.08E+00
Grader	80	4	3.44E+01	2.21E+02	2.36E+02	4.24E-01	1.30E+01	3.76E+04	3.09E+00	2.32E+00
	Total	lb	1.14E+02	7.45E+02	7.54E+02	1.38E+00	4.63E+01	1.18E+05	1.03E+01	1.85E+02
	Total	ton	5.71E-02	3.72E-01	3.77E-01	6.89E-04	1.16E-01	5.92E+01	5.16E-03	9.26E-02

On-road vehicles

Vehicle	# vehicles	days	miles/ day	TOC	CO	NOX	SOX	PM10	CO2	CH4
Passenger vehicles	5	130	15	5.86E+00	5.24E+01	5.00E+00	1.05E-01	9.21E-01	1.08E+04	5.17E-01
Delivery vehicle	4	10	5	3.00E-01	2.00E+00	2.14E+00	5.45E-03	8.63E-02	5.68E+02	1.33E-02
Semi-trucks	10	4	5	2.90E-01	1.30E+00	3.38E+00	8.07E-03	1.70E-01	8.42E+02	1.34E-02
		Total	lb	6.45E+00	5.57E+01	1.05E+01	1.19E-01	1.18E+00	1.22E+04	5.44E-01
		Total	ton	3.23E-03	2.79E-02	5.26E-03	5.94E-05	3.77E+00	6.11E+00	2.72E-04

Fugitive dust unpaved rds.

VMT	lb/VMT	lb	ton
10150	0.743	7541.45	3.770725

Barge shipments and loading/unloading Assumes 1 large barge RT delivery + 10 landing craft RT deliveries

	hr	TOC	CO	NOX	SOX	PM10	CO2	CH4
Barge main engine	8	3.17E+00	2.06E+01	6.88E+01	1.60E+00	8.89E-02	7.90E+01	
Barge aux engine	8	9.50E-01	3.52E+00	1.03E+01	2.40E+00	1.33E-02	9.88E+00	
Landing Craft	80	1.11E+00	3.10E+00	2.63E+01	8.64E+00	2.20E-02	2.97E+02	
Forklift	12	5.10E-01	3.99E+00	3.22E+00	7.20E-03	1.75E-01	6.73E+02	
Total	lb	5.74E+00	3.12E+01	1.09E+02	1.26E+01	2.99E-01	1.06E+03	0.00E+00
Total	ton	2.87E-03	1.56E-02	5.43E-02	6.32E-03	1.50E-04	5.29E-01	0.00E+00

Offshore Emissions

Offshore Barge - SNI

	TOC	CO	NOX	SOX	PM10	CO2
<3 nm	9.79E-04	5.83E-03	1.81E-02	9.01E-04	4.05E-05	8.75E-02
3< x < 12	2.94E-03	1.75E-02	5.44E-02	2.70E-03	1.22E-04	2.62E-01
>12 nm	5.87E-03	3.50E-02	1.09E-01	5.40E-03	2.43E-04	5.25E-01

Barge - Offshore SCrI

	TOC	CO	NOX	SOX	PM10	CO2
<3 nm	8.61E-04	4.69E-03	1.63E-02	1.90E-03	4.49E-05	1.59E-01
3< x < 12	2.01E-03	1.09E-02	3.80E-02	4.43E-03	1.05E-04	3.71E-01

Emission Factors (lb/hp-hr)

IN/OB	VOC	NOX	CO	PM	CO2	Class
IN	6.66E-03	1.87E-02	1.58E-01	1.32E-04	1.79E+00	MS4D

Vessel engines:

5x 2,668 hp KRGB-9 Bergen engines (main engines)

2x 2,280 hp Ulstine thrusters (forward and bow)

2x 4,157 azimuth thrusters

Daily operations (assume 16 hours per day)

Engine	% power	hrs/day	VOC	NOX	CO	PM	CO2
main	66	24	2.81E+02	7.90E+02	6.68E+03	5.63E+00	7.64E+04
f/b thrust	33	6	3.01E+01	8.44E+01	7.13E+02	5.96E-01	8.08E+03
azi thrust	33	6	5.48E+01	1.54E+02	1.30E+03	1.09E+00	1.47E+04
		total	3.66E+02	1.03E+03	8.69E+03	7.31E+00	9.92E+04

PM (<3 nm)

9 days	VOC	NOX	CO	PM	CO2
lb	1.65E+03	4.63E+03	3.91E+04	3.29E+01	4.46E+05
ton	8.24E-01	2.31E+00	1.96E+01	1.65E-02	2.23E+02

SCrI & SNI (<3 nm)

5.5 days	VOC	NOX	CO	PM	CO2
lb	2.01E+03	5.66E+03	4.78E+04	4.02E+01	5.45E+05
ton	1.01E+00	2.83E+00	2.39E+01	2.01E-02	2.73E+02

Takes an extra day due to branching

(3 < x < 12 nm)

18 days	VOC	NOX	CO	PM	CO2
lb	6.59E+03	1.85E+04	1.56E+05	1.32E+02	1.79E+06
ton	3.30E+00	9.26E+00	7.82E+01	6.58E-02	8.93E+02

(>12 nm)

30 days	VOC	NOX	CO	PM	CO2
lb	1.10E+04	3.09E+04	2.61E+05	2.19E+02	2.98E+06
ton	5.49E+00	1.54E+01	1.30E+02	1.10E-01	1.49E+03

APPENDIX B
AGENCY COMMUNICATIONS

Communication with Federal, State, and local agencies will be inserted in the final EA.

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APPENDIX C
PUBLIC COMMENT

Communication with members of the public, government agencies, and non-governmental groups will be inserted into this appendix in the Final EA.