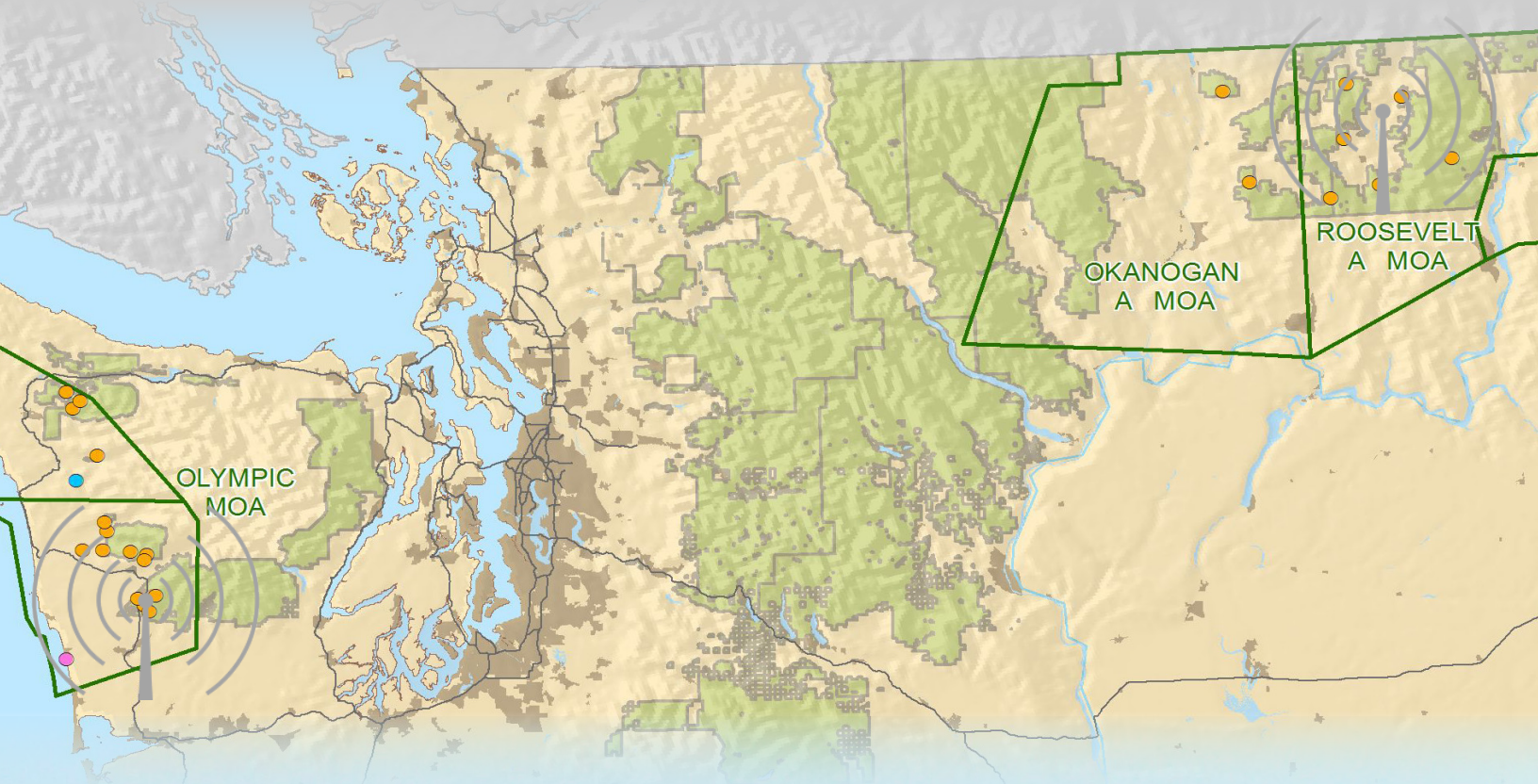
Pacific Northwest EW Range
Draft Environmental Assessment



COMMANDER
UNITED STATES PACIFIC FLEET

August 2014
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ENVIRONMENTAL ASSESSMENT
FOR THE
PACIFIC NORTHWEST
ELECTRONIC WARFARE RANGE

DRAFT ENVIRONMENTAL ASSESSMENT

AUGUST 2014

ENVIRONMENTAL ASSESSMENT

PACIFIC NORTHWEST ELECTRONIC WARFARE RANGE

Lead Agency: United States Department of the Navy

Title of the Proposed Action: Pacific Northwest Electronic Warfare Range

Designation: Environmental Assessment

Abstract

This Environmental Assessment (EA) has been prepared to analyze potential environmental impacts relevant to the proposed installation and operation of an Electronic Warfare (EW) Range in the Pacific Northwest (PNW). The purpose of the Proposed Action is to sustain and enhance the level and type of EW training currently being conducted by Navy assets using the Northwest Training Range Complex (NWTRC), to provide the ability to accommodate growth in future training requirements, and to maximize the ability of local units to achieve their training requirements on local ranges. Three alternatives have been analyzed in this EA:

- Under the No Action Alternative, very limited EW training, without the enhanced capability of fixed and mobile emitters, would continue to be conducted in the NWTRC; and intermediate-level EW training for certification would continue to occur at the Mountain Home Air Force Base approximately 400 nautical miles southeast of Naval Air Station Whidbey Island (NASWI).
- Alternative 1 includes:
    - Installation and operation of a Mission Control and Debrief Center in an existing facility at NASWI
    - Installation and operation of a fixed emitter at Naval Station Everett Annex Pacific Beach, to include renovation of Building 104
    - Installation and operation of communication equipment on an existing tower in the Olympic Military Operations Area (MOA) at Octopus Mountain
    - Operation of Mobile Electronic Warfare Training System (MEWTS) vehicle-mounted emitters in the Olympic Peninsula on U.S. Forest Service (USFS) and Washington State Department of Natural Resources lands to facilitate training in the Olympic MOA and Warning Area 237
- Alternative 2 includes all elements of Alternative 1 plus operation of MEWTS vehicle-mounted emitters on USFS lands to facilitate training within the Okanogan and Roosevelt MOAs.

A thorough analysis of environmental resources determined that implementation of any of the alternatives would result in no significant impact to public health and safety, biological resources, noise, air quality, and visual resources.

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EXECUTIVE SUMMARY

The United States (U.S.) Department of the Navy (Navy), Commander, U.S. Pacific Fleet, prepared this Environmental Assessment (EA) to comply with the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (Title 40 Code of Federal Regulations [C.F.R.] Parts 1500–1508), and Department of the Navy Procedures for Implementing NEPA (32 C.F.R. Part 775). This EA satisfies the requirements of NEPA.

This EA analyzes the potential impacts of actions associated with the installation and operation of an electronic warfare (EW) range in the state of Washington. In 2010, the Navy completed the Northwest Training Range Complex (NWTRC) Environmental Impact Statement (EIS)/Overseas EIS (OEIS), in which a number of ship, submarine, and aircraft activities that included EW training (referred to as Electronic Combat in the NWTRC EIS/OEIS) were analyzed. The NWTRC EIS and Record of Decision analyzed EW range training activities and the concept of a fixed emitter on the Olympic Peninsula as a part of the proposed Pacific Northwest EW Range at a programmatic level. This EA analyzes the installation and operation of the various components of the EW Range. The nature and scope of the Proposed Action involving the use of U.S. Forest Service (USFS) and Washington State Department of Natural Resources (WSDNR) logging roads requires the participation of, and coordination with, the USFS and the WSDNR. This EA will support the USFS and WSDNR permitting processes for road permits to be issued to the Navy that will allow road access and use of logging roads and sites identified in this EA.

BACKGROUND

The Pacific Northwest is home to Navy ships, submarines, and aircraft that have a significant EW training requirement. Electronic Warfare is the primary mission area of EA-18G, EA-6B, and EP-3 aircraft stationed at Naval Air Station Whidbey Island (NASWI). In addition, P-3 and P-8 aircraft stationed at NASWI and ships and submarines based in Puget Sound have EW training requirements as secondary mission areas. As a result of these training requirements, thousands of EW training missions are conducted outside of the NWTRC, which increases the Sailors' time away from home and associated costs to the government. The addition of the EW Range will reduce the time away from home and associated costs to the government.

PURPOSE AND NEED

The purpose of the Proposed Action is to sustain and enhance the level and type of EW training currently being conducted by assets using the NWTRC, to provide the ability to accommodate growth in future training requirements, and to maximize the ability of local units to achieve their training requirements on local ranges. The following list identifies the EW training and needs that will be met by establishing the EW Range: (1) EA-18G and EA-6B Fleet Replacement Squadron (FRS) personnel and Fleet Squadron Personnel training requirements; (2) support of basic and intermediate EW training for all user requirements of the NWTRC, primarily the locally assigned air, surface, and subsurface units; (3) live training, augmented by virtual training; (4) support of unit EW certifications and sustainment level training; (5) maximization and balance of local unit quality of training with local unit quality of life; (6) reduction in costs of training by conducting more training locally; and (7) reduction in the use of fossil fuel consumption from transit to and from training sites outside the state of Washington.

PROPOSED ACTION

The Navy's Proposed Action is to install and operate an EW Range in the Pacific Northwest, which includes the following activities:

(1) Installation and operation of a Mission Control and Debrief Center in an existing facility at NASWI
(2) Installation and operation of a fixed emitter (Mobile Remote Emitter Simulator [MRES]) at the Naval Station (NS) Everett Annex Pacific Beach, Washington, to include renovation of Building 104
(3) Installation and operation of communication equipment on an existing tower in the Olympic Military Operations Area (MOA) at Octopus Mountain
(4) Operation of Mobile Electronic Warfare Training System (MEWTS) vehicle-mounted emitters in the Olympic Peninsula on USFS and WSDNR lands to facilitate training in the Olympic MOA and Warning Area 237
(5) Operation of MEWTS vehicle-mounted emitters on USFS lands to facilitate training within Okanogan and Roosevelt MOAs

SUMMARY OF IMPACTS

This EA analyzes the potential impacts of actions associated with the installation and operation of an EW Range in the Pacific Northwest. A full range of environmental issues were considered for evaluation at the outset of the process. Certain resource areas were eliminated from detailed study in the EA because research revealed that the Proposed Action is unlikely to have any potential environmental impacts on these resources, or that impacts would be negligible. The resources that were not evaluated in this EA included geology, water, land use, cultural, transportation, socioeconomics, and environmental justice and protection of children. A summary of impacts for resource areas carried forward for analysis is provided below.

The NEPA, CEQ regulations, and Navy procedures for implementing NEPA specify that an EA should focus on those resource areas potentially subject to impacts. In addition, the level of analysis should be commensurate with the anticipated level of environmental impact. Those resource areas where there is potential impact as a result of the Proposed Action or different impacts from those considered in the NWTRC EIS/OEIS, are as follows: public health and safety, biological resources, noise, air quality, and visual resources. Consequently, this EA presents the analysis of those resource areas potentially impacted as a result of implementation of the No Action Alternative, Alternative 1, and Alternative 2 (Table ES.1-1).

Table ES.1-1: Summary of Potential Environmental Impacts for Each Alternative

Resource Area	No Action Alternative	Alternative 1	Alternative 2
Public Health and Safety	No significant impacts	No significant impacts	No significant impacts
Biological Resources	No significant impacts	No significant impacts	No significant impacts
Noise	No significant impacts	No significant impacts	No significant impacts
Air Quality	No significant impacts	No significant impacts	No significant impacts
Visual Resources	No significant impacts	No significant impacts	No significant impacts

Cumulative impacts of the Proposed Action, in combination with other past, present, and reasonably foreseeable future impacts, were analyzed. Based on the analysis, cumulative impacts within the EW Range Study Area would not be significant.

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ACRONYMS AND ABBREVIATIONS

µm	micrometer(s)
AGL	Above Ground Level
CAA	Clean Air Act
CEQ	Council on Environmental Quality
C.F.R.	Code of Federal Regulations
CHPPM	Center for Health Promotion and Preventive Medicine
cm	centimeter(s)
CO	carbon monoxide
dB	decibel(s)
dBA	decibel(s), A-weighted
DNL	Day-Night Average Sound Level
DoD	Department of Defense
DOPAA	Description of Proposed Action and Alternatives
E	Endangered
E3	Electromagnetic Environmental Effects
EA (1)	Electronic Attack
EA (2)	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ES	Electronic Warfare Support
ESA	Endangered Species Act
EW	Electronic Warfare
FONSI	Finding of No Significant Impact
FR	Federal Register
FRS	Fleet Replacement Squadron
ft.	foot/feet
FTRC	Fallon Training Range Complex
GHz	gigahertz
HC	hydrocarbon
HERP	Hazards of Electromagnetic Radiation to Personnel
Hr	hour(s)
Hz	hertz
IEEE	Institute of Electrical and Electronics Engineers
in.	inch(es)
kg	kilogram(s)
km	kilometer(s)
km^2	square kilometer(s)
kW	kilowatt(s)
L_{eq}	Equivalent Sound Levels
lb.	pound(s)
m	meter(s)
MANLAA	May Affect, Not Likely to Adversely Affect
MBTA	Migratory Bird Treaty Act
MEWTS	Mobile Electronic Warfare Training System
mi.	mile(s)
$mi.^2$	square mile(s)
MIIH	May Impact Individuals or Habitat
MOA	Military Operations Area
MOU	Memorandum of Understanding
MRES	Mobile Remote Emitter Simulator
msl	mean sea level
n/a	not applicable
NAAQS	National Ambient Air Quality Standards
NAS	Naval Air Station
NASWI	Naval Air Station Whidbey Island
Navy	United States Department of the Navy
NE	No Effect
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NI	No Impact
nm	nautical mile(s)
NMFS	National Marine and Fisheries Service
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NOI	Notice of Intent
NS	Naval Station
NWTRC	Northwest Training Range Complex
NWTT	Northwest Training and Testing
O_3	ozone
OEIS	Overseas Environmental Impact Statement
OLF	Outlying Landing Field
OPNAVINST	Office of the Chief of Naval Operations Instruction
Pb	lead
PM	particulate matter
$PM_{2.5}$	particulate matter ≤ 2.5 µm
PM_{10}	particulate matter ≤ 10 µm
PSD	Prevention of Significant Deterioration
SEL	Sound Exposure Level
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_x	sulfur oxides
SOP	Standard Operating Procedure
T	Threatened
TWTA	Traveling Wave Tube Amplifier
UHF	ultra high frequency
U.S.	United States
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service

USFWS	United States Fish and Wildlife Service
W	Warning Area
WSDNR	Washington State Department of Natural Resources
WSDOT	Washington State Department of Transportation
yd.	yard(s)
Yr	Year

1 PURPOSE OF AND NEED FOR PROPOSED ACTION

1.1 INTRODUCTION

This Environmental Assessment (EA) has been prepared by the United States (U.S.) Department of the Navy (Navy) in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code [U.S.C.] §4321 et seq.); the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (Title 40 Code of Federal Regulations [C.F.R.] §§1500-1508); Navy Procedures for Implementing NEPA (32 C.F.R. 775); and Navy instructions and guidance.

This EA analyzes the potential impacts of actions associated with the installation and operation of an electronic warfare (EW) range in the state of Washington. In 2010, the Navy completed the Northwest Training Range Complex (NWTRC) Environmental Impact Statement (EIS)/Overseas EIS (OEIS), in which a number of ship, submarine, and aircraft activities that included EW training (referred to as Electronic Combat in the NWTRC EIS/OEIS) were analyzed (Figure 1.3-1). The NWTRC EIS and Record of Decision analyzed the concept of a fixed emitter placed on the Olympic Peninsula to enhance electronic combat training. As part of this analysis the training activities associated with this enhancement feature were analyzed. Therefore, this EA will limit its scope to five previously unanalyzed components of operating the proposed Pacific Northwest EW range: (1) the installation and operation of a Mission Control and Debrief Center at Naval Air Station Whidbey Island (NASWI); (2) the installation and operation of a fixed emitter at Naval Station Everett Annex Pacific Beach, Washington, to include renovations to building 104; (3) the installation and operation of communication equipment on an existing tower in the Olympic Military Operations Area (MOA) at Octopus Mountain; (4) the movement and operation of mobile EW emitters in the Olympic Peninsula on U.S. Forest Service (USFS) and Washington State Department of Natural Resources (WSDNR) lands; and (5) the movement and operation of mobile EW emitters on USFS lands within Okanogan and Roosevelt MOAs.

1.2 LOCATION AND DESCRIPTION OF THE ELECTRONIC WARFARE RANGE

The Pacific Northwest EW range is located on Navy land and USFS and WSDNR logging roads in the Olympic Peninsula and north-central portion of Washington State. These land areas lie on the Olympic Peninsula beneath the assigned airspace of the Olympic MOAs (Figure 1.3-2 and Table 1.3-1). The movement and operation of the mobile EW emitters are the only proposed activities for use on USFS or WSDNR land. Additional mobile emitter sites are proposed in the Okanogan and Colville National Forests in north-central Washington State beneath the assigned airspace of the Okanogan and Roosevelt MOAs. Proposed emitter sites are indicated on Figure 1.3-2 and Figure 1.3-3 and listed in Table 1.3-1.

1.3 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action is to sustain and enhance the level and type of EW training currently being conducted by assets using the NWTRC, to provide the ability to accommodate growth in future training requirements, and to maximize the ability of local units to achieve their training requirements on local ranges. The following identifies the EW training and needs that will be met by establishing the EW Range: (1) EA-18G and EA-6B Fleet Replacement Squadron (FRS) personnel and Fleet Squadron Personnel training requirements; (2) support of basic and intermediate EW training for all user requirements of the NWTRC, primarily the locally assigned air, surface, and subsurface units; (3) live training, augmented by virtual training; (4) support of unit EW certifications and sustainment level training; (5) maximization and balance of local unit quality of training with local unit quality of life; (6) reduction in costs of training by conducting more training locally; and (7) reduction in the use of fossil fuel consumption from transit to and from training sites outside the state of Washington.

Figure 1.3-1: Northwest Training Range Complex Study Area

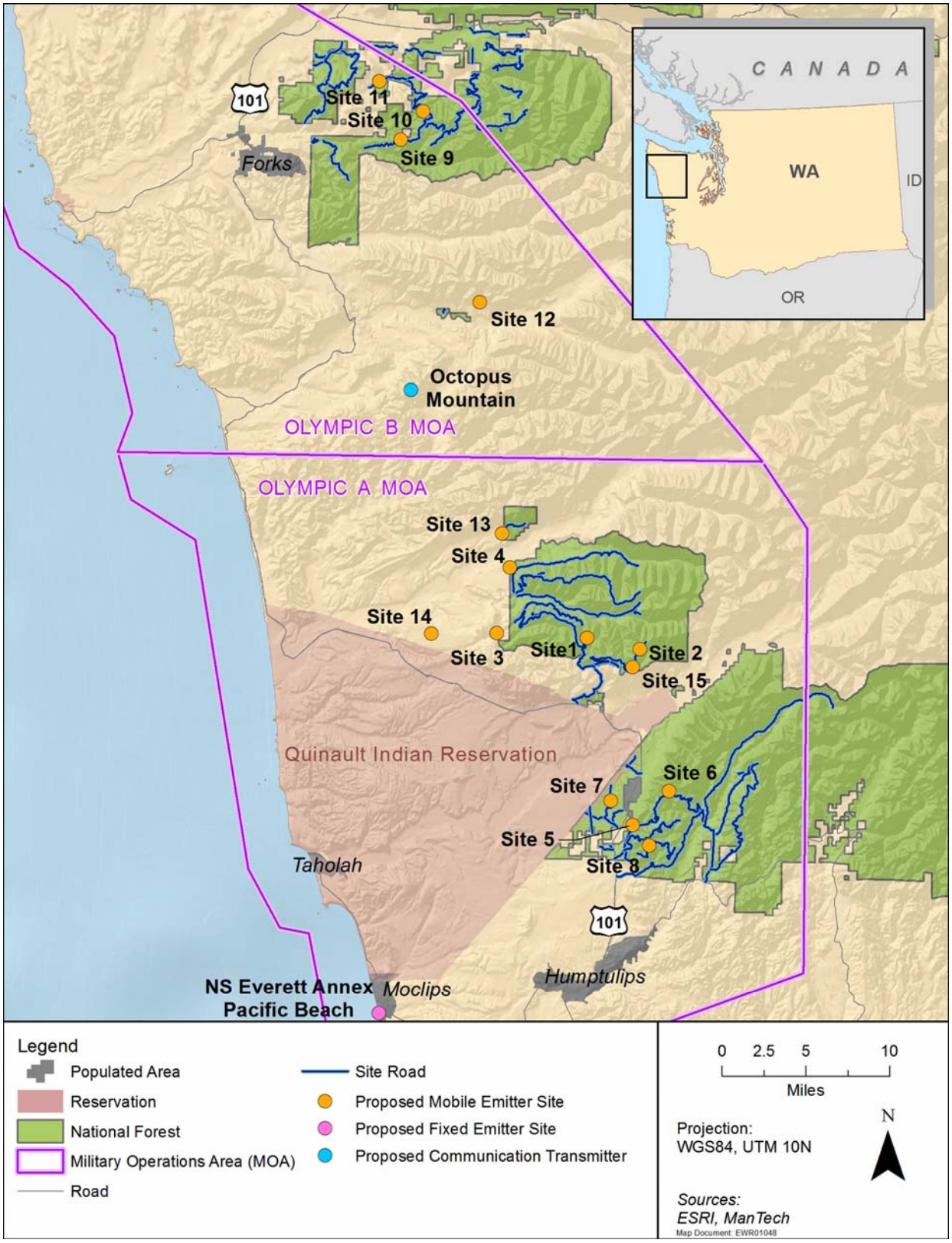

Figure 1.3-2: Proposed Fixed Emitter Site at Naval Station Everett Annex Pacific Beach and Proposed Mobile Emitter Sites in the Olympic Military Operations Area

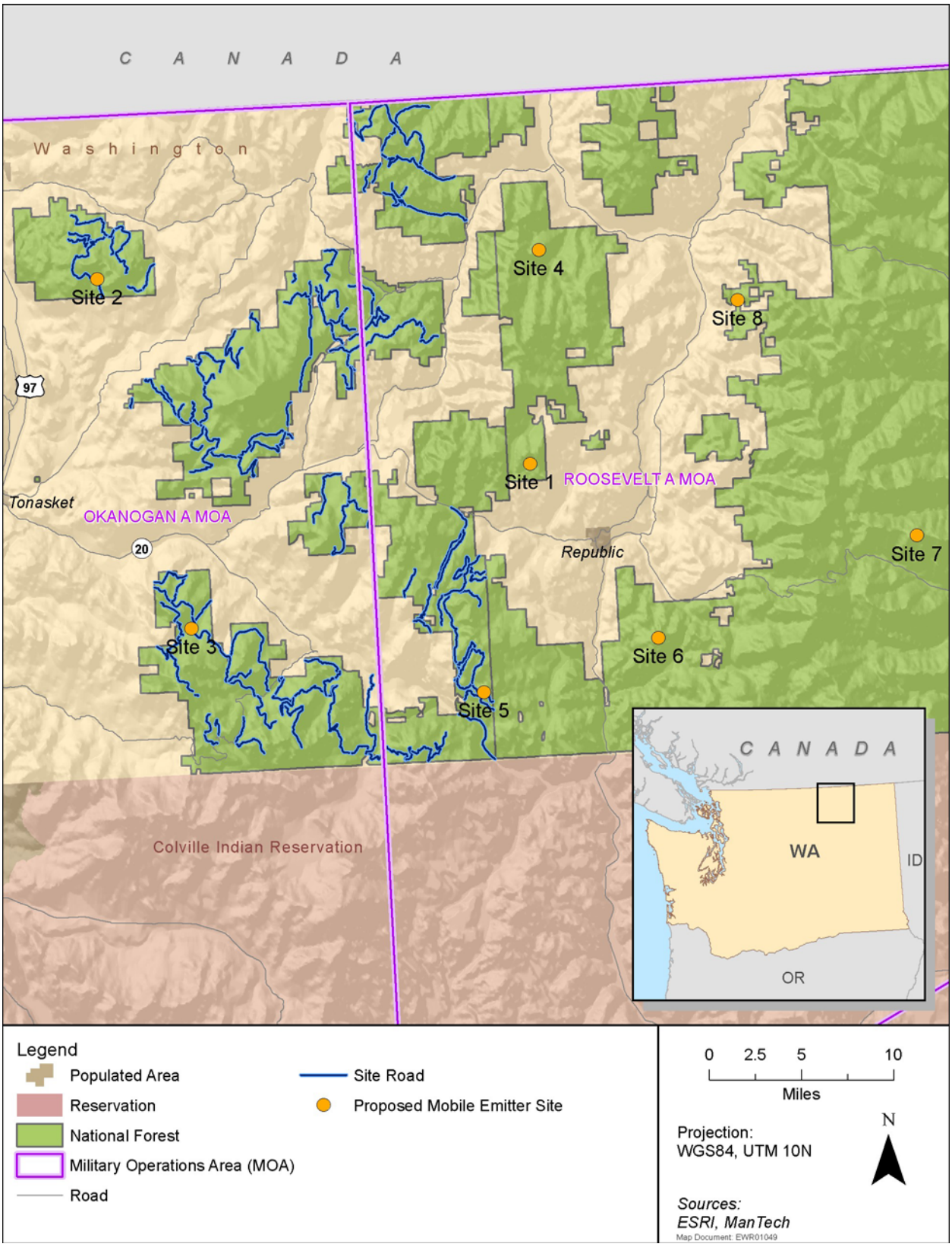

Figure 1.3-3: Proposed Mobile Emitter Sites in the Roosevelt and Okanogan Military Operations Areas

Table 1.3-1: Locations of Proposed Mobile Emitter Sites

Emitter #	Latitude / Longitude	Specific Location
Olympic A MOA		
1	N 47°32'13.56" / W 123°56'51.18"	ONF Land located on NFS Rd NF-2140
2	N 47°31'40.80" / W 123°52'47.50"	ONF Land located on NFS Rd NF-2190
3	N 47°32'24.70" / W 123°03'46.45"	WSDNR Land approximately 464 Ft east of NF 2331
4	N 47°35'49.80" / W 124°02'39.80"	ONF Land located on NFS Rd NF-011
5	N 47°22'32.81" / W 123°53'12.87"	ONF Land located on NFS Rd NF-2258
6	N 47°24'20.50" / W 123°50'27.08"	ONF Land located on NFS Rd NF-2258
7	N 47°23'47.40" / W 123°54'52.80"	NF land on a pull off area on NFS Rd 2257
8	N 47°21'30.10" / W 123°51'56.40"	NF land on a pull off area on NFS Rd 042
13	N 47°37'34.90" / W 124°03'27.60"	On a pull off area at the intersection of NFS Rd 3000 and 015
14	N 47°32'20.30" / W 124°08'45.80"	WSDNR land via NFS Rd 1000 on a pull off area
15	N 47°30'44.80" / W 123°53'20.20"	ONF Land located on NFS Rd NF-2190
Olympic B MOA		
9	N 47°57'58.00" / W 124°11'41.70"	NF land on a pull off area at the intersection of NFS Rd 2923 and NFS Rd 025
10	N 47°59'26.11" / W 124°09'59.78"	NF land on a pull off area on NFS Rd 2923
11	N 48°00'57.54" / W 124°13'26.13"	NF land on a pull off area at the intersection of NFS Rd 060 and NFS Rd 065
12	N 47°49'34.70" / W 124°05'24.40"	WSDNR land via DNR access road off of NFS Rd 005 on a pull off area
Okanogan MOA		
2	N 48°52'19.80" / W 119°18'40.00"	OKNF Land on a pull off area clear of trees from NFS Rd 3525.
3	N 48°35'43.60" / W 119°13'11.80“	OKNF Land on pull off area on NFS Rd 3010
Roosevelt MOA		
1	N 48°42'25.27" / W 118°48'35.64"	CNF Land NFS Rd 780 in a pull off area.
4	N 48°52'36.23" / W 118°47'12.37"	CNF Land NFS Rd 850 in a pull off area
5	N 48°32'02.20" / W 118°52'45.60"	OKNF land on a pull off area from NFS Rd 020
6	N 48°32'55.42" / W 118°41'00.08"	CNF land on pull off area from NFS Rd 800
7	N 48°37'39.70" / W 118°23'28.00"	CNF land on pull off area on NFS Rd 467 from Graves Mountain Road
8	N 48°48'07.52" / W 118°30'44.93"	CNF land on pull off area from NFS Rd 2160

Note: All emitter sites are on existing National Forest roads, CNF = Colville National Forest, DNR = Department of Natural Resources, MOA = Military Operations Area, NF = National Forest, NFS = National Forest Service, ONF = Olympic National Forest, OKNF = Okanogan National Forest, Rd = Road, WSDNR = Washington State Department of Natural Resources

1.4 SCOPE AND CONTENT

This EA assesses the installation and operation of fixed and mobile EW emitters in the Olympic peninsula of Washington State and in north-central Washington State that could potentially impact the human environment. The range of alternatives includes the No Action and other reasonable courses of action. In this EA, the Navy analyzes direct, indirect, cumulative, short-term, long-term, irreversible, and irretrievable impacts. This EA also considers environmental protection measures implemented as part of the use of the emitters during the training activities for assessing environmental consequences. Chapter

3 (Affected Environment and Environmental Consequences) provides information on resources evaluated in this EA.

Resources evaluated in detail include public health and safety, biological resources, noise, air quality, and visual resources.

1.5 ENVIRONMENTAL PLANNING PROCESS

Federal agencies are required to examine the environmental impacts of their proposed actions within the United States and its territories. As defined by CEQ §1508.9, an EA is a concise public document that briefly serves to (1) provide sufficient evidence and analysis for determining whether to prepare an EIS or a finding of no significant impact (FONSI), (2) aid an agency's compliance with the act when no EIS is necessary, and (3) facilitate preparation of a EIS when one is necessary.

In addition, an EA shall include brief discussions of (1) need for the proposal, (2) alternatives as required by Section 102(2)(E) of NEPA (42 U.S.C. §4332), (3) environmental impacts of the proposed action and alternatives, and (4) listing of agencies and persons consulted. The Navy undertakes environmental planning for major Navy actions in accordance with applicable laws, regulations, and executive orders (EOs).

1.5.1 NATIONAL ENVIRONMENTAL POLICY ACT REQUIREMENTS

The Navy undertakes environmental planning for major Navy actions in accordance with applicable laws, regulations, and executive orders (EOs). The NEPA requires federal agencies to examine the environmental impacts of their proposed actions within the United States and its territories. The NEPA provides a framework for deliberate, informed decisions regarding the proposed action and is initiated when an agency identifies a requirement and an action is proposed.

If the environmental impacts of the proposed action are uncertain, then an EA is initiated for developing the scope of issues related to the proposed action. In accordance with CEQ regulations found at 40 C.F.R. §1508.9, an EA is a concise public document that provides sufficient evidence and analysis to the decision maker for determining whether to prepare an environmental impact statement (EIS) or a Finding of No Significant Impact (FONSI). Further, an EA is the agency's compliance with the act when no EIS is necessary, and facilitates preparation of an EIS when one is necessary.

The NEPA process involves coordination with agencies and the public to the extent practicable in development of a draft EA to assess potential impacts of the proposed action and alternatives on the environment. After the Draft EA is made available to the public for review, the Navy decision-maker will evaluate the evidence and analysis contained within the EA and will either (1) prepare a FONSI and issue a Notice of Availability (posted on the Navy's website or published in local newspapers) or (2) make the determination that an EIS needs to be prepared to fully evaluate the impacts of the Proposed Action. The EA process under NEPA concludes with either the FONSI or the determination to proceed to preparation of an EIS.

1.5.2 ADDITIONAL REGULATORY CONSIDERATIONS

The Navy must comply with all applicable federal environmental laws, regulations, and EOs, including, but not limited to, those listed below. Further information can be found in Chapter 5, Other Considerations. Environmental considerations include (among other applicable laws and regulations):

- Bald and Golden Eagle Protection Act of 1940
- Clean Air Act (CAA)
- Endangered Species Act (ESA)
- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*
- EO 13045, *Environmental Health and Safety Risks to Children*
- EO 13175, *Consultation and Coordination with Indian Tribal Governments*
- Federal Water Pollution Control Act (Clean Water Act)
- Magnuson-Stevens Fishery Conservation and Management Act for Essential Fish Habitat
- Marine Mammal Protection Act
- Migratory Bird Treaty Act (MBTA)
- National Historic Preservation Act
- Rivers and Harbors Act

1.5.3 Decision to be Made

The Navy is the action proponent and the lead agency for preparation of this EA. The Navy is coordinating with the USFS and the WSDNR in support of this EA.

The Navy's decision to be made, after a review of the analysis presented in this EA, will be whether to issue a FONSI for the selected alternative or to proceed with development of an EIS. Upon FONSI of the EA and acceptance by the USFS and WSDNR, a road permit will be issued to the Navy that allows road access to the logging roads and sites identified in the EA, in accordance with the Special Use Permit, as indicated by the Master Agreement with the Department of Defense (DoD) on activities of this kind. Preparation of an EIS will only be required if it is necessary to further quantify and detail potentially significant impacts resulting from implementation of the Proposed Action.

1.6 Organization

To meet the need for decision-making, this EA is organized as follows:

- Chapter 1 describes the purpose of and need for the Proposed Action
- Chapter 2 describes the Proposed Action, alternatives considered but eliminated in the EA, and alternatives to be carried forward for analysis in the EA (including the preferred alternative)
- Chapter 3 describes the existing conditions of the affected environment and analyzes the potential impacts of the training activities in each alternative
- Chapter 4 describes the analysis of cumulative impacts, which are the impacts of the Proposed Action when added to past, present, and reasonably foreseeable future actions
- Chapter 5 describes other considerations required by NEPA and describes how the Navy complies with other federal, state, and local plans, policies, and regulations
- Chapter 6 includes a list of preparers and agencies and persons consulted
- Chapter 7 includes references used in the EA
- Appendices provide supporting information and agency coordination

1.7 Related Environmental Documents

In accordance with CEQ regulations for implementing NEPA, the following relevant material to the Proposed Action is being incorporated by reference, with the intent of reducing the size of the document. The following documents relate to the proposed Navy training activities and may be referenced in this EA, as appropriate:

- *Final Northwest Training Range Complex Environmental Impact Statement* (U.S. Department of the Navy 2010)
- *Final Environmental Assessment for the Transition of Expeditionary EA-6B Prowler Squadrons to EA-18G Growler at Naval Air Station Whidbey Island, Oak Harbor, Washington* (U.S. Department of the Navy 2012)
- *Final Environmental Impact Statement for the Introduction of the P-8A Multi-Mission Maritime Aircraft into the U.S. Navy Fleet* (U.S. Department of the Navy 2008)
- *Final Environmental Assessment for Replacement of EA-6B Aircraft with EA- 18G Aircraft at Naval Air Station Whidbey Island, Washington* (U.S. Department of the Navy 2005)
- *Biological Opinion for U.S. Pacific Fleet Northwest Training Range Complex in the Northern Pacific Coastal Waters off the States of Washington, Oregon, and California and Activities in Puget Sound and Airspace over the State of Washington, USA. Lacey, WA: Washington Fish and Wildlife Office* (U.S. Fish and Wildlife Service 2010).
- *Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest-Related Species within the Range of the Northern Spotted Owl. (Northwest Forest Plan). (U.S. Department of Agriculture 1994)*
- *Land and Resource Management Plan for the Olympic National Forest, Pacific Northwest Region (U.S. Department of Agriculture 1990)*
- *Land and Resource Management Plan*, *Colville National Forest (U.S. Department of Agriculture 1988)*
- *Okanogan National Forest Land and Resource Management Plan (U.S. Department of Agriculture 1989)*
- *Land and Resource Management Plan, Wenatchee National Forest (U.S. Department of Agriculture 1989)*

1.8 PUBLIC INVOLVEMENT

CEQ regulations (40 CFR 1506.6) direct agencies to involve the public in preparing and implementing their NEPA procedures. The Navy is circulating this Draft EA for public review from August 01, 2014 to August 15, 2014. A display advertisement announcing the availability of the Draft EA and providing information on the public review and comment period was published in local and regional newspapers. Additional public notices include a postcard mailer, which was distributed to various elected officials, government agencies, federally recognized tribes, nongovernmental organizations, and the public within the Study Area. Finally, an informational flier was mailed to select locations for public viewing. Comments received during the published comment period will be analyzed and considered in the Final EA.

After evaluating the Final EA, the designated official shall decide whether a FONSI is appropriate or whether the Proposed Action would generate significant impacts requiring preparation of an EIS. The FONSI shall address the public comments received.

2 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This chapter is divided into two major subsections: Section 2.1 (Description of the Proposed Action) provides a detailed description of the Proposed Action, and Section 2.2 (Alternatives to the Proposed Action) describes alternatives to the Proposed Action.

2.1 DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action consists of the installation and operation of an Electronic Warfare (EW) Range, which includes the following activities:

(1) Installation and operation of a Mission Control and Debrief Center at Naval Air Station Whidbey Island (NASWI).
(2) Installation and operation of a fixed emitter (Mobile Remote Emitter Simulator [MRES]) at the NS Everett Annex Pacific Beach, Washington (Figure 1-2), to include renovation of Building 104 at NS Everett Annex Pacific Beach
(3) Installation and operation of communication equipment on an existing tower in the Olympic MOA at Octopus Mountain (Figure 1-2)
(4) Operation of Mobile Electronic Warfare Training System (MEWTS) mobile emitters in the Olympic Peninsula on USFS and Washington State Department of Natural Resources (WSDNR) lands to facilitate training in the Olympic MOA and Warning Area (W)-237 (Figure 1-2 and Table 1-1)
(5) Operation of MEWTS mobile emitters on USFS lands to facilitate training within Okanogan and Roosevelt MOAs (Figure 1-3 and Table 1-1)

2.1.1 GENERAL CONCEPT OF OPERATIONS FOR THE PROPOSED ACTION

2.1.1.1 Installation and Operation of a Mission Control and Debrief Center at Naval Air Station Whidbey Island

To facilitate EW training, mission control and debriefing would take place within the EW Training Building (Building 2593) located on NASWI. Internal modifications to Building 2593, Room 102, will be made to support additional equipment, mission control functions, and two mission debriefing rooms. Additionally, Communications Building 135 and an associated tower would be adapted to support enhanced communications equipment and radio antennas. Additional fiber cable and data networking infrastructure would be installed using existing conduit connecting Communications Building 135, Telephone Exchange Building 975, Aircraft System Training Building 976, Aircraft Operations Building 385, and EW Training Building 2593.

2.1.1.2 Installation and Operation of a Fixed Emitter at Naval Station Everett Annex Pacific Beach, Washington

To facilitate EW training, construction of a permanent tower south of Building 104 (Figure 2.1-1) is required to support a fixed emitter (MRES) at NS Everett Annex Pacific Beach (similar to that shown in Figure 3.1-3). The 40-foot (ft.) tower and fixed emitter would have a total height of about 66 ft. above ground level on a Navy-operated, controlled, and owned site, to which the general public does not have access. The MRES is capable of generating an electromagnetic wave at frequencies ranging from 2 to 18 gigahertz (GHz). It can emit up to 64 simultaneous signals and can transmit in pulses or a continuous wave. The MRES site is fenced for security purposes to restrict public access, and the emitter's height is designed to further reduce any potential safety issues or hazards. Additionally, warning signs specific to the tower-mounted emitter would be posted for Building 104, which already has a secured, fenced area

with warning signs that exclude unauthorized personnel and the public. Furthermore, during training evolutions, the Navy would ensure that all necessary safety precautions and standard operating procedures would be followed to further minimize the risk to the public. All Navy personnel and trainees would be required to follow the specific safety precautions identified in Office of the Chief of Naval Operations Instruction (OPNAVINST) 5100.23 Series and any applicable site-specific range regulations.

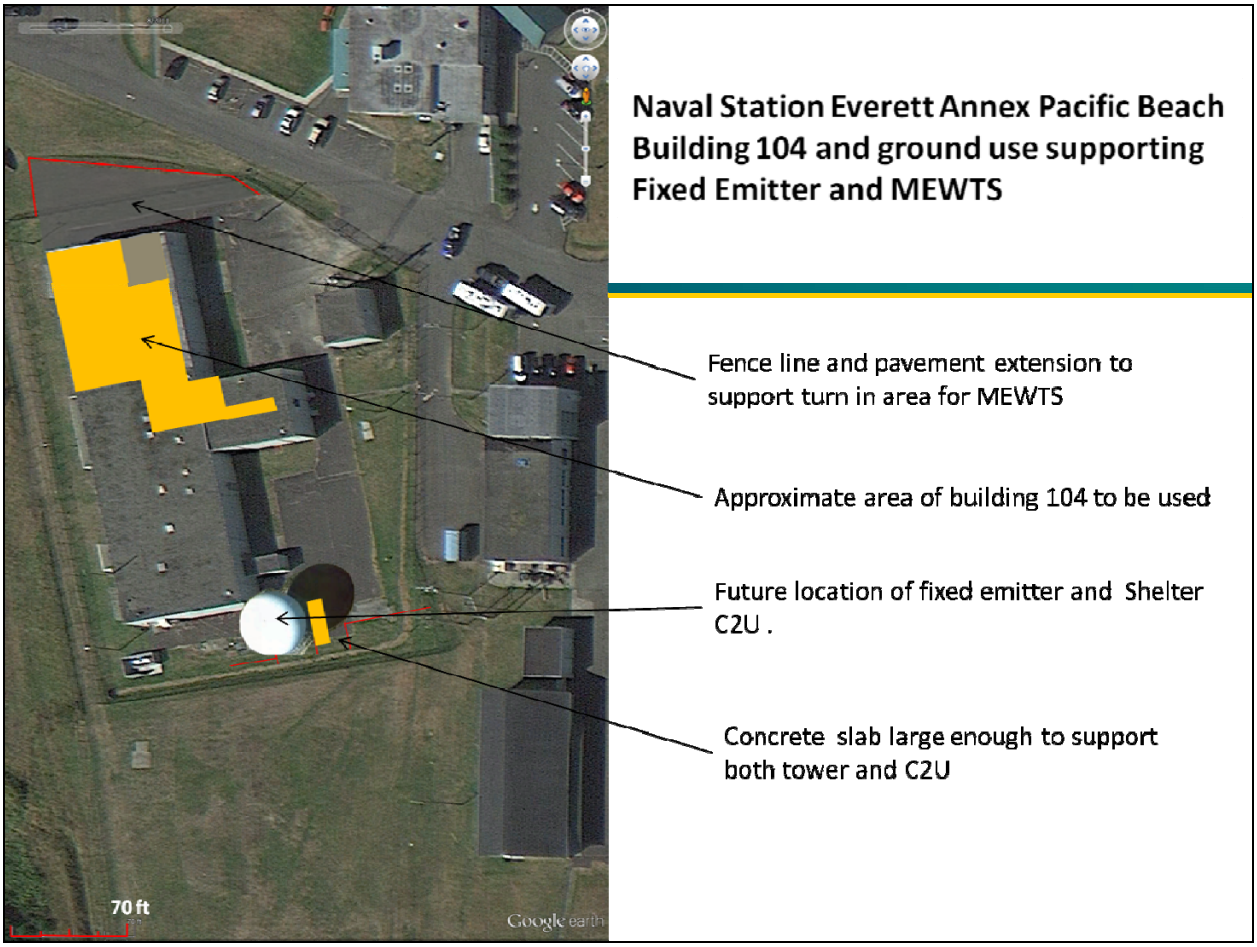

Figure 2.1-1: Proposed Fixed Emitter Location and Renovations to Building 104 Site

To support EW training, demolition and renovations are anticipated to be completed on Building 104 at the Annex to accommodate the MRES, back-up generator, and personnel work stations (Figure 2.1-2). These renovations are mostly to the interior of the building, with the exception of the installation of the MRES tower and the back-up generator. All renovation would be completed utilizing typical construction equipment.

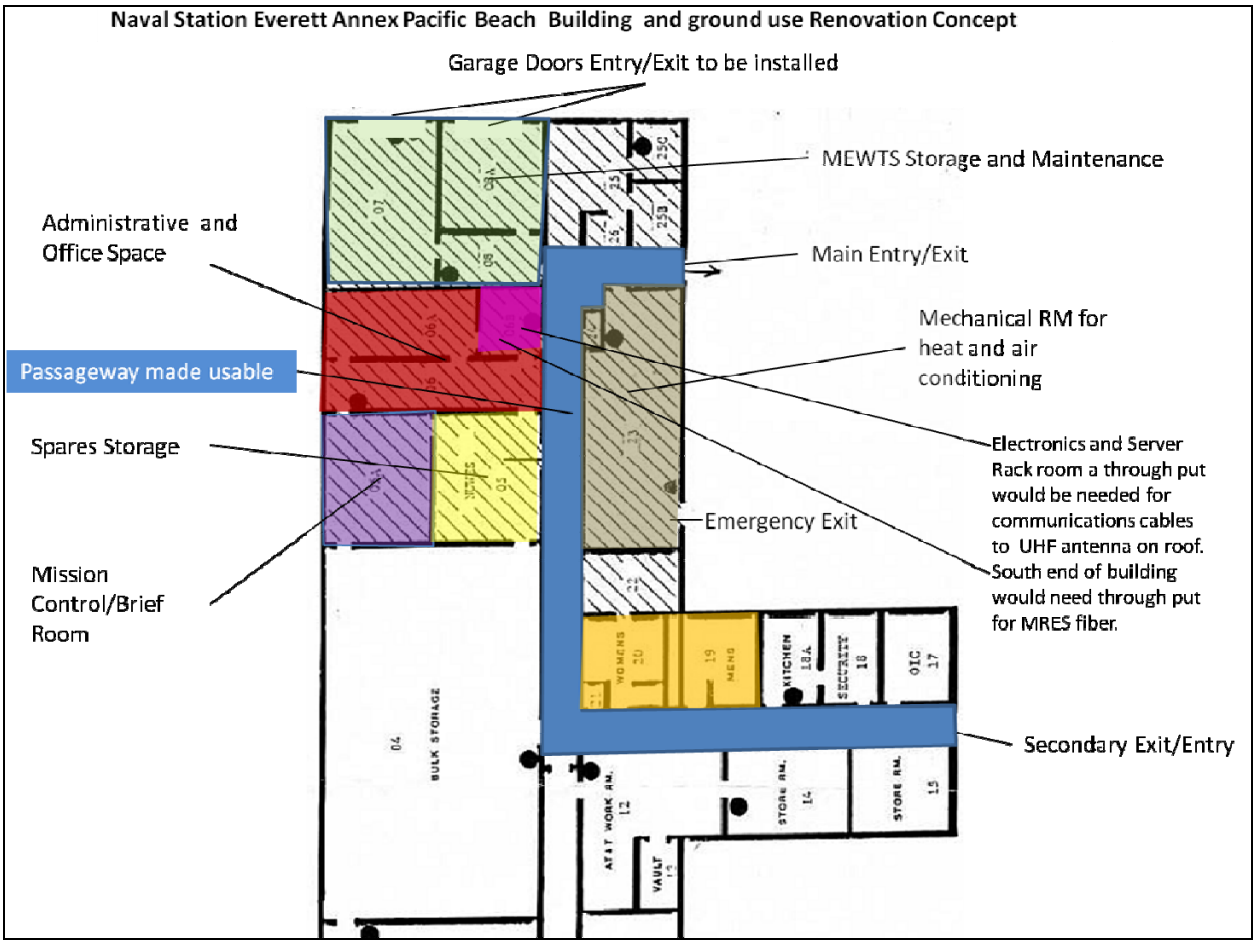

Figure 2.1-2: Building 104 Proposed Renovations

2.1.1.3 Installation and Operation of Communication Equipment on an Existing Tower in the Olympic MOAs at Octopus Mountain

To support EW training, a communications transmitter at Octopus Mountain would be installed and operated on a preexisting tower, which was constructed to avoid becoming a nesting or perching habitat for birds. The communications transmitter at Octopus Mountain will house ultra high frequency (UHF) radios that will enable voice communications between aircraft operating in the Olympic MOAs and in Warning Area (W)-237, the MEWTS, and the Annex through the wide area network system of the communications plan. The communications transmitter will also enable offshore UHF communication with surface ships, in a limited line-of-site fashion, operating on the water in W-237. The communications transmitter at Octopus Mountain is fenced for security purposes, to restrict public access.

2.1.1.4 Operation of MEWTS Mobile Emitters in the Olympic Peninsula on USFS and WSDNR Lands to Facilitate Training in the Olympic MOAs and W-237

Three[1] MEWTS mobile emitter trucks (utility trucks modified with emitter enclosures [Figure 2.1-3]) would be used in the Olympic Peninsula. On a typical training day, the mobile emitter trucks would depart from NS Everett Annex Pacific Beach and drive on existing roads to one of the 15 pre-selected training sites (Table 1-1) within the Olympic MOAs to set up for the day's activities. Once at the site, the trucks would pull off the road utilizing the "pull-outs" or turnarounds that already exist at the pre-selected training sites, park, and shut down their engines. The existing pull-outs and turnarounds have already been cleared (harvested), or have natural open areas that would allow emitter use to the west/northwest in the Olympic National Forest and would not cause an obstruction for other vehicles or ground disturbance. Furthermore, these sites have been preselected because, in general, they are on a cliff or ridgeline and/or currently provide an open area to the west of the pull-out that enables the mobile emitter a clear line of sight to the west. (See Figure 2.1-4 and Figure 2.1-5 for a typical example of a mobile emitter site).

While in transit to each site, the emitter itself will be stowed (non-operational). If the MEWTS crews encounter roads that are undrivable, due to snow, washout, or any other blockage, they will either proceed to an alternate training site not affected by these conditions or cancel the training evolution. Likewise, should the crews come upon a training site that is occupied (by either individuals or animals), they would relocate to an alternate site of the 15 pre-selected sites. Once at the designated training location, but prior to commencing a training activity, the MEWTS crews will set up the safety zones, as applicable, to include warning tape and removable "Electromagnetic Radiation Hazard" signage, which would warn people to not linger inside the taped area.

When the supported aircraft are on-station (either airborne in W-237 or in the Olympic MOAs) the crew within the mobile emitter will energize the emitter in accordance with the training scenario. The emitter may be energized for short periods of time throughout the training activity or continuously throughout the entire time the aircraft is airborne, depending upon the training scenario. One crew member will be charged with observing the general training site from inside the vehicle while the emitter is in operation for the presence of individuals or animals. Should an individual/individuals or animals loiter in the area while a training event is occurring, the mobile emitter crews will cease the training (de-energize the emitter) and wait until the area is clear before resuming training. If need be, they will relocate to another pre-selected training site. After completion of the training event, the mobile emitters used in the Olympic MOA would relocate to the next training site or return to NS Everett Annex Pacific Beach if there are no additional training evolutions scheduled for the day. MEWTS vehicles will not remain parked at training sites overnight.

[1] A typical training scenario would utilize two mobile emitters in the Olympic MOAs. However, there may be times when a training scenario requires all three mobile emitters being used simultaneously.

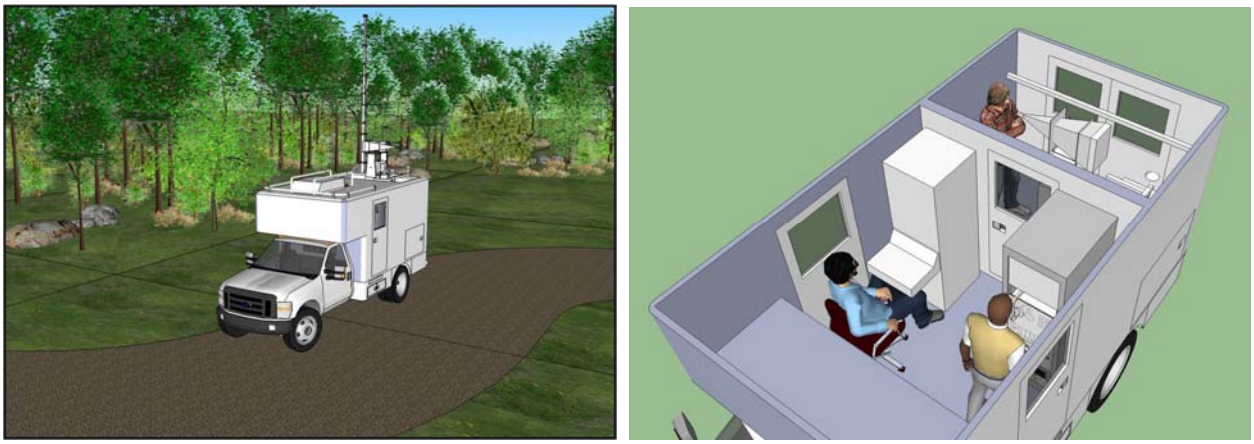

Figure 2.1-3: Conceptual Drawing of Mobile Emitter Truck

Figure 2.1-4: Overhead View of Emitter Site Number 1

Figure 2.1-5: Ground View Looking West from Emitter Site Number 1

On average, there are 260 flying days a year available to Fleet, Fleet Replacement Squadron, and other users (EA-18G, EA-6B, P-3, EP-3, P-8, and transient aircraft) in the Pacific Northwest Operating Areas. Training forecasts from these users show that on an average flying day, the mobile emitters would need to support 11.152 events a day, for a total of approximately 2,900 training events a year. To support 11.152 events a day, the MEWTS would be required to operate anywhere from 8 to 16 hours a day (for planning and analysis purposes, an average of 12 hours a day is being used). During those 12 hours, it is estimated that each emitter will be in use about 45 minutes out of every hour. This equates to a total of 9 hours a day of emitter use for each mobile emitter. For planning and analysis purposes, over the course of a year, each mobile emitter would be driven out to one of the 15 sites in the Olympic MOAs approximately 260 times. Table 2.1-1 illustrates the activities associated with the operation of the MEWTS mobile emitters in the Olympic Peninsula on USFS and WSDNR lands to facilitate training in the Olympic MOAs and W-237.

Table 2.1-1: Total MEWTS Operations in the Olympic MOAs

MEWTS Operations in the Olympic MOAs												
# of Mobile Emitters	# of trips driven to a separate site per:			Total average # of events supported per:			Total duration of a training activity (in Hr) per:			Total Hrs of actual emitter use (average of 45 minutes per Hr)		
	Day	# of Fly Days	Yr	Day	# of Fly Days	Yr	Day	# of Fly Days	Yr	Day	# of Fly Days	Yr
1	1	260	260	11.152	260	2,900	12	260	3,120	9	260	2,340
Total[1]	**3**	**260**	**780**	**11.152**	**260**	**2,900**	**36**	**260**	**9,360**	**27**	**260**	**7,020**

[1] Total represents maximum deployment of MEWTS (three MEWTS in the Olympic MOAs).

Notes: # = Number, Hr = Hour(s), MEWTS = Mobile Electronic Warfare Training System, MOA = Military Operations Area, Yr = Year

The crews that will be operating the MEWTS mobile emitters will receive specialized training, to include safe equipment (vehicle, generator, and emitter) handling and operations, as well as cultural and environmental resources awareness training. All equipment used by military units in the Study Area, including vehicles, generators, and emitters are, and would continue to be, properly maintained in accordance with applicable Navy requirements. Additionally, all operating equipment meets, and would continue to meet, federal and state emission standards, where applicable. The proposed demolition and renovations to Building 104, as described in Section 2.1.1.2, would also support the MEWTS mobile emitter training, mobile emitters staging and storage, and personnel work stations.

2.1.1.5 Operation of MEWTS Mobile Emitters on USFS Lands to Facilitate Training within Okanogan and Roosevelt MOAs

Similar to the description in Section 2.1.1.4, up to three (but typically two) additional MEWTS mobile emitter trucks would be used on USFS lands within the Okanogan and Roosevelt MOAs. On a typical training day, the mobile emitter trucks would depart from either NASWI or various forward deployed locations[2] in eastern Washington state, as necessary to cover training requirements. Similar to the

[2] Forward deployed locations include towns around the sites located under the Okanogan and Roosevelt MOAs. At the conclusion of a day's training events, emitter crews would drive to and stay the night at a local hotel and then depart the following morning to that day's training location(s).

description above, MEWTS crews would drive on existing roads to one of the eight pre-selected training sites (Table 1-1) within the Okanogan and Roosevelt MOAs to set up for the day's activities. Once at the site, the trucks would pull off the road utilizing the "pull-outs" or turnarounds that already exist at the pre-selected training sites, park, and shut down their engines. The existing pull-outs and turnarounds have already been cleared (harvested), or have natural open areas that would allow emitter use to the west/southwest in the Okanogan and Colville National Forest and would not cause an obstruction for other vehicles or ground disturbance. Transit to and from the training site, establishment of a safety zone, and operations during training activities would all be conducted in the same manner as that described for the MEWTS mobile emitters operating in the Olympic MOA. After completion of the training activities, the mobile emitters used in the Okanogan and Roosevelt MOAs would return to NASWI or their forward deployment location. Table 2.1-2 illustrates the activities associated with the operation of MEWTS mobile emitters on USFS land to facilitate training within the Okanogan and Roosevelt MOAs, as well as those activities associated with the operation of MEWTS mobile emitters in the Olympic Peninsula on USFS and WSDNR lands to facilitate training in the Olympic MOAs and W-237.

Table 2.1-2: Total MEWTS Operations in the Olympic MOAs and the Okanogan and Roosevelt MOAs

MEWTS Operations in the Olympic MOAs and the Okanogan and Roosevelt MOAs												
# of Mobile Emitters	# of trips driven to a separate site per:			Total average # of events supported per:			Total duration of a training activity (in Hr) per:			Total Hr of actual emitter use (average of 45 minutes per Hr)		
	Day	# of Fly Days	Yr	Day	# of Fly Days	Yr	Day	# of Fly Days	Yr	Day	# of Fly Days	Yr
Olympic MOAs												
1	1	260	260	11.152	260	2,900	12	260	3,120	9	260	2,340
Subtotal	**3**	**260**	**780**	**11.152**	**260**	**2,900**	**36**	**260**	**9,360**	**27**	**260**	**7,020**
Okanogan and Roosevelt MOAs												
1	1	260	260	8.077	260	2,100	12	260	3,120	9	260	2,340
Subtotal	**3**	**260**	**780**	**8.077**	**260**	**2,100**	**36**	**260**	**9,360**	**27**	**260**	**7,020**
Grand Total[1]	**6**	**260**	**1,560**	**19.222**	**260**	**5,000**	**72**	**260**	**18,720**	**54**	**520**	**14,040**

[1] Grand Total represents maximum deployment of MEWTS (three MEWTS in the Olympic MOAs and three MEWTS in the Okanogan and Roosevelt MOAs).

Notes: # = Number, Hr = Hour(s), MEWTS = Mobile Electronic Warfare Training System, MOA = Military Operations Area, Yr = Year

2.1.2 DESCRIPTION OF ELECTRONIC WARFARE

Electronic warfare is any military action involving the use of electromagnetic and directed energy to control the electromagnetic spectrum or to attack the enemy. The purpose of EW is to deny the opponent the advantage of, and ensure unimpeded access to, the electromagnetic spectrum—the range of all possible frequencies of electromagnetic radiation (i.e., electromagnetic energy) for use in such applications as communication systems, navigation systems, and defense-related systems and components (Joint Publication 3-13.1, Electronic Warfare, 08 February 2012). An EW Range is a collection of resources across a large geographic area where EW training can be facilitated.

The activities of the Proposed Action center on two divisions of EW, known as electronic warfare support (ES) and electronic attack (EA). Sailors aboard Navy ships, submarines, and aircraft conduct ES

and EA training as they search for, intercept, identify, and locate or localize sources of intentional and unintentional radiated electromagnetic energy for the purpose of immediate threat recognition, targeting, planning, and conduct of future operations.

Effective EW training requires sources of electromagnetic energy that simulate systems operated by enemy combatants. Each of these threat systems (typically search or targeting radar systems) transmits energy within identifiable and recognizable parameters (e.g., frequency). These parameters can be simulated by EW emitters such as those proposed above.

To train Sailors in locating the source, it is important that the EW emitters have some degree of mobility in order to present a cross threat axis training picture. For that reason, mobile EW emitters are required and are included in the Proposed Action. The emitters will be frequently relocated among the selected sites, challenging crews in determining the emitter's location.

2.1.3 Training Activities Associated with the Electronic Warfare Range

The Pacific Northwest is home to Navy ships, submarines, and aircraft that have a significant EW training requirement. Electronic warfare is the primary mission area of EA-18G, EA-6B, and EP-3 aircraft stationed at NASWI. In addition, P-3 and P-8 aircraft stationed at NASWI and ships and submarines based in Puget Sound all have EW training requirements as secondary mission areas. As a result of these training requirements, thousands of EW training missions are conducted outside of the NWTRC at other Department of Defense (DoD) ranges that are capable of supporting EW training. Conducting these training missions outside of the NWTRC increases the Sailors' time away from home, and associated costs to the government. The addition of the Pacific Northwest EW Range will reduce the time away from home, and associated costs to the government.

All of the EW training activities and locations that would be associated with the implementation of the Pacific Northwest EW Range were analyzed in the NWTRC EIS/OEIS. The NWTRC EIS/OEIS has an October 2010 Record of Decision that approved an alternative that included EW training activities associated with the establishment of a fixed emitter in the Pacific Beach area. Current training levels in the Olympic MOAs and W-237 will remain the same as per the NWTRC EIS/OEIS, and any changes to the type or tempo of training conducted in the Olympic MOAs and W-237 will be addressed in the Northwest Training and Testing (NWTT) EIS/OEIS. The Navy is not projecting an increase in EW training activities for the Okanogan or Roosevelt MOAs at this time, as flight numbers and aircraft training remain the same. However, this EA is addressing the operation of the MEWTS to support the existing simulated EW training already occurring in the Okanogan or Roosevelt MOAs.

2.2 Alternatives to the Proposed Action

Alternatives to the Proposed Action must be considered in accordance with NEPA and CEQ regulations for implementing NEPA. The following section provides the evaluation screening criteria used to identify a reasonable range of alternatives.

2.2.1 Alternatives Selection Criteria

Each of the alternatives must be feasible, acceptable, and suitable. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint. Additional considerations for minimizing impacts to environmental resources were taken into consideration when selecting potential sites, including utilizing existing structures and USFS and WSDNR roads.

Alternative sites for the Pacific Northwest EW Range were evaluated based on their ability to meet all of the following selection criteria.

- The site must provide suitable terrain and be adequate in size
- The site must be within a range complex with adequate airspace
- The site must provide suitable electronic transmission capability (lack of electronic spectrum interference and an area relatively clear of trees to the west of the site)
- The site must provide adequate security (for stationary sites)
- The site must have adequate facilities and infrastructure (for stationary sites)
- The site must be federally or state controlled or available for long-term private lease (for stationary sites)
- The site must have scheduling flexibility for use 24 hours a day, 365 days a year

2.2.2 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

2.2.2.1 Alternative Sites for Electronic Warfare Training Activities

An alternative location for EW training activities was considered at the Fallon Training Range Complex (FTRC). However, this site was eliminated from subsequent consideration because it failed to adequately meet several of the selection criteria. Specifically, the FTRC is burdened with scheduling conflicts, training at the FTRC would require extended time away from the local home base for local aviation units, training conducted away from the local range complex would incur high costs, and the FTRC would not meet unit-level training needs of the locally assigned NWTRC surface and submarine assets due to the distance from NWTRC and inland position.

2.2.2.2 Alternative Locations for Additional Fixed Emitters in the Olympic Peninsula

The installation and use of additional fixed emitters in the Olympic Peninsula was considered as an alternative. However, these additional locations failed to sufficiently meet the selection criteria for safety and this alternative was eliminated from subsequent consideration.

2.2.2.3 Alternative Locations for Communication Towers in the Olympic Peninsula

An alternative site at Kalaloch was identified as a potential location for a communication and data link capabilities site in the Olympic Peninsula. However, this site was eliminated from subsequent consideration because it failed to sufficiently meet the selection criteria for adequate security, required significant infrastructure upgrades, and presented spectrum challenges not present at the other location (Octopus Mountain).

2.2.2.4 Installation of Fixed Emitters in the Okanogan and Roosevelt Military Operations Areas

The installation of fixed emitters in the Okanogan and Roosevelt MOAs were identified as a potential alternative. However, there was a lack of Navy-owned land to support the installation of fixed emitters. Additionally, training requirements did not require a fixed emitter in this location at this time. Therefore, this alternative was eliminated from subsequent consideration because it failed to adequately meet several of the selection criteria.

2.2.2.5 Installation of a New Facility at Naval Station Everett Annex Pacific Beach, Washington

The complete demolition of Building 104 and the installation of a new facility at NS Everett Annex Pacific Beach were identified as a potential alternative. However, it was determined that Building 104 could

adequately meet training requirements with some minor alterations. Therefore, this alternative was eliminated from subsequent consideration.

2.2.3 ALTERNATIVES CONSIDERED

As required by NEPA, alternatives to the Proposed Action must be considered. However, only those alternatives determined to be reasonable relative to their ability to fulfill the purpose of and need for the Proposed Action will be analyzed in this EA. Three alternatives to the Proposed Action have been carried forward for analysis in this EA, the No Action Alternative, Alternative 1, and Alternative 2. The Proposed Action is discussed in detail in Section 2.1 (Description of the Proposed Action). The alternatives to the Proposed Action meet all criteria as outlined in Section 2.2.1 (Alternatives Selection Criteria). Implementation of the Proposed Action would allow for more enhanced EW training than is currently offered within the existing NWTRC boundary, would minimize impacts on resources (such as fossil fuels), and would accommodate anticipated future training requirements.

2.2.3.1 No Action Alternative

Under the No Action Alternative, very limited EW training, without the enhanced capability of fixed and mobile emitters, would continue to be conducted in the NWTRC and intermediate-level EW training for certification would continue to occur at the Mountain Home Air Force Base approximately 400 nautical miles (nm) southeast of NASWI.

2.2.3.2 Alternative 1

Under Alternative 1, existing NASWI facilities would be modified, and the fixed emitter site at NS Everett Annex Pacific Beach, the communications transmitter at Octopus Mountain, and the mobile emitter sites in the Olympic MOA would all be emplaced and operated as described in Sections 2.1.1.1, 2.1.1.2, 2.1.1.4, and 2.1.1.4 respectively. Additionally, modifications would be made to Building 104 to house the vehicles with the MEWTS mobile emitters.

2.2.3.3 Alternative 2

Under Alternative 2, all of the installations and activities covered under Alternative 1 would occur as described in Sections 2.1.1.1, 2.1.1.2, 2.1.1.3, and 2.1.1.4. In addition, mobile emitters would operate in the Roosevelt and Okanogan MOAs as described in Section 2.1.1.5.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.0 INTRODUCTION

This EA focuses on potential environmental impacts associated with the installation and operation of the proposed Pacific Northwest EW range: (1) the installation and operation of a Mission Control and Debrief Center in an existing facility at NASWI; (2) the installation and operation of a permanent (fixed) EW emitter at NS Everett Annex Pacific Beach, to include the renovation of Building 104 at NS Everett Annex Pacific Beach; (3) the installation and operation of communication equipment on an existing tower in the Olympic MOA at Octopus Mountain; (4) the movement and operation of mobile EW emitters in the Olympic Peninsula on USFS and WSDNR lands; and (5) the movement and operation of mobile emitters on USFS lands within Okanogan and Roosevelt MOAs. The types of training and training activities associated with EW will remain the same as those assessed in the NWTRC EIS/OEIS and are not proposed to change. In other words, the Proposed Action does not propose training activities that differ in scope, nature, or location from those analyzed in the 2010 NWTRC EIS/OEIS.

3.0.1 RESOURCES EVALUATED

This chapter describes relevant existing environmental conditions for resources potentially affected by the Proposed Action as described in Chapter 2 (Description of Proposed Action and Alternatives). A number of resource areas and potential impacts were considered for evaluation at the outset of the process. However, consistent with the NEPA, CEQ regulations, and Navy procedures for implementing NEPA, the description of the affected environment focuses only on those resources potentially subject to impacts. As such, certain resource areas were eliminated from detailed study within the EA because research revealed that the Proposed Action is unlikely to have any potential environmental impacts on these resources, or that impacts would be negligible. The following resources were not evaluated in this EA:

- Geology
- Water Resources
- Land Use
- Cultural Resources
- Transportation
- Socioeconomics
- Environmental Justice and Protection of Children

Subsequently, the following discussion of the affected environment (and associated environmental analyses) focuses on these resources: public health and safety, biological resources, noise, air quality, and visual resources. Table 3.0-1 summarizes all the resources that were considered and provides rationale for why particular resources were not carried forward, as well as section references to the resources that are being carried forward for analysis.

Table 3.0-1: Resources Analyzed in the Electronic Warfare Range Environmental Assessment

Resource	Carried Forward for Detailed Analysis	Rationale
Geologic	No	The Proposed Action does not include construction on undeveloped lands or ground-disturbing activities over an undisturbed area. Therefore, this resource area was not carried forward for detailed analysis.
Water Resources	No	The Proposed Action would not impound, divert, drain, control, or otherwise modify the waters of any stream or other body of water. In addition, the Proposed Action would not impact energy supply. Therefore, this resource area was not carried forward for detailed analysis.
Land Use	No	The Proposed Action would not change the manner of use or quality of land, land encroachments, or land forms and soil. Additionally, the Proposed Action would not change the intended use and purpose of existing roads throughout the Study Area. The Proposed Action does not include construction on undeveloped lands or ground-disturbing activities over an undisturbed area. Proposed modifications to Building 104 would not result in a change in land use. Therefore, this resource area was not carried forward for detailed analysis.
Cultural Resources	No	The Proposed Action would not result in any negative impacts, change, or alter cultural resources of surrounding areas. Building 104 at the Navy Facility Pacific Beach would be renovated. In a letter from the State Historic Preservation Officer (SHPO) dated October 16, 2012, the extant building of the Navy Facility Pacific Beach has been determined not eligible for inclusion in the National Register of Historic Places due to low integrity. Additionally, the area of proposed renovations has been heavily disturbed over the years and has a low probability of containing undisturbed archaeological material. In an additional letter from the SHPO dated May 22, 2014, the SHPO has concurred with the Navy's findings that no historic properties would be affected by the Proposed Action. However, if an area used by a mobile emitter is required for use by local tribes, the mobile emitter will be relocated. Therefore, this resource area was not carried forward for detailed analysis.
Transportation	No	The Proposed Action would not change or alter any transportation and circulation activities of surrounding areas. Therefore, this resource area was not carried forward for detailed analysis.
Socioeconomics	No	The Proposed Action would not result in any negative impacts or additional burdens on the local economy, public services, or utilities. Therefore, this resource area was not carried forward for detailed analysis.
Environmental Justice and Protection of Children	No	Minority, low-income populations, and children would not be directly affected or disproportionately burdened by the Proposed Action. Therefore, this resource area was not carried forward for detailed analysis. Any potential impacts to children present at the Pacific Beach location with the fixed emitter are discussed in Section 3.1 (Public Health and Safety).
Public Health and Safety	Yes	Detailed analysis provided in Section 3.1 (Public Health and Safety).
Biological Resources	Yes	Detailed analysis provided in Section 3.2 (Biological Resources).
Noise	Yes	Detailed analysis provided in Section 3.3 (Noise).
Air Quality	Yes	Detailed analysis provided in Section 3.4 (Air Quality).
Visual Resources	Yes	Detailed analysis provided in Section 3.5 (Visual Resources).

As shown in Table 3.0-1, the resource areas where there is potential environmental impact from the Proposed Action are as follows: public health and safety, biological resources, noise, air quality, and visual resources. These resources are further described and analyzed in Sections 3.1 through 3.5.

Consultation and resource area data collection included liaison with or access to the following agencies: Colville National Forest, Okanogan-Wenatchee National Forest, Olympic National Forest, the State of Washington, Department of Archaeology and Historic Preservation, State Historic Preservation Officer, U.S. Navy, Naval Base Everett, and other organizations and agencies as appropriate. Tribal correspondence occurred during the months of April and May 2014. See Appendix B (*Regulatory Compliance Communications*). Additionally, tribal notification of the availability of the Draft EA for review and comment has occurred.

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3.1 PUBLIC HEALTH AND SAFETY

For purposes of this EA, the primary public health and safety issues associated with implementation of the Proposed Action would be related to electromagnetic radiation associated with EW training activities. Topics related to public health and safety within the Study Area[1] include safety standards, population centers, and public access. Because children may suffer disproportionately from environmental health risks and safety risks, EO 13045, *Protection of Children From Environmental Health Risks and Safety Risks,* was introduced in 1997 to prioritize the identification and assessment of environmental health and safety risks that may affect children and to ensure that federal agencies' policies, programs, activities, and standards address environmental and safety risks to children. This section identifies the distribution of children and locations of schools, childcare centers, and family housing areas in areas potentially affected by implementation of the Proposed Action.

3.1.1 AFFECTED ENVIRONMENT

3.1.1.1 Electromagnetic Radiation

Effective EW training requires that the military learn how to deny an enemy the advantage of, and ensure unimpeded access to, the electromagnetic spectrum—the range of all possible frequencies of electromagnetic radiation (i.e., electromagnetic energy) for use in such applications as communication systems, navigation systems, and defense-related systems and components (Joint Publication 3-13.1, Electronic Warfare, 08 February 2012). The use of the emitter systems listed in the Proposed Action provides the Navy with the ability to simulate modern EW threats in an open-air environment to effectively and efficiently train the operators of these systems (Joint Publication 2012). The emitter systems transmit electromagnetic radiation within an identifiable and recognizable energy wave (e.g., parameter) within the electromagnetic spectrum.

Electromagnetic energy is composed of two components: an electric wave and a magnetic wave. These two waves are in phase and move at 90 degrees to each other. The electromagnetic waves create electromagnetic radiation and can be drawn as a self-propagating transverse oscillating wave of electric and magnetic fields.

The orientation can vary in the space through which it moves but the electric and magnetic components always maintain the right angle relationship to each other, and thus attune to a recognizable wave or parameter. All electromagnetic waves (from television waves to radio waves) have different wavelengths; however, all wavelengths must fall within certain parameters of the electronic spectrum.

3.1.1.2 Electromagnetic Radiation Hazards

Physical reactions to electromagnetic radiation are subject to the power and energy of the emitted electromagnetic wave. Human tissue is directly susceptible to shock or burns when metallic objects, which have absorbed high electromagnetic radiation, are touched. This type of burn would be similar to the type of burn produced inside a microwave oven. The heating effect varies with the power and the frequency of the electromagnetic energy.

There are no conclusive direct hazards to human tissue as a result of electromagnetic radiation. Links to DNA fragmentation, leukemia, and cancer due to intermittent exposure to extremely high levels of

[1] Defined as Navy lands and USFS and WSDNR logging roads in the Olympic peninsula and USFS logging roads in north-central to northeastern portion of Washington State in the Okanogan and Colville National Forests beneath the assigned airspace of the Olympic, Okanogan and Roosevelt MOAs. These areas include the following counties: Clallam, Ferry, Grays Harbor, Jefferson, Okanogan, Pend Oreille, and Stevens.

electromagnetic radiation are speculative; study data are inconsistent and insufficient at this time (Focke et al. 2009).

Strong electromagnetic radiation can cause fire if a wave were to create a spark near explosives or ordnance. Strong waves can also induce an electric current capable of overloading or destroying electrical equipment while less strong radiation waves can interfere with electromagnetic signals, such as radio, television, and telephone.

3.1.1.2.1 Navy's Electromagnetic Devices and Electromagnetic Radiation Outputs

Fixed Emitter. The MRES, more commonly referred to as the "fixed emitter" being proposed and analyzed for use at NS Everett Annex Pacific Beach (tower-mounted, similar to that shown in Figure 3.1-1) is capable of generating an electromagnetic wave at frequencies ranging from 2 to 18 GHz. It can emit up to 64 simultaneous signals and can transmit in pulses or a continuous wave.

Vehicle-mounted Mobile Emitters. There are two types of vehicle-mounted mobile emitters that are being proposed and analyzed for use on the MEWTS, more commonly referred to as "mobile emitters." Traveling Wave Tube Amplifier (TWTA) mobile emitters are capable of generating an electromagnetic wave at frequencies ranging from 4 to 8 GHz; the Magnetron mobile emitters are capable of generating an electromagnetic wave at frequencies ranging from 6.7 to 7.4 GHz.

Figure 3.1-1: A Tower-Mounted Emitter

These emitters can produce the electromagnetic hazards mentioned in the previous section. As discussed below, the threat to the public's safety is largely a function of the locations of the emitters relative to people, the power and frequency output of the emitters, the amount of time an individual is exposed to the electromagnetic energy, and the Navy's management practices related to operation of the emitters.

For each EW emitter, a "controlled environment" and "action level environment" (as described below in Section 3.1.1.3) are determined based on the power and frequency output of the emitter. Because emitters focus energy in a relatively narrow beam, controlled and action level environments would be triangular, as opposed to complete circles. Within controlled and action level environments, personnel and the public would be limited to the time they could be exposed without receiving harmful levels of electromagnetic energy (this is done by calculating the distances from the emitter and time limits at those distances). For example, the mobile emitters (MEWTS) have controlled and action level environments in which personnel and the public must not be allowed to loiter, while outside a controlled or action level environment, personnel and the public would receive no harmful levels of electromagnetic radiation.

3.1.1.3 Current Requirements and Management Practices

The Navy's policy is to use every possible precaution in planning and executing all activities in order to prevent injury to people or damage to property. Public safety or health concerns are minimized as the result of Navy precautions and because the general public normally does not have access to Navy-controlled areas.

The Navy implements a wide range of rules and practices for safe military use of training systems such as EW emitters. Training hazards and associated safety procedures are analyzed in detail for an accurate assessment of public health and safety (OPNAVINST 3770.2K, and Military Handbook 1027/3B).

The Navy follows OPNAVINST 5100.23G, *Navy Safety and Occupational Health (SOH) Program Manual, of 21 July 2011* (hereinafter referred to as OPNAVINST 5100.23G) for its radiation protection requirements and safety guidelines. OPNAVINST 5100.23G follows the Institute of Electrical and Electronics Engineers (IEEE) C95.1a-2010, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," as amended 16 March 2010.

OPNAVINST 5100.23G defines the exposure limits to personnel based on the controlled environment and to the general public based on the action level environment and the averaging time of exposure. These two criteria are defined as follows:

Controlled environments are defined as areas where exposure may be incurred by people who are aware of the potential for electromagnetic radiation exposures as a result of employment or duties, exposure of individuals who knowingly enter areas where higher radiation levels can reasonably be anticipated to exist, and incidental exposure that may occur due to transient passage through such area. Typically, for military sites, controlled areas include all operational and work areas.

Action level environments are defined as public areas where individuals have no knowledge or control of their exposure. Such areas include living quarters, workplaces, or public areas where there are no expectations that higher radiation levels should exist. The on-base housing and associated facilities such as commissaries, exchanges, recreational facilities, and areas beyond the base boundary are considered action level environments or areas.

Table 3.1-1 displays the minimum calculated separation distances within controlled and action level environments for the main beams of each electromagnetic radiation wave being proposed for use, at its highest frequency, and at the longest averaging time (the "permissive exposure time") for each type of proposed emitter. The values were derived in accordance with OPNAVINST 5100.23G, IEEE standards, and two[2] separate Electromagnetic Environmental Effects (E3) safety reviews conducted for the MRES and MEWTS. It should be noted that these values are "worst case" scenario, thus providing the greatest amount of protection to the general public. In actual operations, these values will typically be lower, as the emitters will not be transmitting at their highest frequency, and permissive exposure times would vary as well. Additionally, safety precautions, as described in Section 3.1.1.5 below, would further limit the general public's (as well as forest creatures) potential exposure and enhance the overall safety of the operation.

[2] The Space and Naval Warfare Systems Center Pacific, under the Navy's Shore E3 Program, performed two separate Electromagnetic Radiation Hazard safety reviews for the Pacific Northwest Electronic Warfare sites in support of the Proposed Action. One Review was for MEWTS operating at sites located in the Olympic National Forest, and the second review was for the MEWTS and MRES operating at the Naval Station Everett Pacific Beach location (E13-H058 NWSTF WA Peninsula Safety Review and E13-H061 Pac Beach Safety Review, respectively.

Table 3.1-1: Radiation Hazard Minimum Safe Separation Distances Per the E3 Safety Reviews

Operating Site	Emitter Type	Action Level Environment (m/ft.)	Controlled Environment (m/ft.)
Naval Station Everett Annex Pac Beach	MRES	217.5 m/713.7 ft.	84.2 m/276.4 ft.
	MEWTS Magnetron Radar	8.9 m/29.3 ft.	2.8 m/9.3 ft.
	MEWTS TWTA Radar	30.8 m/101.1 ft.	9.7 m/32.0 ft.
Olympic, Okanogan, and Roosevelt MOAs	MEWTS Magnetron Radar	8.9 m/29.3 ft.	2.8 m/9.3 ft.
	MEWTS TWTA Radar	30.8 m/101.1 ft.	9.7 m/32.0 ft.

Notes: ft. = Feet, m = Meters, MEWTS = Mobile Electronic Warfare Training System, MOAs = Military Operations Areas, MRES = Mobile Remote Emitter Simulator, TWTA = Traveling Wave Tube Amplifier

3.1.1.4 Olympic Peninsula and Northeastern Washington Population Centers

As stated above, the Study Area for assessing potential impacts on public health and safety are the Olympic peninsula and northeastern Washington portions of the Pacific Northwest EW Range, to include the counties of Clallam, Ferry, Grays Harbor, Jefferson, Okanogan, Pend Oreille, and Stevens (Figure 1.3-2 and Figure 1.3-3). The closest populated areas to potential mobile emitter sites on the Olympic Peninsula include Neilton (nearest to Sites 5 through 8) and Forks (nearest to Site 9), and in Northeastern Washington include the city of Oroville (approximately 3 miles [mi.] [4.8 kilometers {km}] from potential sites along roads near Site 2) and the cities of North Omak and Inchelium, both over 5 mi. away from proposed areas of use.

Recreational users of forest lands and Okanogan, such as hikers and hunters, are also considered as potential members of the public who could be in range of radiation from a mobile emitter site.

3.1.1.5 Public Access and Safety

The MRES emitter site (fixed emitter) and its operation are discussed in detail in Section 2.1.1.2. In summary, the site would be located on a Navy-operated, controlled, and owned property, to which the general public does not have access. Additionally, warning signs (Figure 3.1-2) specific to the tower-mounted fixed emitter would be posted for Building 104, which already has a secured, fenced area with warning signs that exclude unauthorized personnel and the public.

In order to protect the general public to the maximum extent, the following would be the standard operating procedures (SOPs) for EW training activities for the Proposed Action:

- Pre-positioning surveys for hazards, general public in the area, or other potential safety issues would be conducted upon arrival at the potential mobile emitter site.
- Most planned mobile emitter sites would be located on ridges and cliffs, and the direction of emissions would generally be toward the open area, out and away from the cliff or ridge. Those sites that do not meet these requirements will utilize a distance barrier of 101 ft. prior to activation for mobile emitters with the TWTA

Figure 3.1-2: A Type 1 Radiation Hazard Sign

emitter antenna and 29.3 ft. for mobile emitters that have the Magnetron emitter antenna (Table 3.1-1).

- Planned mobile emitter sites would be located in lands that do not have public housing or residents.
- One crew member will be charged with observing the general training site from inside the vehicle while the emitter is in operation for the presence of individuals or animals. If during the pre-positioning survey, or any time prior to operation, a public safety issue is present (e.g., an active hunting, camping, or gathering site) the mobile emitter would be de-energized and an assessment of the situation undertaken. If required, the mobile emitters would relocate to another of the 15 planned mobile emitter sites or, as determined by the nature of the public safety issue, the mobile emitter would wait to begin operations until all people have left the action level environment.
- If the public does not wish to leave the area, the mobile emitter would cease operations and relocate to a safe distance from the public or to another of the 15 potential mobile emitter sites.
- If a public safety issue is present (e.g., an active hunting, camping, or gathering site) during the operation of the mobile emitter, the crew would de-energize the emitter and make an assessment of the situation. If required, the mobile emitters would relocate to another of the 15 planned mobile emitter sites or, as determined by the nature of the public safety issue, the mobile emitter would wait until all people have left the action level environment before resuming operations.
- During operation of mobile emitter sites, 4-inch red line barriers (through the use of removable warning tape) would delineate the action level environment boundaries from the mobile emitters (101.1 ft or 29.3 ft [TWTA or Magnetron respectively]).
- Fixed (at Building 104) and removable (at the mobile emitter sites) signage (Figure 3.1-2) would be posted, as required, advising of the potential radiation hazard and encouraging people to not loiter inside the removable 4-inch red line barrier tape.
- Controlled and action level environments at the mobile sites would be monitored by Navy personnel (emitter crew members) through the windows of the emitter vehicle (see Figure 2.1-3) during emitter operation. This will enable Navy personnel to observe the general surroundings in order to keep the public or animals from entering into potential action level environments.
- Fixed beam tracking of aircraft within a range of 1,162 ft. would be prohibited.
- The mobile emitters would be manually operated and moveable, as needed.
- Emitters would only produce electromagnetic signals in frequency bands in accordance with approvals that are attained through the Navy Marine Spectrum Office and reviewed by the Federal Communications Commission, the Federal Aviation Administration, and the National Telecommunications and Information Administration.
- The mobile emitter antennas will be mounted 14 ft. above ground level (AGL).
- The fixed emitter located at NS Everett Annex Pacific Beach will be located on a 40 ft. tower, for a total height of approximately 66 ft. AGL to help mitigate hazards and potential safety issues.
- As prescribed in the E3 safety review, minimum antenna look angle limits, for both the fixed and mobile emitters, will be adhered to.

Navy personnel and operators in the controlled environment would be protected by guidelines as described in OPNAVINST 5100.23G and the E3 safety review, specifically as follows:

- Diesel fuel will not be stored onsite. Safety procedures currently authorize that there is no fueling or fuel handling site within 50 ft. of an emitter site.
- To protect the general public and the emitter operators, and in accordance with the E3 safety reviews, analysis has been done and procedures are in place establishing minimum height and antenna look angle limits for both the fixed and mobile emitters that ensure power density levels will not exceed safe levels.
- There will be no ordnance or ordnance handling within designated distances from the signal.

3.1.1.6 Mitigations

Based on the Hazards of Electromagnetic Radiation to Personnel (HERP) analysis results and antennas' height AGL, the radio frequency energy from the MRES emitters will not pose radiated HERP to personnel at ground level. The MRES antenna will be mounted 47 ft. AGL, including the 7 ft. antenna pedestal. Rising to 40 ft., Building 108 is the highest building in the area and is located 342 ft. away. This building falls within the "Action Level" calculated maximum permissible exposure (MPE) separation distance of 713.7 ft. To mitigate this, either of the following is recommended:

- Keep personnel off Building 108's roof while the MRES is operating. All access to the roof of Building 108 should be controlled and Electromagnetic Radiation Hazard Type 1 signs should be posted at the roof accesses.
- MRES operating elevation angle must be higher than 1.9 degrees (°) in elevation in order to keep the antenna's 3.7°-main-beam width away from anyone that may be on the roof of Building 108.
- Limit the MRES operating azimuth angle to exclude Building 108.

3.1.1.7 Protection of Children

There are approximately 55,000 children under the age of 18 in counties where the EW emitters would be located (U.S. Census Bureau 2013). The only school, the Pacific Beach Elementary School, near the tower-mounted emitter is located approximately 2,000 ft. (610 m) to the southeast of Building 104, which is well outside any controlled or action level environment where there might be hazardous exposure levels.

There could be children staying or visiting with families in the camping area, conference center, or Navy lodge at NS Everett Annex Pacific Beach, proximate to the tower-mounted emitter; however, these visiting children would not be within an action level environment of the tower-mounted emitter as the height of the tower-mounted emitter was designed to reduce any potential threats posed to children or the public.

There are no childcare centers or family housing areas proximate to the mobile emitter sites. There may be transient children in camping areas or other recreational areas proximate to mobile emitter sites; however, as noted in Section 3.1.1.5 (Public Access and Safety), the action level environments would be thoroughly surveyed and monitored to make certain no children or other members of the public are in an unsafe location.

3.1.2 ENVIRONMENTAL CONSEQUENCES

The Pacific Northwest EW range would be located on U.S. Navy lands and USFS and WSDNR logging roads in the Olympic Peninsula beneath the Olympic MOAs (Figure 1.3-2) and on USFS logging roads in the Okanogan and Colville National Forests in the northeastern portion of Washington State beneath the Okanogan and Roosevelt MOAs (Figure 1.3-3).

3.1.2.1 Determination of Significance

Factors used to assess the significance of potential impacts from the Action Alternatives include the extent or degree to which an alternative would have a serious negative impact on public health or disproportionate environmental health and safety risks specific to children. Types of activities that could pose a risk to public health are those in which hazardous constituents are released to the environment in substantial amounts, or in which hazardous levels of energy are released. Types of activities that raise public safety concerns are those where members of the public are proximate or within the footprint of a potentially hazardous training activity.

3.1.2.2 No Action Alternative

Under the No Action Alternative, very limited EW training, without the enhanced capability of fixed and mobile emitters, would continue to be conducted in the NWTRC, and intermediate level EW training for certification would continue to occur at the Mountain Home Air Force Base approximately 400 nautical miles southeast of NASWI. Consequently, existing public health and safety conditions would remain unchanged. Therefore, no significant impacts would occur as a result of implementation of the No Action Alternative.

3.1.2.3 Alternative 1

Under Alternative 1, existing NASWI facilities would be modified, and the fixed tower-mounted emitter site at NS Everett Annex Pacific Beach, the communications transmitter at Octopus Mountain, and the mobile emitter sites in the Olympic MOA would be installed and operated as described in Sections 2.1.1.1, 2.1.1.2, 2.1.1.3, and 2.1.1.4, respectively.

Implementation of Alternative 1 would comply with the electromagnetic safety standards already in place for EW training activities. The fixed tower-mounted emitter's height is designed to reduce any potential threat to the general public or those military family members (including children) staying at the nearby Navy lodge, conference center, or campground. During EW training, the Navy would ensure that all necessary safety precautions and SOPs are followed to minimize the risk to the public. All Navy personnel and trainees would be required to follow the specific safety precautions identified in OPNAVINST 5100.23G, the E3 safety review, and any applicable site-specific range regulations, including those enumerated in this EA. These guidelines provide procedures, responsibilities, and safety guidance for personnel when performing training activities.

The nearest schools, childcare centers, and permanent family housing are not located within the controlled or action level environments of the fixed tower-mounted emitter at NS Everett Annex Pacific Beach.

For public access, all non-authorized personnel would be prohibited from entering the EW training area at NS Everett Annex Pacific Beach at any time as it has a secured, fenced area with warning signs that exclude unauthorized personnel and the public. At the mobile emitter sites, the Navy would not restrict any individual from entering the general area. However, both the tower-mounted emitter and mobile emitter sites would be monitored during training activities to ensure that non-authorized personnel remain outside controlled and action level environments at all times.

No significant health or safety impacts to the public would occur as a result of implementation of Alternative 1 because of the SOPs listed in Section 3.1.1.5 (Public Access and Safety). In addition, (1) the emitter operators would adhere to specific safety precautions designed to prevent electromagnetic

hazards to people; (2) schools, childcare centers, and permanent family housing are not located within the controlled or action level environments for the fixed emitter at NS Everett Annex Pacific Beach; and (3) the emitter operators would monitor the area and take measures to ensure personnel and the public remain outside the controlled or action level environments of the emitter.

3.1.2.4 Alternative 2

Alternative 2 includes all of the installations and activities covered under Alternative 1. In addition, mobile emitters would operate beneath the Roosevelt and Okanogan MOAs as described in Section 2.1.1.5.

Implementation of Alternative 2 would comply with the electromagnetic safety standards already in place for EW training activities. During EW training, the Navy would ensure that all necessary safety precautions are adhered to in order to minimize the risk to the public. All Navy personnel and trainees would be required to adhere to specific safety precautions identified in OPNAVINST 5100.23G, the E3 safety review, and any applicable site-specific range regulations. These guidelines provide procedures, responsibilities, and safety guidance for personnel when performing training activities.

No significant health or safety impacts to the public would occur as a result of implementation of Alternative 2 because of the SOPs listed in Section 3.1.1.5 (Public Access and Safety). In addition, (1) the emitter operators would adhere to specific safety precautions designed to prevent electromagnetic hazards to people; (2) schools, childcare centers, and permanent family housing are not located within the controlled or action level environments for the fixed emitter at NS Everett Annex Pacific Beach or at any of the mobile emitter sites in the Okanogan or Roosevelt MOAs; and (3) the emitter operators would monitor the area and take measures to ensure personnel and the public remain outside the controlled or action level environments of the emitter.

3.2 BIOLOGICAL RESOURCES

3.2.1 DEFINITION OF RESOURCE

For this EA, biological resources are defined as the flora and fauna, including special status species and their habitats that occupy the project area. For this EA, the term "special status" refers to all plant and animal species that are federally listed or proposed, or have been given special status by the Forest Service (for the Olympic, Okanogan and Colville National Forests). The Environmental Consequences section presents an analysis of the potential impacts of the No Action Alternative, Alternative 1, and Alternative 2. Aquatic flora and fauna (see Appendix A) are not included in this assessment as the scope of the Proposed Action would not involve any actions or impacts to aquatic habitat or species.

3.2.2 REGULATORY REQUIREMENTS

Regulatory requirements that are applicable to the proposed action in the project area are listed below. A discussion of the project's compliance with applicable regulations is provided in Section 5.1.

3.2.2.1 Endangered Species Act

The ESA of 1973 (16 U.S.C. 1531 to 1543) established protection for and conservation of threatened and endangered species and the ecosystems on which they depend. An "endangered" species is a species that is in danger of extinction throughout all or a significant portion of its range, while a "threatened" species is one that is likely to become endangered within the foreseeable future throughout all or in a significant portion of its range. The U.S. Fish and Wildlife Service (USFWS) administers the ESA for terrestrial and freshwater species. The determination and designation of geographical habitats as critical habitat is performed under the ESA when a species is proposed for listing as threatened or endangered.

Section 7(a)(1) of the ESA directs federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Section 7(a)(2) requires each federal agency to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of such species. When a federal agency's action "may affect" a listed species, that agency is required to consult formally with the National Marine Fisheries Service (NMFS) and USFWS, depending upon the species or designated critical habitat that may be affected by the action (50 C.F.R. 402.14(a)). Under the terms of Section 7(b)(4) and Section 7(o)(2) of the ESA, taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act, provided that such taking is in compliance with the terms and conditions of an Incidental Take Statement.

Informal consultation is an optional process that includes all discussions, correspondence, etc., between the Services and the Federal agency or the designated non-Federal representative, and is designed to assist the Federal agency in determining whether formal consultation or a conference is required. If during informal consultation the Federal agency determines, with the written concurrence of the Service, that the action is not likely to adversely affect listed species or critical habitat, the consultation process is concluded, and no further action is necessary (50 C.F.R. 402.13).

The analysis of potential impacts presented in this EA will be used in support of the consulting process the Navy will undergo with USFWS based on the determination of effects on listed species. This EA also provides the Navy's determinations of effect for listed species based on guidance contained in the *Endangered Species Consultation Handbook* (U.S. Fish and Wildlife Service). Terms commonly used in making a determination of effect are defined as follows:

- "No effect" is the appropriate conclusion when a species will not be affected, either because the species will not be present or because the project does not have any elements with the potential to affect the species. "No effect" does not include a small effect or an effect that is unlikely to occur.
- "May affect, not likely to adversely affect" means that all effects are beneficial, insignificant, or discountable. Beneficial effects have concurrent positive effects without any adverse effects to the species or habitat (i.e., there cannot be balancing, wherein the benefits of the project would be expected to outweigh the adverse effects). Insignificant effects relate to the magnitude or extent of the impact (i.e., they must be small and would not rise to the level of a take of a species). Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur.
- "May affect, likely to adversely affect" means that all adverse effects cannot be avoided. A combination of beneficial and adverse effects is still "likely to adversely affect," even if the net effect is neutral or positive. Adverse effects do not qualify as discountable simply because it is not certain they will occur. The probability of occurrence must be extremely small to achieve discountability. Likewise, adverse effects do not meet the definition of insignificant because they are less than major. If the adverse effect can be detected in any way or if it can be meaningfully articulated in a discussion of the results, then it is not insignificant, it is likely to adversely affect.

In 2008 the Navy prepared the Northwest Training Range Complex Biological Evaluation which analyzed various training activities in the Study Area, including electronic warfare (which was referred to as electronic combat in previous documents). This document analyzed the proposal to place a fixed emitter in the Olympic Peninsula and the associated training activities. Additional activities beyond those analyzed are presented in this document.

3.2.2.2 Migratory Bird Treaty Act

The MBTA of 1918 (16 U.S.C. 703 et seq.) and the Migratory Bird Conservation Act (16 U.S.C. 715–715d, 715e, 715f–715r) of 18 February 1929 (45 Stat. 1222) are the primary legislation in the United States established to conserve migratory birds. The MBTA prohibits the taking, killing, or possessing of migratory birds or the parts, nests, or eggs of such birds, unless permitted by regulation. The list of species protected by the MBTA appears in Title 50, Section 10.13 of the C.F.R. (50 C.F.R. 10.13) and represents almost all avian families found in North America. With the exception of California quail, European starling, gray partridge, house sparrow, and ring-necked pheasant, all bird species recorded in the project area are protected by the MBTA (U.S. Fish and Wildlife Service 2005).

Pursuant to EO 13186 (17 January 2001), *Responsibilities of Federal Agencies to Protect Migratory Birds*, the DoD and USFWS developed a Memorandum of Understanding (MOU) to Promote the Conservation of Migratory Birds. The original MOU was signed in July 2006, and an extension was signed in October 2011. The MOU describes specific actions that should be taken by DoD to advance migratory bird conservation, avoid or minimize the take of migratory birds, and ensure DoD activities (other than military readiness activities) are consistent with the MBTA. The MOU also describes how DoD and USFWS will work together cooperatively to achieve these ends.

On 2 December 2003, the President signed the 2003 National Defense Authorization Act. The Act provides that the Secretary of the Interior shall exercise authority under the MBTA to prescribe regulations to allow the incidental taking of migratory birds by the Armed Forces during military

readiness activities authorized by the Secretary of Defense. Congress defined military readiness activities as all training and operations of the Armed Forces that relate to combat and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use. Congress further provided that military readiness activities do not include the following:

- The routine operation of installation operating support functions, such as administrative offices, military exchanges, commissaries, water treatment facilities, storage facilities, schools, housing, motor pools, laundries, morale, welfare, recreation activities, shops, and mess halls
- The operation of industrial activities
- The construction or demolition of facilities used for a purpose described in the previous two bullets

The Final Rule authorizing the DoD to take migratory birds during military readiness activities was published in the Federal Register (FR) on 28 February 2007 (50 C.F.R. Part 21). The regulation provides that the Armed Forces must confer and cooperate with USFWS on the development and implementation of conservation measures to minimize or mitigate adverse effects of a military readiness activity if it determines that such activity may have a "significant adverse effect" on a population of a migratory bird species. An activity has a significant adverse effect if, over a reasonable period of time, it diminishes the capacity of a population of a migratory bird species to maintain genetic diversity, to reproduce, and to function effectively in its native ecosystem. As used here, population means a group of distinct, coexisting, conspecific individuals (i.e., organisms of the same species), whose breeding site fidelity, migration routes, and wintering areas are temporally and spatially stable, sufficiently distinct geographically (at some time of the year), and adequately described so that the population can be effectively monitored to discern changes in its status.

3.2.2.3 Other Federal and State Regulations on Biological Resources

In addition to the laws and regulations described above, additional regulatory requirements that are applicable to the proposed action in the project area are listed below in Table 3.2-1.

Table 3.2-1: Other Federal and State Regulations on Biological Resources

Law/Policy	Citation	Summary
Conservation Programs on Military Installations (Sikes Act)	16 U.S.C. 670(a) et seq.	Requires military departments to manage natural resources on their lands. Authorizes military departments to enter into cooperative agreements with states, local governments, and others to carry out natural resources projects.
Fish and Wildlife Coordination Act	16 U.S.C. 661	Integrates fish and wildlife conservation programs with federal water development projects and conservation projects that affect water resources.
Responsibilities to Protect Migratory Birds	EO 13186 (10 January 2001)	Recognizes the ecological and economic value of migratory birds in conjunction with the Migratory Bird Treaty Act and international migratory bird conventions. Requires federal agencies whose actions are likely to have a measurable negative effect on migratory bird populations to establish a memorandum of understanding with the USFWS that shall promote the conservation of migratory bird populations.
Natural Resources Conservation Program	DoD Instruction 4715.3 (18 March 2011)	Implements policy, assigns responsibilities, and prescribes procedures for the integrated management of natural resources on property under DoD control.

Table 3.2-1: Other Federal and State Regulations on Biological Resources (continued)

Law/Policy	Citation	Summary
National Forest Management Act	16 U.S.C. 1600	Sets the statutory framework for the management of our National Forest lands. 16 U.S.C. § 1604. NFMA establishes a two-step process for forest planning. First, NFMA requires the Forest Service to develop and maintain a Forest Plan for each unit of the National Forest. Second, under NFMA, the Forest Service implements each Forest Plan by approving or disapproving site-specific actions. All proposed projects must be consistent with the overall forest plan. 16 U.S.C. § 1604(i).
Clean Water Act	33 U.S.C. 1251 et seq.	Establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters.
Bald and Golden Eagle Protection Act of 1940	16 U.S.C. 668-668c	Was enacted in 1940 and amended several times since. It prohibits anyone without a permit issued by the Secretary of the Interior from "taking" bald eagles, including their parts, nests, or eggs. The act defines a "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

Notes: DoD = Department of Defense, EO = Executive Order, NFMA = National Forest Management Act, U.S.C. = United States Code, USFWS = U.S. Fish and Wildlife Service

3.2.3 AFFECTED ENVIRONMENT

The proposed EW range includes emitters positioned on U.S. Navy lands and USFS and WSDNR logging roads in the Olympic Peninsula and north-central to northeastern portion of Washington State in the Okanogan and Colville National Forests. These land areas lie on the Olympic Peninsula beneath the assigned airspace of the Olympic MOAs (see Chapter 1, Figure 1-2) and the Okanogan and Colville National Forests beneath the assigned airspace of the Okanogan and Roosevelt MOAs. The proposed emitter sites can be found in Chapter 1, Figure 1-2, Figure 1-3, and Table 1-1.

A brief discussion of vegetation and invertebrates, plant community types, and distribution throughout the Study Area is provided below. However, the areas that support the activities under the Proposed Action are previously disturbed and do not support intact vegetation communities, as these areas include existing roadways or paved areas.

Similarly, a brief discussion of amphibians and reptiles is also provided below. However, there are no ESA-listed amphibian or reptile species in the action area, and the areas that would be used to support activities under the Proposed Action are previously disturbed and do not support habitat for amphibians or reptiles. As stated previously, the Proposed Action would not require additional or irreversible conversion of resource lands within the action area. Therefore, given the lack of overlap between mobile emitters (that would be restricted to driving on paved or logging roads) and vegetation, there would be a similar lack of potential impacts on amphibians and reptiles associated with vegetated or undisturbed habitat.

The other Biological Resources (Mammals and Birds) are also discussed below, and divided geographically into the Olympic Peninsula and north-central and northeastern Washington portions of the project area. An expanded discussion of the four ESA-listed mammals (the Grizzly Bear [*Ursus arctos*], the Canada Lynx [*Lynx canadensis*], the Woodland Caribou [*Rangifer tarandus*], and the Gray Wolf [*Canis lupis*]), and the two ESA-listed bird species (the Northern Spotted Owl [*Strix occidentalis caurina*], and the Marbled Murrelet [*Brachyramphus marmoratus*]), and their respective critical habitats that may occur in the project area are included in the analysis. It is important to note that activities

under Alternative 1 only occur within the Olympic Peninsula portion of the Study Area, while activities under Alternative 2 occur within both the Olympic Peninsula and the north-central and northeastern Washington portion of the Study Area.

It should also be pointed out that, with the exception of demolition/construction requirements to Building 104 on-board Navy-owned land at NS Everett Annex Pacific Beach (discussed in Section 2.1.1.1, 2.1.1.2, and 2.1.1.3), the Navy's proposed action requires no physical alteration to the environment in any way, to include no tree cutting/removal, digging, construction, demolition, or utilization of currently undisturbed areas. As such, the Proposed Action would not require additional or irreversible conversion of resource lands within the action area.

3.2.3.1 Vegetation and Invertebrates

The structure and composition of the Olympic peninsula and north-central and northeastern Washington vegetation is made up of late-successional and old-growth forest ecosystems, including Douglas-fir (*Pseudotsuga menziesii*) and sitka spruce (*Picea sitchensis*) trees. In the north-central and northeastern Washington portion of the Study Area the dominate forest ecosystem is ponderosa pine (*Pinus ponderosa*), however the specific composition will vary depending on physical factors such as temperature and moisture.

Disturbed areas make up the majority of the project area. Disturbed areas include areas that have been recently disturbed or that receive ongoing disturbance, apart from regular landscape maintenance. Disturbed areas typically have extensive patches of bare soil and may or may not be dominated by vegetation. Bare soil is interspersed with seral herbs and weedy exotic species. The mobile emitters will only be driven on paved or logging roads and operating at sites that are already disturbed, such as turnouts and open turnabouts that are located next to the roads. The only ESA-listed plant species that may occur in the Study Area is the Wenatchee mountain checkermallow (*Sidalcea oregana*) which may occur in the area under the Okanogan MOA. This species would not be in the vicinity of the proposed action and is not considered further in this analysis.

The Regional Forester's Sensitive Species List for the Olympic National Forest includes the following invertebrates: Johnson's hairstreak (*Callophrys johnsoni*), Taylor's checkerspot (*Euphydryas editha taylori*), Olympic arctic (*Oeneis chryxus valerata*), golden hairstreak *(Habrodais grunus*), Makah copper (*Lycaena mariposa charlottensis*), Puget blue or Blackmore's blue (*Plebejus icariodes blackmorei*), lupine blue butterfly (*Plebejus lupini spangelatus*), and valley silverspot (*Speyeria zerene bremnerii*).

Species listed as Sensitive for the Regional Forester's Sensitive Species list in the north-central and northeastern portion of the Study Area include the lustrous copper (*Lycaena cupreus*), meadow fritillary (*Boloria bellona*), Peck's skipper (*Polites peckius*), tawny-edged skipper (*Polites Themistocles*), Great Basin fritillary (*Speyeria egleis*), Melissa arctic (*Oeneis melissa*)*,* and the zigzag darner (*Aeshna sitchensis*). Other sensitive species that may occur in the project area are alpine sedge (*Carex media*), the bluntleaved orchid (*Platanthera obtusata*). Because activities under the proposed action all occur on previously developed roads, there should be no impact to any of these plant species and others that may occur in the Study Area (see Appendix A for a full listing of species).

3.2.3.2 Amphibians and Reptiles

Freshwater marshes and meadows are suitable habitat for amphibians. Amphibians that may occur in the Olympic Peninsula and the north-central and northeastern Washington portions of the Study Area include salamanders, newts, frogs (including the Pacific treefrog [*Hyla regilla*]), and the western toad

(*Bufo boreas*). Reptiles use freshwater habitats, grasslands, forested areas, and agricultural fields. Reptiles that may occur include three species of garter snakes (*Thamnophis spp*.) and the northern alligator lizard (*Elgaria coerulea*). None of these amphibians or reptiles is listed under ESA. Two of the amphibians are listed on the Regional Forester's Sensitive Species List for the Olympic National Forest: the Van Dyke's salamander (*Plethodon vandykei*), and the Olympic torrent salamander (*Rhyacotriton olympicus*). The proposed activities do not occur on marshes or in meadows; therefore, it is highly unlikely that amphibians or reptiles would occur in the project area. Furthermore, because the proposed activities would all occur on disturbed areas, it is unlikely that amphibians or reptiles would be present in the project area. Therefore, no adverse impacts are expected to occur to any of these species and others that may occur in the Study Area (see Appendix A for a full listing of species).

3.2.3.3 Mammals

This section addresses mammals that could occur in the Olympic Peninsula portion and the north-central and northeastern Washington portion of the project area. A general description of each portion of the project area is presented, followed by species descriptions, habitat, and a brief life history of threatened or endangered species within that portion of the Study Area.

3.2.3.3.1 Olympic Peninsula

Mammals that are typically found within the Olympic Peninsula portion of the project area that include multiple species of moles (*Scapanus* spp.), voles (*Microtus* spp.), mice (*Peromyscus maniculatus*, *Mus musculus*, and *Zapus trinotatus*), rabbits (*Sylvilagus bachmani*), raccoons (*Procyon lotor*), skunks (*Mephitis mephitis*), weasels and ferrets (*Mustela* spp.), bats (*Lasurus* spp., *Lasionycteris* spp., and *Myotis* spp), blacktail deer (*Odocoileus hemionus*), and Roosevelt elk (*Cervus Canadensis roosevelti*). Larger carnivorous species that may be present include black bears (*Ursus americanus*), coyotes (*Canis latrans*), bobcats (*Lynx rufus*), and cougars (*Felis concolor*). Additionally, aquatic environments within the Olympic Penninsula, both freshwater and estuarine, support animals such as beavers (*Aplodontia rufa* and *Castor canadensis*), river otters (*Lutra canadensis*), and muskrats (*Ondatra zibethicus*) (National Parks Service 2014).

Species that are on the Olympic National Forest's Regional Forester's Sensitive Species List include the Townsend's big-eared Bat (*Corynorhinus townsendii*), Keen's myotis (*Myotis keenii*), Pacific fisher (*Martes pennant* [West coast]), Olympic pocket gopher (*Thomomys mazama melanops*), and the Olympic marmot (*Marmota Olympus*). The Olympic National Forest Management also includes an Indicator Species list, which includes mammals such as the American marten (*Martes americana*), the Roosevelt elk, and the Columbia black-tailed deer (Hamer Environmental L.P. 2006). The Regional Forester's Sensitive Species List of species and the Indicator Species list are provided in Appendix A. However, none of the terrestrial mammal species that occur in the Olympic Peninsula portion of the Study Area are listed under the federal ESA, but two species of bats are listed as Species of Concern. These bats are the long-eared myotis (*Myotis evotis*) and the long-legged myotis (*M. volans*) (Washington Fish and Wildlife Office 2013).

3.2.3.3.2 North-Central to Northeastern Washington

Many small mammals are found within the north-central and northeastern Washington portion of the project area that include multiple species of moles (*Scapanus* spp.), voles (*Microtus* spp.), mice (*Peromyscus maniculatus*, *Mus musculus*, and *Zapus trinotatus*), rabbits (*Sylvilagus bachmani*), raccoons (*Procyon lotor*), skunks (*Mephitis mephitis*), weasels and ferrets (*Mustela* spp.), and bats (*Lasurus* spp. and *Lasionycteris* spp.). Larger animals include the blacktail deer (*Odocoileus hemionus*), Rocky

Mountain elk (*Cervus Canadensis nelsoni*), and moose (*Alces americanus*). Larger carnivorous species that are present include grizzly bears (*Ursus horribilis),* black bears (*U. americanus*), coyotes (*Canis latrans*), bobcats (*Lynx rufus*), and cougars (*Felis concolor*) (U.S. Department of the Navy 2010).

The Regional Forester lists the California wolverine (*Gulo gulo luteus*), the Townsend's big-eared bat (*Corynorhinus townsendii*), and the western gray squirrel (*Sciurus griseus*) as Sensitive Mammal Species in the north-central and northeastern portion of the Study Area. The American marten (*Martes americana*), and the mule deer (*Odocoileus hemionus*) are also listed in this region as management indicator species. The Regional Forester's Sensitive Species List of species and the Indicator Species list are provided in Appendix A. However, four terrestrial species are listed under the federal ESA and may occur in the northeastern Washington portion of the Study Area. They include the grizzly bear (*Ursus arctos*), the Canada lynx (*Lynx canadensis*), the woodland caribou (*Rangifer tarandus*), and the gray wolf (*Canis lupis*). These species are discussed in greater detail below.

Grizzly Bear

General Description. Grizzly bears reach weights of 400–1,500 pounds (lb.) (180–680 kilograms [kg]). The male bears are on average 1.8 times heavier than the females (U.S. Fish and Wildlife Service 2013). Their coloring ranges widely across geographic areas, from blond to deep brown or black. The grizzly bear has a large hump over its shoulders, which is a muscle mass used to power its forelimbs in digging. Grizzly bears have large heads and round concave facial profiles. They can run at speeds of up to 35 miles per hour (55 kilometers per hour) (U.S. Fish and Wildlife Service 2013).

Status, Population Trends, and Threats. The grizzly bear is federally listed as threatened. The range and numbers of grizzlies were reduced to less than 2 percent of their historical levels by the 1930s, approximately 125 years after first contact with European settlers. Of 37 grizzly populations present in 1922, only five remained by 1975 (Servheen 1999). The decreases in historical range, the isolated nature of existing populations, the building of roads and trails in formerly secure grizzly bear habitat, and livestock practices on National Forests contributed to the decline in grizzly bear populations. No critical habitat for the grizzly bear occurs in the project area. However, there is grizzly bear recovery area designated near the north-central to northeastern Washington portion of the project area (Figure 3.2-1) (U.S. Fish and Wildlife Service 2011a).

Distribution. Grizzly bears historically occupied territory extending from central Mexico to the Arctic Ocean and from the Pacific Ocean east to the Mississippi River. Their current range includes Alaska, western and northern Canada, and the northern Rocky Mountains through north-central Washington, and across northern Idaho and northeast Washington (U.S. Department of the Navy 2010).

Habitat. The grizzly bear occurs in many diverse habitats. Their home ranges exhibit variation among individuals, areas, and seasons. They occur in riverine and riparian habitats (in creeks, rivers, lakes, and alongside other bodies of water); in alpine, conifer, hardwood, and mixed forests; and in grassland, scrubland, and tundra ecosystems. Historically they were found on open prairies, brush lands, and semi-desert areas; however, current populations are found mostly in arctic tundra, alpine tundra, and subalpine mountain forests. Most populations require huge areas of suitable habitat and are common only where food is abundant and concentrated (e.g., salmon runs, caribou calving grounds) (NatureServe 2013). In general, home range sizes of females are less variable than those of males (LeFranc et al. 1987). Generally, females with cubs-of-the-year have the smallest home range sizes (Blanchard and Knight 1991).

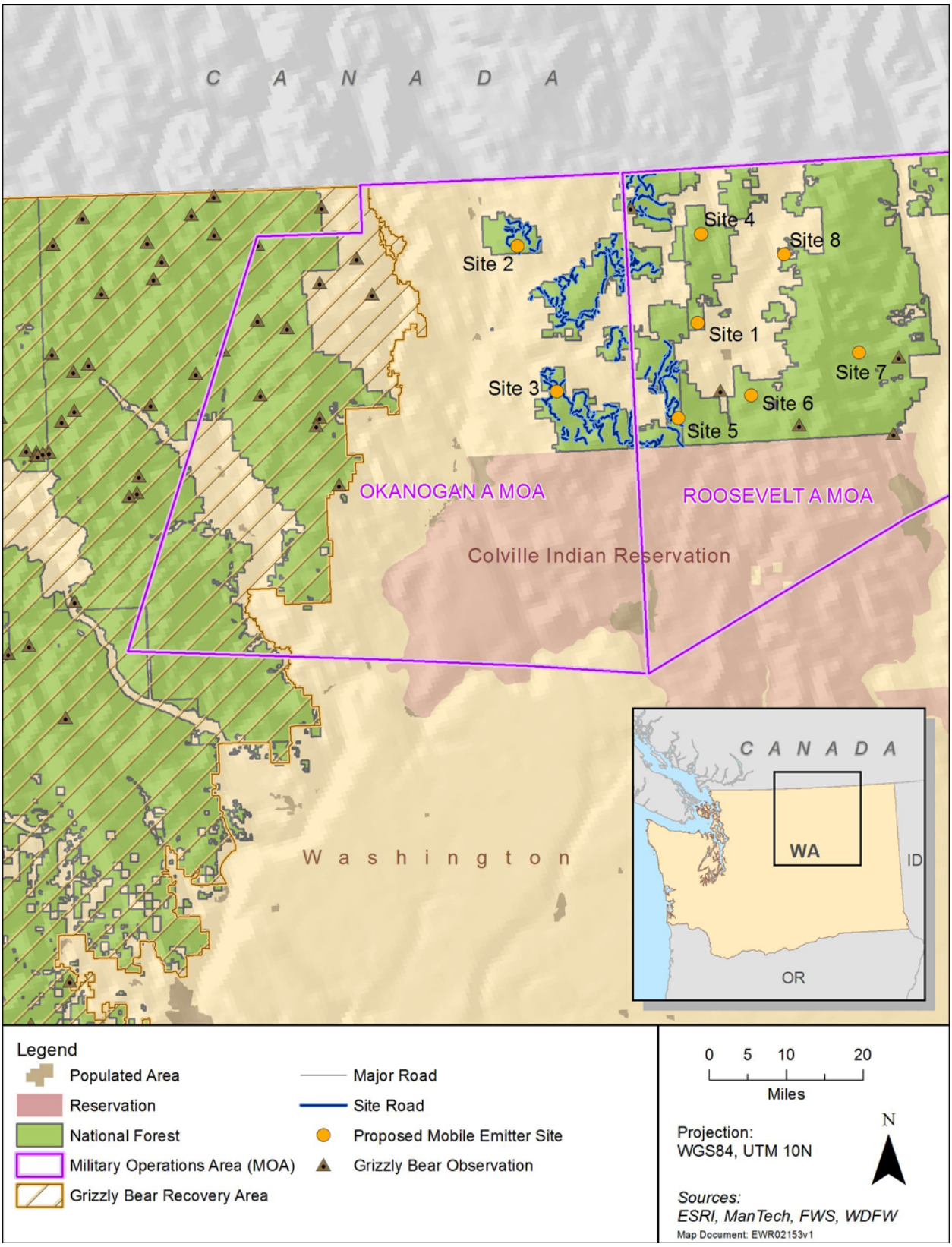


Figure 3.2-1: Grizzly Bear Recovery Area near the Proposed Action Area

Occurrence in the Study Area. The North Cascades Ecosystem of north-central Washington (including the Okanogan MOA) covers 25,000 square kilometers (km^2) (9,650 square miles [$mi.^2$]) but is estimated to contain fewer than 20 bears (Almack et al. 1993). The nearest additional population of grizzly bears is immediately north in Canada with an estimated 23 individuals, but populations to the east and west of the Cascades in Canada are considered extirpated (removed or destroyed) (North Cascades Grizzly Bear Recovery Team 2004). Figure 3.2-1 shows observations of the grizzly bears in the project area and grizzly bear recovery areas near the project area (U.S. Fish and Wildlife Service 2011a).

Canada Lynx

General Description. The lynx is a medium-sized cat with long legs, large paws, long tufts on the ears, and a short, black-tipped tail. Adult males average 22 lb. (10 kg) in weight and (33.5 inches (in.) (85 centimeters [cm]) in length (head to tail), and females average 19 lb. (8.5 kg) and 32 in. (82 cm). Lynx are mainly nocturnal with their most active hours being 2 hours after sunset to 1 hour after sunrise (Banfield 1974). Canada lynx have large feet that are adapted to walking on snow and are highly adapted for hunting snowshoe hare, their primary prey, in the snow of boreal forests (U.S. Fish and Wildlife Service 2005).

Status, Population Trends, and Threats. The Canada lynx is federally listed as threatened. Washington contains one of the last and largest Canada lynx populations in the United States. Threats to the lynx include road activity, destruction of snowshoe hare habitat, kill trapping, and hunting by humans. For the Pacific Northwest, the U.S. Forest Service (1993) recommended the following actions within known lynx range: (1) minimizing road construction, closing unused roads, and maintaining roads to the minimum standard possible; (2) using prescribed fire to maintain forage area for snowshoe hare in juxtaposition with hunting cover for lynx; (3) designating areas to be closed to kill trapping of any furbearer to avoid incidental lynx mortality to maintain population refugia for lynx in key areas; (4) planning for kill-trapping closure on a wider basis if data indicate a declining lynx population as a result of incidental trapping mortality; and (5) developing and implementing a credible survey and monitoring strategy to determine the distribution of lynx throughout its potential range. In 1998, the U.S. Forest Service, the U.S. Bureau of Land Management, and the U.S. Fish and Wildlife service created the Lynx Conservation Strategy Action Plan, which presented conservation measures that have been used to analyze effects of projects on lynx and lynx habitat. The Lynx Conservation Strategy Action Plan recommended that the lynx population be split up by Lynx Analysis Units (LAUs) to provide a better way to track and monitor the lynx populations in Washington, Idaho, Alaska, and Canada. None of the proposed mobile emitter sites occur within the LAUs. Some scientists believe that in order to ensure that lynx persist in Washington State, it would be a prudent conservation strategy to develop additional lynx populations in suitable boreal forests beyond the Okanogan highlands (Koehler and Maletzke n.d.).

Distribution. Lynx in the United States are at the southern margins of more dense populations in Canada and Alaska. They are found in 14 states with boreal forests. Habitat on state lands in Washington are managed under the state's Lynx Habitat Management Plan (Washington State Department of Natural Resources 2006). Lynx are best known for their unique association with a single prey item, the snowshoe hare. The density of the lynx populations oscillates only in relation to the density of snowshoe hare. Washington State represents approximately 0.5 percent of the total area of the occupied by lynx; however, Washington may support a significant proportion of the resident populations of lynx in the United States. Of the 14 states where lynx formerly resided, breeding lynx have recently been detected in Washington, Montana, Maine, Wyoming, and Minnesota. Introduced lynx are also breeding in Colorado (Washington State Department of Natural Resources 2006).

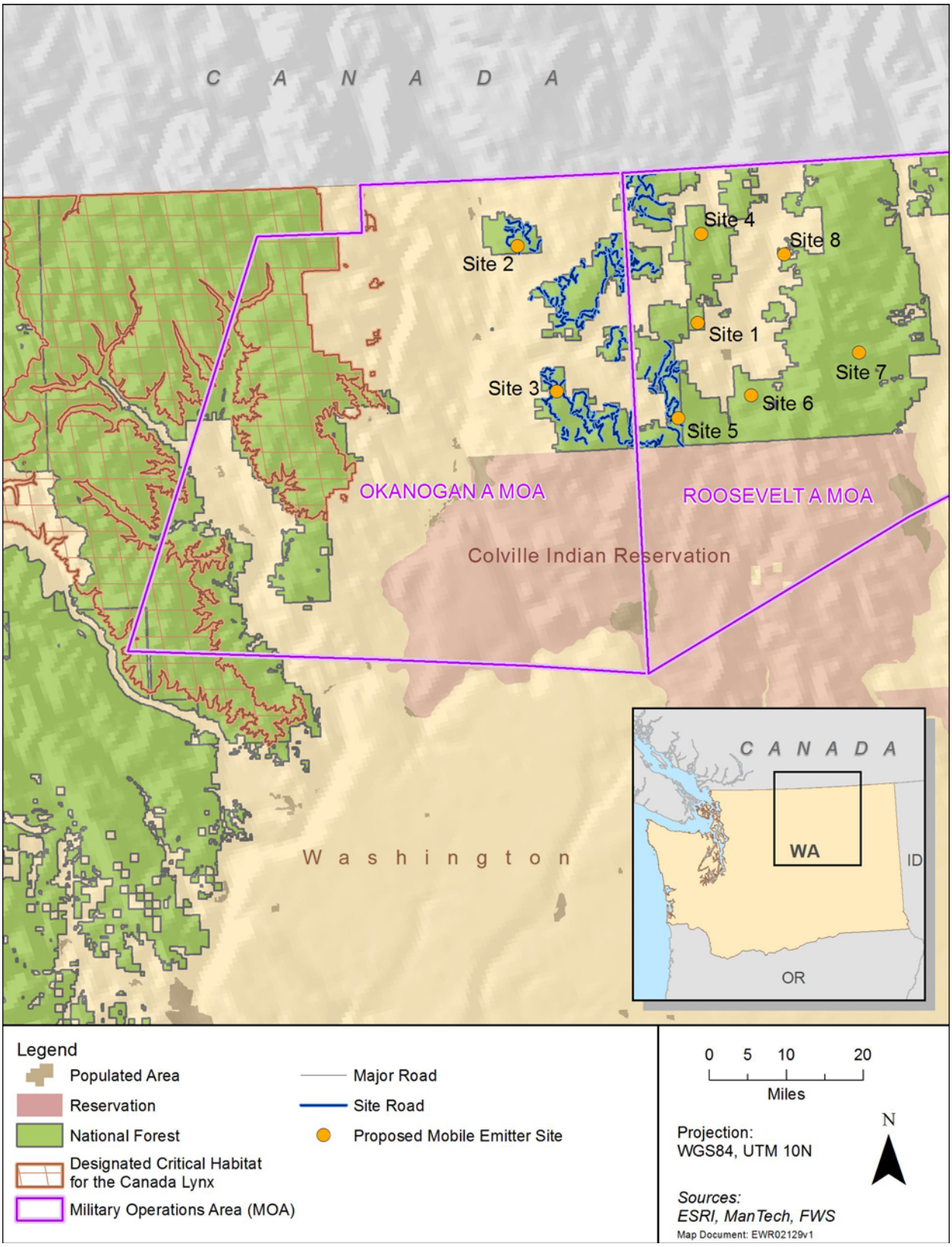


Figure 3.2-2: Canada Lynx Critical Habitat near the Proposed Action Area

Habitat. Canada lynx are commonly found in large spruce-fir and lodgepole pine forests at higher elevations with cold winters and substantial snowfalls, which generally occur at elevations over 4,000 ft. Dense understory is important, both for prey habitat and for den sites. Lynx are highly mobile, with individual home ranges between 12 and 83 mi.^{2} (31 and 216 km^2), depending on age, gender, season, lynx density, and prey base.

Occurrence in the Study Area. Lynx occur in small numbers in Okanogan County and occur intermittently in the other northeastern Washington counties (Washington Department of Fish and Wildlife 2013b). Koehler et al. (2008) used snow-tracking data to develop a model of lynx–habitat relationships that could be used to assess the potential distribution of lynx in Washington. They estimated about 3,800 km^2 of suitable habitat, indicating that Washington could support up to 87 lynx, but they believed this was an overestimate because it was based on an area where hare densities were high (Washington Department of Fish and Wildlife 2013a). Critical Habitat was designated in 2006 (71 FR 66008) and amended in 2009 (FR 74 8616). An additional amendment was proposed in September 2013 (78 FR 59429); however, the proposed revision does not include changes to critical habitat in Washington. Designated critical habitat for the Canada lynx does not overlap with the proposed emitter sites.

Woodland Caribou

General Description. The woodland caribou are typically found in the Selkirk Mountains and known as Selkirk mountain woodland caribou. They are medium-sized members of the deer family. The males weigh up to 600 lb. (272.2 kg) and females weigh up to 300 lb. (136.1 kg). Caribou are distinguishable from other members of the deer family because of their large concave hooves that allow them to walk "snowshoe-style" across deep snow. They also have distinct antlers that both sexes drop annually. The males of the species possess larger antlers that only have one or two brow tines called "shovels" that extend over the face (Washington Department of Fish and Wildlife 2011).

Status, Population Trends, and Threats. The woodland caribou is federally listed as endangered. The sub-population of woodland caribou that have the potential to occur in the project area is known as the South Selkirk sub-population. This subpopulation includes fewer than 30 individuals (Washington Department of Fish and Wildlife 2013a) and the population appears to be decreasing (US Fish and Wildlife Service 2012) Threats to woodland caribou include habitat loss and fragmentation, over-hunting, and predation. Forest-dwelling woodland caribou occur at low density and therefore require large areas with specific habitats for foraging, calving, and avoiding predators (Thomas and Gray 2002). Critical habitat for the caribou is designated but does not overlap with proposed sites in the action area (Figure 3.2-3).

Distribution. In the past, woodland caribou were widely distributed throughout the northern United States from Washington to Maine. A recovery area has been designated that encompasses 2,200 mi.^{2} (5,700 km^2), with 53 percent in the United States and the remainder in British Columbia, Canada. Critical habitat has been designated in Pend Oreille County in Washington, and in Boundary and Bonner counties in Idaho. The total critical habitat designated for the woodland caribou is approximately 375,562 acres (151,985 hectares) (U.S. Fish and Wildlife Service 2011b). In the project area woodland caribou have the potential to occur in northeastern Washington, and that subpopulation consists of fewer than 30 individuals (Washington Department of Fish and Wildlife 2013a).

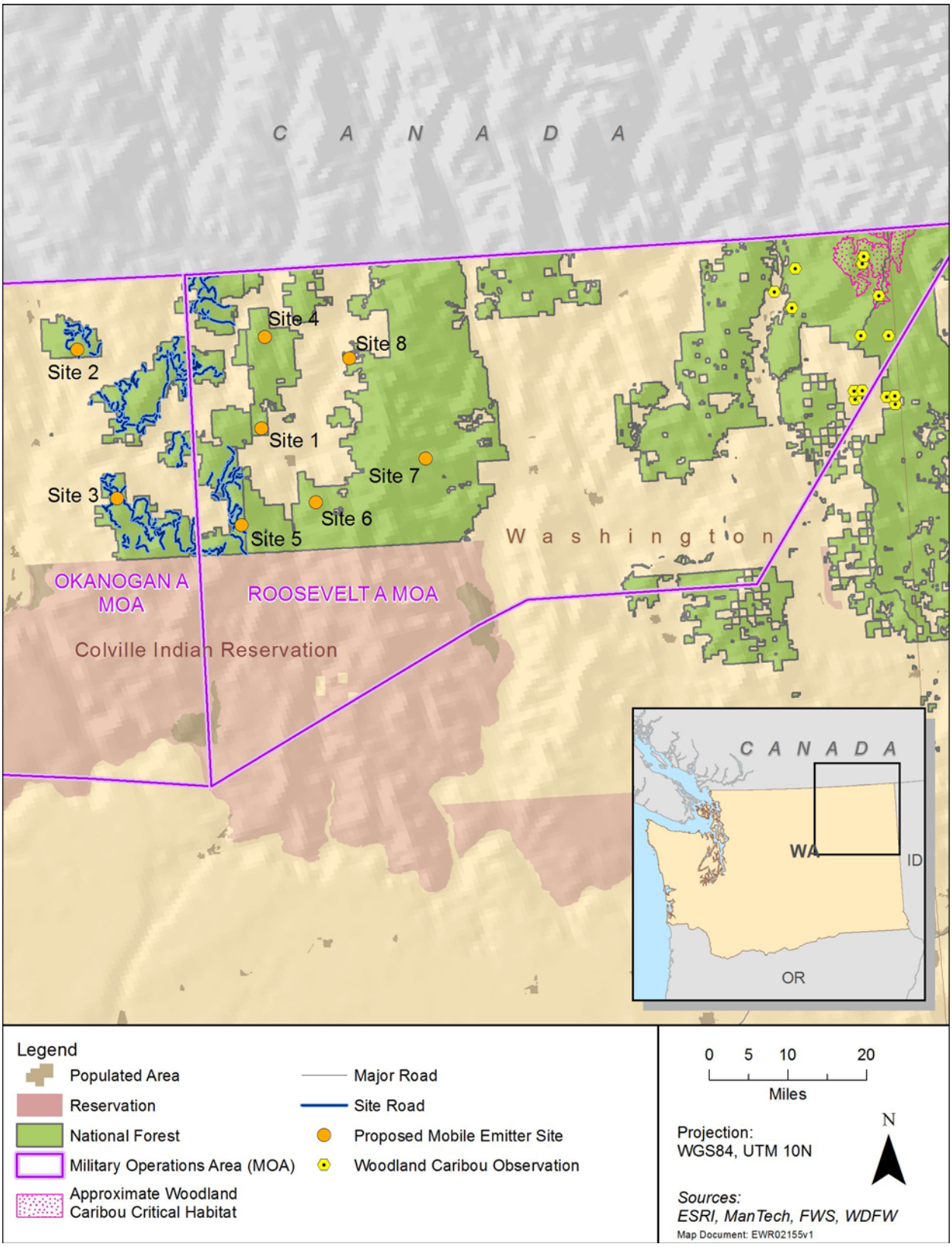


Figure 3.2-3: Critical Habitat for the Woodland Caribou in the Study Area

Habitat. Woodland caribou primarily occupy old growth cedar/hemlock and spruce/fir forests above 4,000 ft. (1,220 meters [m]) with high snow falls. Selkirk woodland caribou distinguish themselves from other woodland caribou by their winter diet, which consists almost exclusively of arboreal lichens. This trait allows them to inhabit the deep snow wet belt of the Columbia Mountains. These caribou are often referred to as "mountain caribou." The recovery area is characterized by long, steep-sided drainages. Seasonal movements based on elevation are common, but woodland caribou do not engage in the mass migrations that are noted for tundra caribou.

Occurrence in the Study Area. In the Colville National Forest, woodland caribou are found on the Newport-Sullivan Lake Ranger Districts in the northeast corner of Washington State. The Selkirk Mountains Woodland Caribou Recovery Area includes a portion of the districts, as well as public lands in northern Idaho and southern British Columbia. In Washington, woodland caribou are most likely to be found in the Salmo-Priest Wilderness (U.S. Department of Agriculture 2013). This area is in the northeast corner of the state, which is outside of the Study Area. Woodland caribou do not occur in the Okanogan portion of the Study Area.

Gray Wolf

General Description. The gray wolf is the largest of the wild dogs, with an average length of 19–80 in. (50–205 cm) tail. Wolves vary from nearly black to white, to some shade of gray in most areas. They differ from coyotes in that they have larger nose pads, rounded ears, larger diameter of upper canine teeth at gum level, larger hell pads on forefeet, longer skulls, and relatively shorter canines. Gray wolves breed in February–March in the north including Washington. Gestation lasts about 2 months, and young are born in late May to early June. Litter sizes range from 4 to 10 pups, and only the dominant male and female mate and rear offspring (NatureServe 2013).

Status, Population Trends, and Threats. The gray wolf is listed as federally endangered in the western two-thirds of Washington; however, no gray wolves are known to occur in the Olympic peninsula portion of the project area. The Rocky Mountain Distinct Population Segment (DPS) (the population segment east of Highway 97 in eastern Washington) was federally delisted in the eastern third of the state, however, this DPS remains listed as endangered throughout Washington under state protection. The gray wolf in western portion of the state remains federally listed as endangered. In March 2014 the U.S. Fish and Wildlife Service reopened the comment period on the proposal to delist the gray wolf. A decision on this ruling is expected in late 2014. Reliable population reports began increasing in Washington in 2002 due in part to the recovery of wolf populations in Idaho, Montana, and Wyoming. Estimates from 2012 showed that the wolf population in Washington increased by 31 percent over 2011 estimates and included 51 wolves in 9 known packs (Becker et al. 2013).

Humans are the largest cause of death in most areas of North America, with illegal killing and lethal control to reduce livestock depredation being the main sources (Murray et al. 2010; Smith et al. 2010). Illegal killing has been documented in Washington. As top-level predators, wolves influence the abundance and behavior of their prey and other predators, which in turn can affect vegetation patterns, occurrence of other wildlife, and other ecological processes (e.g., Hebblewhite and Smith 2010). There is no designated critical habitat for the Gray Wolf in the proposed action area (Figure 3.2-4).

Distribution. Wolves were formerly common throughout most of Washington, but declined rapidly from being aggressively killed during the expansion of ranching and farming between 1850 and 1900. They were eliminated as a breeding species from the state by the 1930s. However, as stated previously under *Status, Population Trends, and Threats*, reports have indicated that wolf populations have been increasing in Washington since 2002 (Washington State Department of Fish and Wildlife 2011).

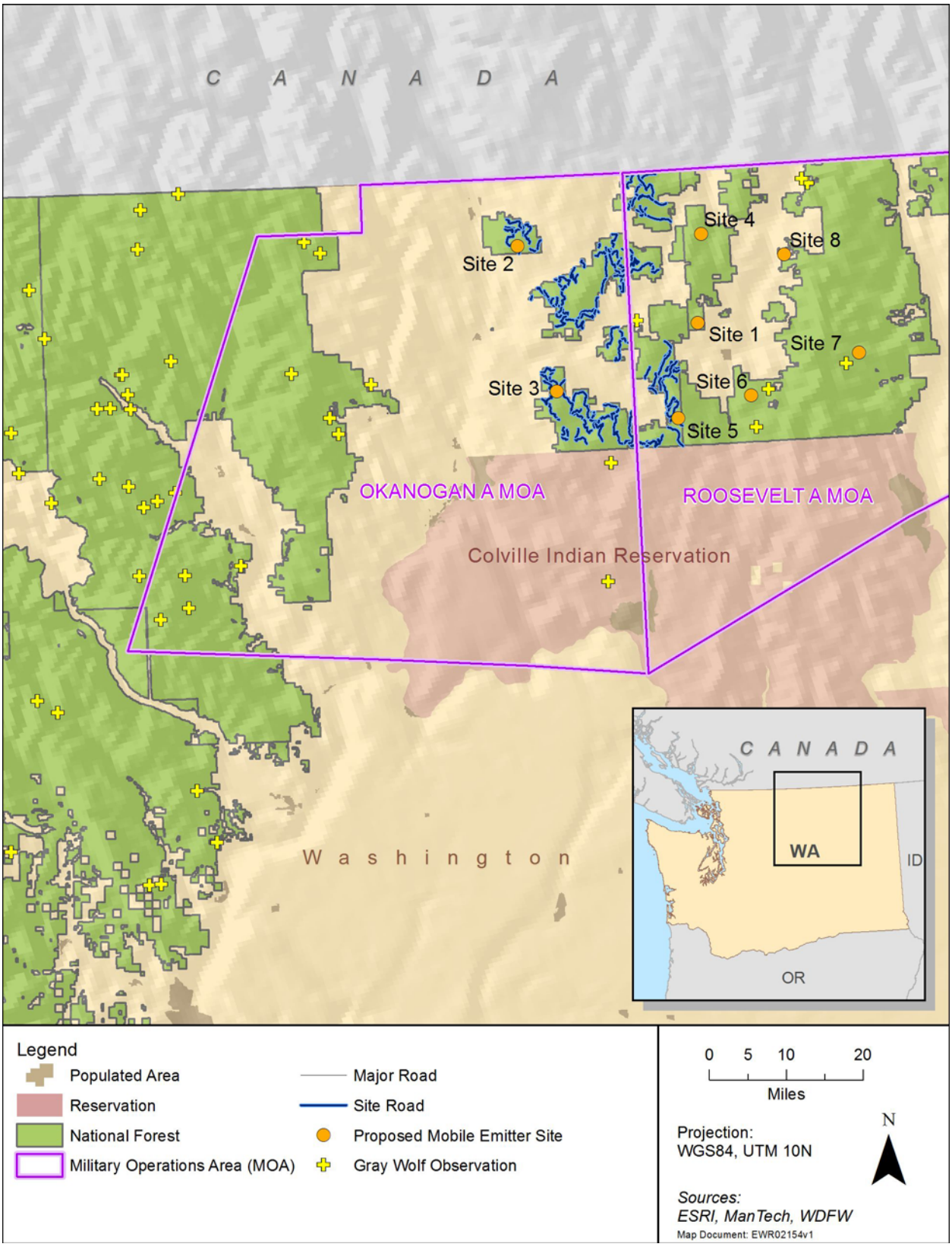


Figure 3.2-4: Gray Wolf Observations in the Proposed Action Area

Habitat. Wolves are habitat generalists and can occupy almost any habitat where adequate prey is available and human-caused mortality is limited (Washington State Department of Fish and Wildlife 2011). Common wolf habitats include conifer forests, mixed forests, grasslands, shrubland, and hardwood forests. In the northwest, dens were most commonly located within 31 mi. (50 km) of the northern tree line, which resulted in maximum availability of caribou during the denning and pup rearing period (NatureServe 2013).

Occurrence in the Study Area. In 2008, wolves and wolf pups began to naturally return to northeastern Washington from packs in British Columbia. Wolves are likely to occur in the northeastern portion of the project area, especially in the Okanogan MOA (Washington State Department of Fish and Wildlife 2013). However, the proposed locations of the mobile emitters would be located within the range of the Rocky Mountain DPS (the population segment east of Highway 97 in eastern Washington) which has been delisted.

3.2.3.4 Birds

This section addresses birds that could occur in the Olympic Peninsula portion and the north-central and northeastern Washington portion of the project area. A general description of each portion of the project area is presented, followed by a species description, habitat, and brief life history of threatened or endangered species within that portion of the Study Area.

3.2.3.4.1 Olympic Peninsula

Mixed forests provide excellent habitat for perching birds. The vegetation in the Olympic Peninsula is dominated by 60–100-year-old Douglas fir trees, and some firs may be well above 150 years old. A number of neotropical migratory birds breed primarily in conifer forest and winter south of Washington. These migratory birds include olive-sided flycatchers (*Contopus cooperi*), Cassin's vireo (*Vireo cassinii*), Townsend's warbler (*Dendroica townsendii*), and the western tanager (*Piranga ludoviciana*). Those birds that are more likely to breed in broadleaf forests include black-headed grosbeak (*Pheucticus melanocephalus*), black-throated gray warblers (*Dendroica nigrescens*), and the warbling vireo (*Vireo gilvus*). Species that may breed in either forested habitat include rufous hummingbirds (*Selasphorus rufus*), Pacific-slope flycatchers (*Empidomax difficilis*), Swainson's thrush (*Catharus ustulatus*), house wrens (*Troglodytes aedon*), orange-crowned warblers (*Vermivora celata*), and the Wilson's warbler (*Wilsonia pusilla*) (U.S. Department of the Navy 2010). Herons and egrets also occur within the Olympic peninsula portion of the study area. Birds of prey that occur in the area include numerous hawk species, bald eagles (*Haliaeetus leucocephalus*), ospreys (*Pandion haliaetus*), peregrine (*Falco peregrinus*), and other falcons (*Falco sp.*).

The Regional Forester's Sensitive Species List for the Olympic National Forest includes the common loon (*Gavia immer*), American peregrine falcon (*Falco peregrines anatum*), the bald eagle, and the harlequin duck (*Histrionicus histrionicus*). Birds that are also Management Indicator species are the bald eagle, northern spotted owl (*Strix occidentalis caurina*), pileated woodpecker (*Dryocopus pileatus*), and various other woodpecker species (Hamer Environmental 2006). The Regional Forester's Sensitive Species List of species and indicator species are listed in Appendix A. Three federally listed species are found in the Olympic Peninsula portion of the project area: the threatened northern spotted owl (*Strix occidentalis caurina*), the threatened marbled murrelet (*Brachyramphus marmoratus*), and the snowy plover (*Charadrius nivosus*). However, the snowy plover is discounted from further analysis because activities near Pacific Beach will be localized to the fixed emitter site, and the emitter is directional and will not be pointed at the beach, but rather into the air. Because snowy plovers stay close to the beach while foraging and typically fly at low altitudes, they are not expected to overlap with the electromagnetic

beam from the fixed emitter. Subsequently, the activities near the beach containing snowy plover habitat will not impact biological resources on the beach. A description, along with the habitat and brief life history of these threatened species, excluding the snowy plover, is included below.

Northern Spotted Owl

General Description. The northern spotted owl is a medium-sized, dark brown owl with a barred tail, white spots on the head and breast, and dark brown eyes surrounded by prominent facial disks. Males and females have similar plumage, but females typically weigh 10–20 percent more than males. The spotted owl is a relatively long-lived bird; produces few, but large, young; invests significantly in parental care; experiences later or delayed maturity; and exhibits high adult survivorship. Spotted owls do not typically reach sexual maturity until after 2 years of age, and when they pair, they are monogamous. Adult females lay an average of two eggs per clutch with a range of one to four eggs. Spotted owl pairs do not typically nest every year, nor are nesting pairs successful every year. Spotted owls are mostly nocturnal, but they may forage opportunistically during the day (Oregon Fish and Wildlife Service 2012).

Status, Population Trends, and Threats. The northern spotted owl was listed in 1990 (55 FR 26114) as threatened throughout its range primarily due to loss and adverse modification of suitable habitat as a result of timber harvesting, habitat changes that are exacerbated by catastrophic events such as fire, volcanic eruption, disease, and wind storms. Recent reviews have more specifically identified competition with the barred owl (*Strix varia*) (U.S. Fish and Wildlife Service 2011c), and fire in the relatively dry east Cascades and Klamath provinces of California and Oregon (where other northern subspecies occur) as greater threats than previously considered. New potential threats of unknown magnitude to the subspecies include West Nile virus and the sudden oak death tree disease (U.S. Fish and Wildlife Service 2011c). Populations of the northern spotted owl are declining over time. This trend is most evident in Washington (Anthony et al. 2004).

Distribution. The distribution of the northern subspecies (there are also California and Mexican subspecies with distributions outside the study area) of the northern spotted owl includes southwestern British Columbia, western Washington and Oregon, and northwestern California. The range of the northern spotted owl is divided into 12 provinces from Canada to northern California and from the Pacific Coast to the eastern Cascades. Over half of the nesting/roosting habitat occurs in the central (core) portions of the owl's range, within the Klamath Mountain provinces of Oregon and California (27 percent) and the western Cascades of Oregon (26 percent) (Davis et al. 2011).

Habitat. Northern spotted owls generally inhabit older forested habitats that are characterized by dense canopy closure because they contain the structural characteristics required for nesting, roosting, and foraging. Although they are known to nest and roost and feed in a wide variety of habitats, northern spotted owls prefer a multi-layered, multi-species canopy with moderate to high canopy closure. Typically, forests do not attain these characteristics until they are at least 150–200 years old (Oregon Fish and Wildlife Office 2012). Northern spotted owl critical habitat in the Olympic Peninsula is shown in Figure 3.2-5.

Occurrence in the Study Area. Northern spotted owls are particularly rare in the Cascade Mountains of northern Washington, and the Coast Ranges of southwest Washington and northwest Oregon. However, a large and virtually isolated population persists on the Olympic Peninsula. This population of northern spotted owl may be found throughout the Olympic Peninsula portion of the project area (Oregon Fish and Wildlife Office 2012).

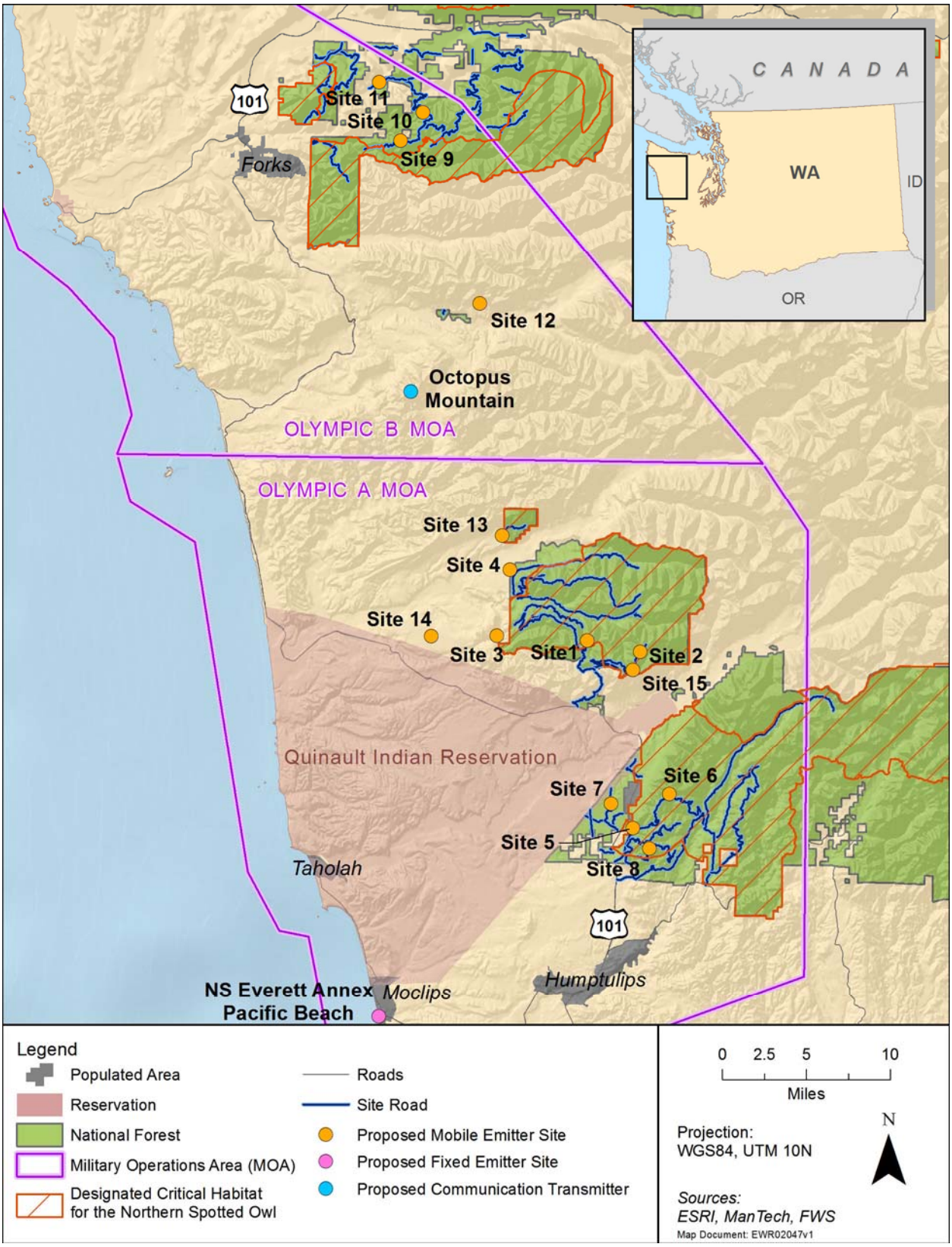


Figure 3.2-5: Northern Spotted Owl Critical Habitat in the Olympic Peninsula

Marbled Murrelet

General Description. The marbled murrelet is a small alcid with sooty brown to brownish-black upper parts, rusty margins on the back feathers, and reddish scapulars (Carter and Stein 1995). During the breeding season it has dark brown to blackish upperparts and a white belly and throat that are greatly mottled. During the winter the upperparts become gray, dark marks form on the sides of the breast and a white ring develops around the eye. Males and females are similar in appearance and size. Juveniles are similar to the adult winter plumage, but with dusky mottling on the under-parts (NatureServe 2013).

Status, Population Trends, and Threats. The marbled murrelet is listed as threatened under ESA (57 FR 45328), and has designated critical habitat in the Olympic Peninsula portion of the project area (61 FR 26256). Marbled murrelet populations have experienced significant population declines in the Pacific Northwest, primarily because of the removal of essential habitat by logging and coastal development (Wahl et al. 2005). Fisheries, especially gill-net fisheries, and oil spills have also contributed to population declines. The marbled murrelet population in the Olympic Peninsula is a part of the Conservation Zone 2 of 6 that are designated for the bird. In Conservation Zones 1 through 5 (northern California through Washington), there are an estimated 17,700 birds in the population, with the lowest average density among the five zones located on the outer coast of Washington (U.S. Fish and Wildlife Service 2009).

Distribution. The marbled murrelet occurs only in the north Pacific ranging from the Aleutian archipelago across southern Alaska and south as far as Santa Cruz County in central California (U.S. Department of the Navy 2006). Critical habitat areas are found on lands beneath the Olympic MOA, and may be near mobile emitters. However, because mobile emitters are only found on disturbed roads, and will operate from cleared sites, and because marbled murrelets prefer heavy canopy areas (Figure 3.2-6) (U.S. Fish and Wildlife 2009).

Habitat. Marbled murrelets spend most of their lives in the marine environment where they forage in near-shore areas and consume a diversity of prey species, including small fish and invertebrates. Aside from the oceanic portion of their lives, they come inland to nest. In their terrestrial environment, the presence of platforms (large branches or deformities) used for nesting in trees is the most important characteristic of their nesting habitat. Nesting occurs from the Aleutian Islands south through British Columbia, Washington, and Oregon, and into central California (U.S. Fish and Wildlife Service 2011d). The species' wintering range is poorly documented, but includes most of the marine areas used in the breeding season (Nelson 1997). Marbled murrelet critical habitat in the Olympic Peninsula is shown in Figure 3.2-6.

Occurrence in the Study Area. Marbled murrelets spend the majority of their lives on the ocean, but come inland to nest. They generally nest in old-growth forests, characterized by large trees, multiple canopy layers, and moderate to high canopy closure. These forests are located close enough to the marine environment for the birds to fly to and from nest sites. Nests have been found inland from the coast up to a distance of 50 mi. in Washington State. With many of the emitter sites in the Olympic Peninsula project area within 50 mi. of the Washington coastline, it is possible that nesting habitat overlaps with the Olympic Peninsula portion of the project area. However, mapping done by the Washington Department of Fish and Wildlife indicates that marbled murrelet nesting habitat may occur approximately 3,280.8 ft. (1,000 m) away from the fixed emitter site at Building 104 at NS Everett Annex Pacific Beach (Figure 3.2-6) (Washington Department of Fish and Wildlife 2013a). There are no known nesting sites that will be impacted by the mobile emitters driving on logging or paved roads in the action area (Raphael et al. 2011), and murrelets are unlikely to create nests near these sites because these

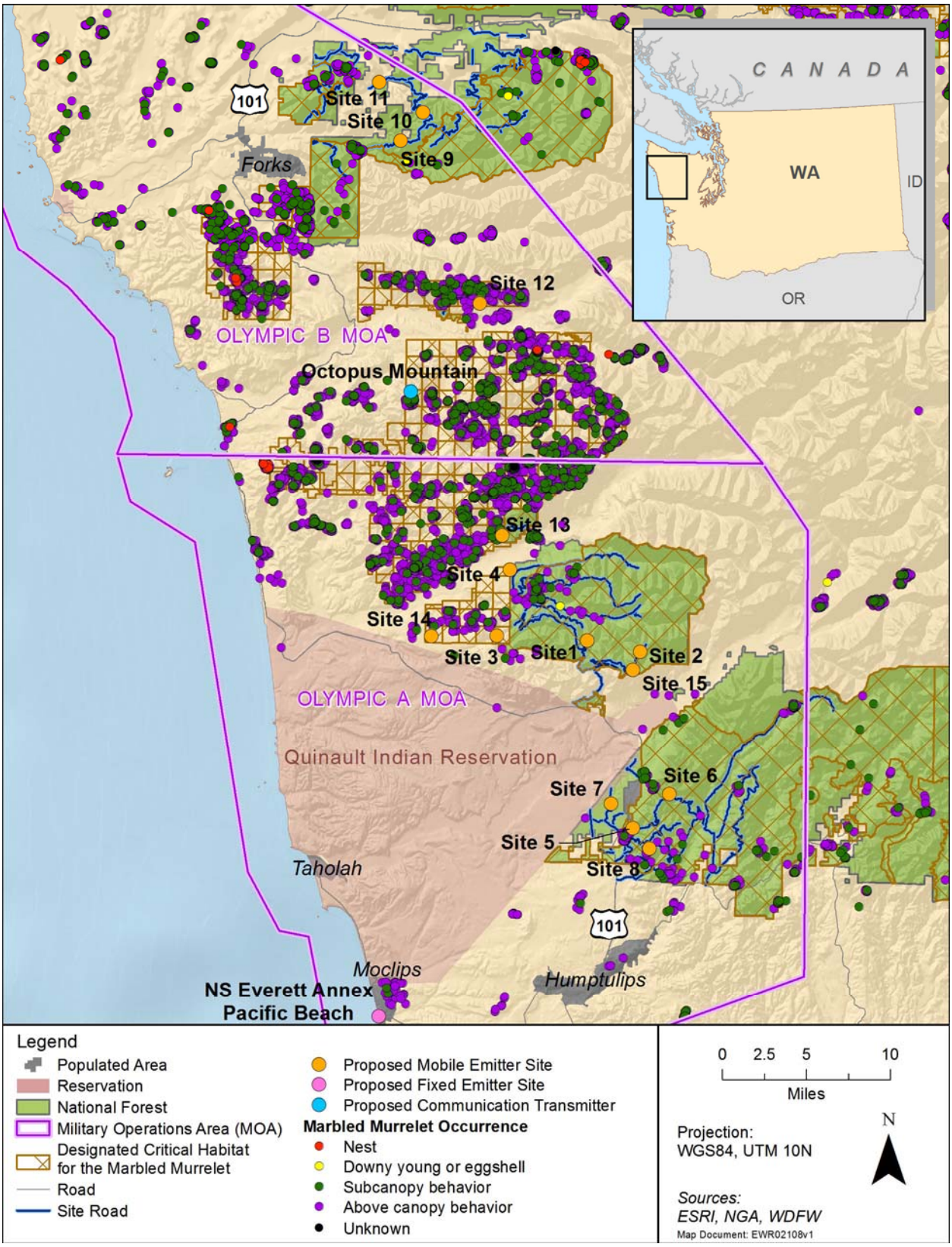


Figure 3.2-6: Marbled Murrelet Critical Habitat and Nesting Habitat in the Olympic Peninsula

areas are cleared and murrelets prefer heavy canopy areas for nesting.

3.2.3.4.2 North-Central to Northeastern Washington

The extensive shrublands of northeastern Washington provide excellent habitat for perching birds. The vegetation is dominated by 60–100-year-old Douglas fir trees. A number of neotropical migratory birds breed primarily in conifer forest, and winter to the south. These migratory birds include olive-sided flycatcher (*Contopus cooperi*), Cassin's vireo (*Vireo cassinii*), Townsend's warbler (*Dendroica townsendii*), and western tanager (*Piranga ludoviciana*). Those that are more likely to breed in broadleaf forests include black-headed grosbeak (*Pheucticus melanocephalus*), black-throated gray warbler (*Dendroica nigrescens*), and warbling vireo (*Vireo gilvus*). Species that may breed in either forested habitat include rufous hummingbird (*Selasphorus rufus*), Pacific-slope flycatcher (*Empidomax difficilis*), Swainson's thrush (*Catharus ustulatus*), house wren (*Troglodytes aedon*), orange-crowned warbler (*Vermivora celata*), and Wilson's warbler (*Wilsonia pusilla*) (U.S. Department of the Navy 2010).

The Regional Forester's List of Sensitive Species in this region includes the American Peregrine Falcon (*Falco peregrinus anatum*), the bald eagle (*Haliaeetus leucocephalus*), the common loon (*Gavia immer*), the gray flycatcher (*Empidonax wrightii*), the great gray owl (*Strix nebulosa*), the harlequin duck (*Histrionicus histrionicus*), the Pacific fisher (*Martes pennant pacifica*), the sandhill crane (*Grus canadensis*), the sharp-tailed grouse (*Tympanuchus phasianellus*), and the white-headed woodpecker (*Picoides albolarvatus*). Management Indicator species in this region include the barred owl (*Strix varia varia*), the pileated woodpecker (*Dryocopus pileatus*), the three-toed woodpecker (*Piocoides tridactylus*), other primary cavity excavators, and the ruffed grouse (*Bonasa umbellus*). The Regional Forester's Sensitive Species List of species and indicator species are listed in Appendix A. One federally listed species is found in the northeastern portion of the project area, the threatened northern spotted owl (*Strix occidentalis caurina*). Northern spotted owls inhabit older forested habitats that contain the structural characteristics they require for nesting, roosting, and foraging; those characteristics are multi-layered, multi-species canopies with moderate-to high-canopy closure. Critical habitat areas for the northern spotted owl are located in and adjacent to the southwest corner of the Okanogan MOA (Figure 3.2-7) (U.S. Department of the Navy 2010). However, the closest critical habitat area is well over 45 miles from the nearest proposed operating site (Site 3).

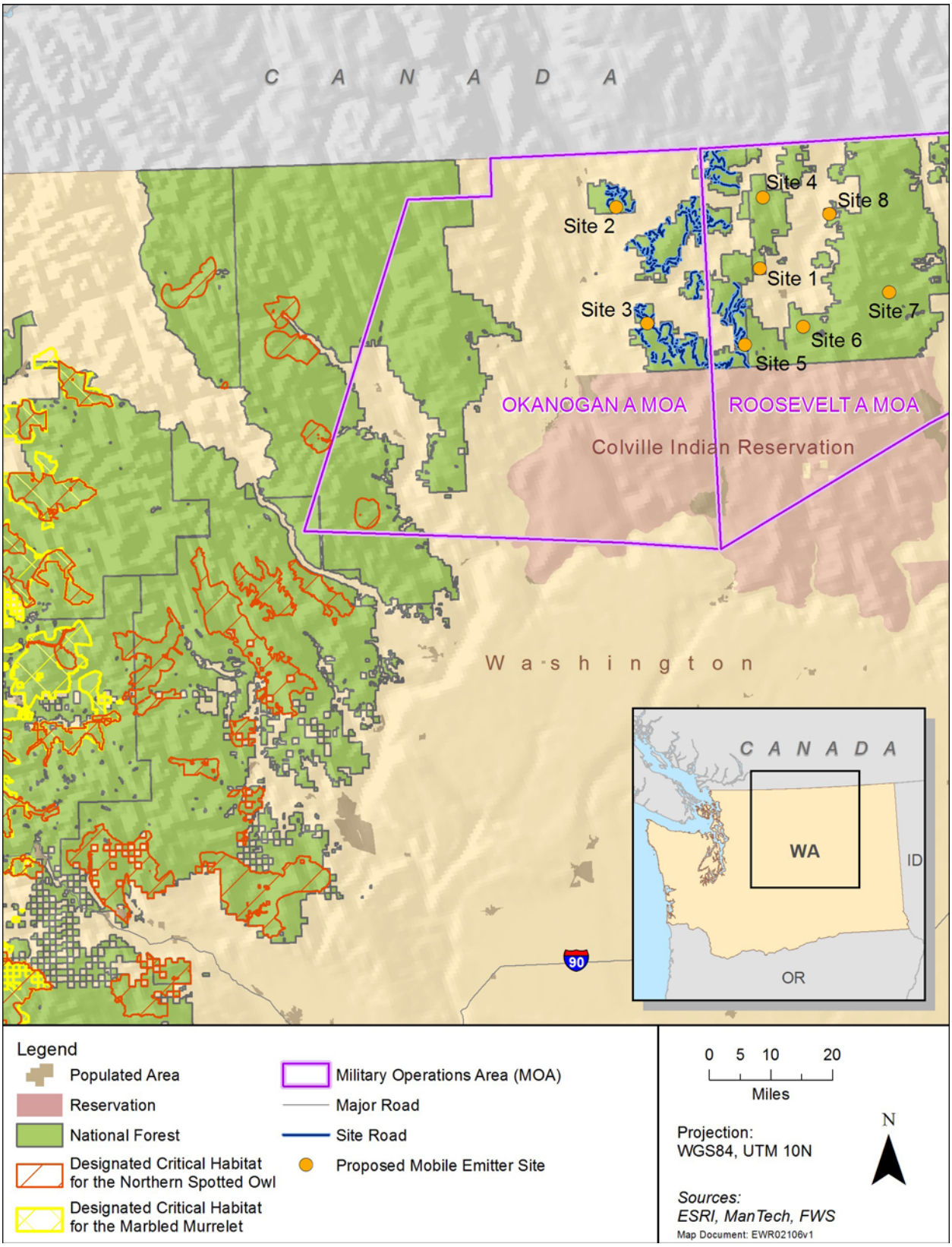


Figure 3.2-7: Northern Spotted Owl and Marbled Murrelet Critical Habitat In and Around the Okanogan A MOA

3.2.4 ENVIRONMENTAL CONSEQUENCES

The significance of potential impacts on biological resources are determined on the basis of the importance (i.e., legal, ecological, or scientific) of the resource; the portion of the resource that would be affected relative to its occurrence in the region; the sensitivity of the resource to existing and proposed activities; and the duration of ecological ramifications. Impacts on biological resources are significant if species or habitats of concern are adversely affected over relatively large areas or disturbances adversely affect the population or distribution of a species of concern.

This section analyzes the potential for impacts on biological resources from actions associated with the No Action Alternative, Alternative 1, and Alternative 2. Elements of Alternatives that could have impacts on biological resources include:

- **Noise.** Noise from vehicle travel, generators/operation of emitters, and temporary demolition/construction (during the renovation of Building 104 and the construction of the MRES tower), may disturb wildlife.
- **Electromagnetic Radiation.** The electromagnetic field created from the operation of the EW emitters during training activities may disturb wildlife that use electromagnetic fields for movement and orientation.

3.2.4.1 Determination of Significance

The impact analysis for biological resources considers effects of the Proposed Action on individual biological resources and populations. The analysis first looked at how individuals would respond to a stressor or combination of stressors and whether the response would affect the fitness of an individual. Fitness refers to changes in an individual's growth, survival, annual reproductive success, or lifetime reproductive success. If individual fitness is not affected, then no impacts to populations would be expected. The potential for impacts to occur at the population level depends on several things including whether individual fitness has been reduced, the number of individuals affected, the size of the affected population, and numerous life history and ecological factors.

The significance of impacts to wildlife is considered in the context of populations. A population is broadly defined as a group of biological resources (vegetation or wildlife) of one species that interbreed and live in the same place at the same time. The geographic scale used to define a particular wildlife population is influenced by species-specific life history characteristics such migratory and breeding behavior, as well as ecological factors such as habitat availability and barriers to migration or dispersal. These species-specific characteristics and ecological factors are discussed in more detail in Section 3.2.3 (Affected Environment). In particular, impacts to special status wildlife species were considered because populations of these species have declined historically or are currently declining on a regional or national level.

Impacts to wildlife are determined significant if the fitness of individual animals were affected directly or indirectly to the extent that populations would decline or become unstable. For an outcome to be biologically significant to a population, it must have a measurable impact on the population and/or its habitat which could reasonably be expected to affect its stability, and as a result influence a population's viability. The scientific limitations associated with predicting the responses of individuals and populations to stressors create a relatively high degree of uncertainty. Accordingly, a conservative approach was used in making significance determinations when the level of uncertainty was considered high.

3.2.4.2 No Action Alternative

Under the No Action Alternative, very limited EW training, without the enhanced capability of fixed and mobile emitters, would continue to be conducted in the NWTRC and intermediate level EW training for certification would continue to occur at the Mountain Home Air Force Base approximately 400 nm southeast of NASWI. Therefore, no significant impacts would occur as a result of implementation of the No Action Alternative. Pursuant to the ESA, the No Action Alternative will have no effect on ESA-listed species that may occur in the Study Area.

3.2.4.3 Alternative 1

All activities under Alternative 1 occur within the Olympic Peninsula portion of the project area. The activities would occur as described under Section 2.1.1.4 and Section 2.2.3.2. As discussed in the Affected Environment section, the ESA-listed bird species that may occur in this portion of the project area are the northern spotted owl, and the marbled murrelet. Critical habitat has been designated for both species, and the Proposed Action overlaps with this critical habitat (Figure 3.2-5 and Figure 3.2-6). The two stressors that could impact the birds are noise and electromagnetic radiation.

3.2.4.3.1 Noise

Vehicle Noise

Under Alternative 1, and in accordance with the concept of operations as described in Section 2.1.1.4, vehicle noise would only occur on established public roads and forestry roads. Although pass-by noise from individual vehicles would be audible in the immediate vicinity of these roads, the contribution of the intermittent transits to the overall noise environment would be no more than incremental, as they are typically only in operation twice a day, and only impact a fixed location for a brief period.

Generator/Emitter Noise

Under Alternative 1, the fixed emitter and each mobile emitter could be in use for up to 9 hours per day (Table 2.1-1). Noise from generators emanates from stationary positions, and as such, biological resources with ranges that overlap with mobile emitter operational sites would experience steady noise during the period of operation.

Fixed Emitter Generator Noise. The generator at Building 104 at NS Everett Annex Pacific Beach would only be used in the event of a power outage, as the emitter will receive its power from the building itself. The specifications of the backup generator at Building 104 state that it shall not generate acoustical noise that exceeds 80 decibels, A-weighted (dBA) at a distance 6 ft. from the unit as dictated by the Kohler October 1992 Generator Division Report #K239DT-167. Subsequently, the sound level of this generator at or greater than 500 ft. (152.4 m) would be between 38 and 44 dBA. This contribution to the overall noise level would be low. Additionally, considering the predicted low frequency of utilization of this generator (back-up utilization only), the fixed nature of the generator on Building 104, and that Building 104 is already in a disturbed habitat with the area physically separated from adjacent habitat by existing development and the town of Pacific Beach, biological resources would not be impacted by this stationary generator's noise.

Mobile Emitter Generator Noise. In order to power the mobile emitters, 10 kilowatt (kW) generators, which are housed within the mobile emitter units, will be used and operated in accordance with the discussion in Section 2.1.1.3. The generators selected to power the mobile emitters have specifications that state they meet National Park Service sound level requirements (60 dBA at 50 ft.) for National Park use. The generators will be encased in steel and have mufflers on the exhaust, both of which offer an

increased level of sound attenuation and are both being utilized to create a corresponding drop in noise levels to approximately 42 dBA at 50 ft. Additional attenuation may occur due to the dense vegetation in the immediate vicinity of some of the training sites where the emitters would be operating from. Studies have shown that a break in the line of sight between the noise source and the receptor can result in a 5 dB reduction. Dense vegetation can reduce noise levels by as much as 5 dB for every 100 ft. (30.5 m) of vegetation, up to a maximum reduction of 10 dB over 200 ft. (60.9 m) (U.S. Department of Transportation 1995). Subsequently, with muffling and attenuation factors, the sound level of this generator at 50 ft. (15.3 m) is estimated at or near ambient noise levels and the sound level at 100 ft. (30.5 m) is estimated to be below the expected ambient noise level (the Olympic National Forest programmatic biological assessment uses an estimated ambient level of 40 dBA for undisturbed forested areas [U.S. Department of the Interior 2003]).

Temporary Demolition/Construction Noise

Under Alternative 1, renovations would be completed on Building 104 at NS Everett Annex Pacific Beach to accommodate the fixed emitter and work stations (see Figure 1-4). Renovation activities (demolition and construction) would be a temporary source of daytime sound. All renovation would be completed utilizing typical construction equipment (typical sound levels presented in Table 3.3-2). Since the sound-generating events from renovation activities would be intermittent, the contribution of renovation to the overall noise environment would be low. Increased noise levels from construction may cause wildlife to leave the area; however, because the potential disturbance is intermittent and will not continue once the demolition/construction effort is complete, any biological resources that utilize the area would likely return. The number of biological resources in the Building 104 region of the project area impacted by sound from renovation activities under Alternative 1 is expected to be low, and only in areas immediately adjacent to the renovation activities. The area immediately adjacent to the proposed location of the Building 104 renovations is within a fenced area (similar to a fenced residential area), which physically separates the renovation zone from adjacent vegetation. With this area cordoned off by fencing, it is unlikely that mammals would be able to approach the renovation site at distances close enough to evoke responses. The fenced area has no available nesting habitat, and adjacent nesting habitat occurs in areas where received sound levels would not be in excess of ambient noise conditions.

As indicated in Table 3.3-2, at distances of 500 ft. (152.4 m), the majority of expected noise levels from renovation equipment are between 55 and 65 dB. The fenced off area (and thus lack of available habitat) ends at a distance of approximately 200 ft. (61 m) from the renovation zone.

Vegetation, Invertebrates, Amphibians, Reptiles, and Other Non-Listed Birds and Mammals

These disturbances from vehicle noise, generator/emitter noise, and temporary renovation noise are expected to be minimal, short term, and recoverable based on: (1) relatively low intensity of the impacts, (2) localized nature of the impacts on pre-disturbed areas, (3) infrequent nature of the impacts due to the spread-out nature of the sites, and (4) the brief duration of the activities. For these reasons, long-term consequences to individual vegetation, invertebrates, amphibians, reptiles, and other non-listed birds and mammals or their populations are not expected to result from proposed training activities. The Proposed Action will have no direct or indirect changes that would have a considerable impact on habitat.

ESA-Listed Birds

Marbled murrelets and Northern spotted owls in the project area may be temporarily disturbed by noise associated with the Proposed Action. While owls and murrelets may be disturbed by a wide variety of human activities, the USFWS has anticipated that harassment (or “take”) would occur when the species

exhibit behavior that suggests that the safety or survival of the species is at risk, or that a reproductive effort is potentially lost or compromised (U.S. Fish and Wildlife Service 2006). These behaviors could include species flushing from the nest during incubation, brooding, or fledging, all of which could lead to egg failure or reduced juvenile survival. Abandonment of the nest during a feeding or delaying a feeding could also lead to reduced survival of the juvenile. Recent biological opinions for forest management activities in the Olympic National Forest have noted that these behaviors are likely to occur when (1) aircraft noise exceeds 92 dBA Sound Exposure Level (SEL) at a nest site, or aircraft approach within a distance of 110 yards (yd.), whichever is greater; and (2) ground-based activity occurs during the nesting season within 100 m (110 yd.) of a nest site (U.S. Fish and Wildlife Service 2013).

Parris and Schneider (2008) indicated that high traffic noise and traffic volume were responsible for decreases in the presence of some avian species in roadside habitats. It is unlikely that a single transit by a mobile emitter would evoke anything other than a short-term behavioral response. Further, a single transit by a mobile emitter on an established road would not generate noise levels that meet or exceed the criteria established by USFWS as those that could put the safety or survival of an avian species at risk. Short-term and negligible impacts to wildlife may result from proposed training activities within the Study Area (vehicle noise, generator/emitter noise, and temporary construction noise). Furthermore, due to the location of proposed activities in an area already subjected to recurring noise disturbances, implementation of Alternative 1 would not result in significant impacts to marbled murrelets or northern spotted owls. Pursuant to the ESA, vehicle noise, generator/emitter noise, and temporary renovation noise associated with activities proposed under Alternative 1 may affect, but are not likely to adversely affect, marbled murrelets or northern spotted owls in the Study Area. The activities may affect but are not likely to adversely affect the critical habitat of the marbled murrelet and the northern spotted owl.

ESA-Listed Mammals

Mammals that are ESA-Listed should not be present in the Study Area under Alternative 1. Therefore, noise associated with the activities proposed under Alternative 1 will have no effect on ESA-listed mammals.

3.2.4.3.2 Electromagnetic Radiation

Under Alternative 1, the fixed emitter and each mobile emitter could be in use for up to 9 hours per day (Table2.1-1). As presented in Chapter 1, emitters would be energized in accordance with the training scenario. The emitter may be energized for short periods of time throughout the training activity or continuously throughout the entire time the aircraft is airborne, depending upon the training scenario. Electromagnetic radiation is a form of environmental disturbance that may impact wildlife in various ways depending on type of radiation, duration of exposure, and the species of the receiving animal. Effects on birds may include reduced nesting success (Fernie and Reynolds 2005, Balmori 2009) and various behavioral and physiological responses to electromagnetic fields (Fernie et al. 2000, Fernie and Bird 2001), such as disruption of normal sleep-wake cycles through interference with pineal gland and hormonal imbalance. Salford et al. (2003) and Marks et al. (1995) report various effects on mammals from electromagnetic exposure, including changes in alarm and aversion behavior, deterioration of health, reproductive problems, and changes in normal sleep wake patterns. Nishimura et al. (2010) reported response in lizards to low-frequency electromagnetic fields. Experiments and field observations in these studies were based on continual and long-duration exposure. However, as standard practice, should an individual/individuals or animals persist in the area while a training event is occurring, the mobile emitter crews will cease the training (de-energize the emitter and stow for travel), and if need be, relocate to another pre-selected training site.

Two types of mobile emitters will be used under Alternative 1. The first operates between 6 and 8 GHz with an approximate peak transmit power of 100 kW. The second operates between 4 and 8 GHz with an approximate peak transmit power of 3 kW. At these operational settings, it is not expected that wildlife, notably birds, would be impacted by the radiated energy. Bruderer et al. (1999) investigated flight patterns of birds crossing the beam of a 9 GHz tracking radar, which had an approximate peak transmit power of 150 kW. Bruderer tracked individual birds using a constant radar source, tracking while switching the radar source on and off, and tracking while turning on a light source that was pointed at the flying bird. The study shows that the beam of a strong searchlight influenced the flight behavior of migrating birds, whereas the beam of an X-band tracking radar did not. Additionally, opportunistic observations on other mammals and fowl, such as rabbits and chickens, in close proximity to the tracking radar indicated no behavioral responses to the radar emissions.

Vegetation, Invertebrates, Amphibians, Reptiles, and Other Non-Listed Birds and Mammals

The effects of this radiation on vegetation, invertebrates, amphibians, reptiles, and non-listed birds and mammals can be expected to be minor for the following reasons: (1) the source of electromagnetic radiation discussed in this EA does not expose wildlife species to constant radiation; in other words, no area of the project area is continuously saturated with electromagnetic fields because six of the emitters are mobile, and the stationary emitter is not constantly running; (2) beams of electromagnetic radiation (e.g., from EW training) may expose birds in flight to increased levels of radiation; however, the birds in flight would be moving through the area and potentially out of the area of the main beam, once again keeping them from continuous or long-duration exposure (especially since non-soaring birds have relatively quick airspeeds); and (3) the beam pattern emitted is directional, which minimizes the area exposed to radiation. Electromagnetic radiation may have an impact on vegetation, invertebrates, amphibians, reptiles, and non-listed birds and mammals under Alternative 1; however, it is unlikely that vegetation, invertebrates, amphibians, reptiles, and non-listed birds and mammals would be constantly exposed to electromagnetic radiation, and therefore negative effects are less likely to occur.

ESA-Listed Birds

The impact from electromagnetic radiation is expected to be minimal, short term, and recoverable based on: (1) the source of electromagnetic radiation discussed in this EA does not expose wildlife species to constant radiation; in other words, no area of the project area is continuously saturated with electromagnetic fields because six of the emitters are mobile, and the stationary emitter is not constantly running; (2) beams of electromagnetic radiation (e.g., from EW training) may expose birds in flight to increased levels of radiation; however, the birds in flight would be moving through the area and potentially out of the area of the main beam, once again keeping them from continuous or long-duration exposure (especially since non-soaring birds have relatively quick airspeeds); and (3) the beam pattern emitted is directional, which minimizes the area exposed to radiation. For these reasons, long-term consequences to individual marbled murrelets and northern spotted owls or populations are not expected to result from proposed training activities. The proposed action does not cause direct or indirect changes that would have a considerable impact on the critical habitat in the Study Area. Therefore, electromagnetic radiation from training activities may affect but is not likely to adversely affect the marbled murrelet or northern spotted owl or their critical habitat.

ESA-Listed Mammals

ESA-Listed mammals should not be present in the Study Area under Alternative 1. Therefore, the electromagnetic radiation from the proposed action under Alternative 1 will have no effect on ESA-listed mammals.

3.2.4.4 Alternative 2

Under Alternative 2, all of the activities proposed under Alternative 1 would occur. Additionally, Alternative 2 proposes the use of three additional mobile emitters in the Roosevelt and Okanogan MOAs. The same activities that are proposed in the Olympic MOA would occur in the Okanogan and Roosevelt MOAs as described in Chapter 2. As presented in the Affected Environment section, the ESA-listed mammal and bird species that may occur in this portion of the project area are the grizzly bear, Canada lynx, woodland caribou, gray wolf, northern spotted owl, and marbled murrelet.

3.2.4.4.1 Noise

Vehicle Noise

Under Alternative 2, six mobile emitters (utility truck modified with emitter enclosure) would be available to be driven to separate locations within the Olympic, Okanogan, and/or Roosevelt MOAs. Three of the mobile emitters would be located within the Olympic Peninsula, while the other three would be located in the Okanogan and Roosevelt MOAs. The vehicles would operate as described under Alternative 1.

Generator/Emitter Noise

Under Alternative 2, the fixed emitter and each mobile emitter could be in use for up to 9 hours per day (Table 2.1-2). Noise from generators emanates from stationary positions, and biological resources with ranges that overlap with mobile emitter operational sites would experience steady noise during the period of operation. At Building 104, impacts from generator noise will be the same as described in Alternative 1.

Similar to Alternative 1, generator noise associated with mobile emitters are the main source of sound during operations, and may be audible in the immediate vicinity of the emitter. At distances at or greater than 100 ft. (15.3 m), their contribution to an elevated overall noise level would be low and should not have a significant effect on biological resources. The noises from generators emanate from nonrandom positions, and biological resources with home ranges that do not overlap with mobile emitter roads will experience very different noise intensities depending on their exact ranges.

Temporary Demolition/Construction Noise

Under Alternative 2, the same renovations as described for Alternative 1 would be done on Building 104 at NS Everett Annex Pacific Beach to accommodate the fixed emitter, MEWTS, and work stations (see Figure 1-4), and the communications transmitter at Octopus Mountain would be installed and operated. No additional renovation activities are proposed under Alternative 2.

Vegetation, Invertebrates, Amphibians, Reptiles, and Other Non-Listed Birds and Mammals

Under Alternative 2, the disturbances from vehicle noise, generator/emitter noise, and temporary construction noise are expected to be minimal, short term, and recoverable based on: (1) relatively low intensity of the impacts, (2) localized nature of the impacts on pre-disturbed areas, (3) infrequent nature of the impacts due to the spread-out nature of the sites, and (4) the brief duration of the activities. For these reasons, long-term consequences to individual vegetation, invertebrates, amphibians, reptiles, and other non-listed birds and mammals or their populations are not expected to result from proposed training activities. The proposed action will have no direct or indirect changes that would have a considerable impact on habitat.

ESA-Listed Birds

As described for Alternative 1, despite the addition of some new training locations, impacts are expected to be minimal, short term, and recoverable based on the: (1) short-term behavioral response; (2) localized nature of the impacts on roads that already emanate noise; (3) infrequent nature of the impacts due to the spread-out nature of the sites; and (4) the brief duration of the activities, as the generators will only be on while the vehicle has stopped and is at a site. No additional impacts are expected beyond those described in the Alternative 1. Pursuant to the ESA, vehicle noise, generator/emitter noise, and temporary construction noise associated with activities proposed under Alternative 2 may affect, but are not likely to adversely affect, marbled murrelets or northern spotted owls in the Study Area. The activities would have no effect on the critical habitat of the marbled murrelet and the northern spotted owl.

ESA-Listed Mammals

Grizzly Bear. Studies have shown that grizzly bears may avoid areas of human activity (Archibald et al. 1987). However, recent studies have shown that bears do not necessarily avoid roadways, unless the traffic volume or associated noise is elevated (McCown et al. 2009; Phillips et al. 2010; Northrup et al. 2012). A single transit by a mobile emitter on forestry roads is not expected to reach levels that would cause avoidance of the area by bears. Grizzly bears in the immediate vicinity of mobile emitter sites may vacate the area due to generator noise (Archibald et al. 1987). If grizzly bears are present prior to the arrival of a mobile emitter, it is likely that they will relocate prior to any activation of the emitter, which would reduce any potential acoustic impact. Under Alternative 2, vehicle noise and generator noise from mobile emitters may affect, but are not likely to adversely affect grizzly bears.

Canada Lynx. The habitat surrounding the mobile emitter sites is unlikely to be suitable to support populations of Canada lynx, although individual lynx could potentially move through the area while dispersing. Any potential occurrences of lynx within the study area would be a rare transitory movement by individual lynx, at most. Additionally, lynx occur in areas where deep snow is present during much of the year. No snow plowing of roads will occur under the proposed action, and any area inaccessible due to snow would not be used, further reducing the probability that lynx would occur near emitters. Given the low probability of lynx occurrence in the area, under Alternative 2, vehicle noise and generator noise from mobile emitters may affect, but are not likely to adversely affect Canada lynx.

Other ESA-Listed Species. As indicated in the species descriptions, woodland caribou and gray wolves (individuals or populations) are not anticipated to overlap with the proposed emitter locations. Given this lack of overlap, under Alternative 2, vehicle noise and generator noise from mobile emitters would have no effect woodland caribou and gray wolves. There would be no impact to the critical habitat of the woodland caribou as the study area does not overlap with either designated habitat.

3.2.4.4.2 Electromagnetic Field

Under Alternative 2, the Navy would have a total of six mobile emitters. There would be three for the activities in the Olympic MOAs as described in Alternative 1 and three for activities in the Okanogan and Roosevelt MOAs. On average, the fixed and mobile emitters would provide service for 19 events a day, totaling about 72 hours of operation per day (Table 2.1-2). In order to power the mobile emitters, 10 kW generators will be used, which are housed within the mobile emitter unit. Emitters would be energized in accordance with the training scenario. The emitter may be energized for short periods of time throughout the training activity or continuously throughout the entire time the aircraft is airborne, depending upon the training scenario. Should an individual/individuals or animals remain in the area while a training event is occurring, the mobile emitter crews will cease the training (de-energize the

emitter and stow for travel), and if need be, relocate to another pre-selected training site.

Vegetation, Invertebrates, Amphibians, Reptiles, and Other Non-Listed Birds and Mammals

The effects of this radiation on vegetation, invertebrates, amphibians, reptiles, and non-listed birds and mammals can be expected to be minor for the same reasons as stated under Alternative 1. Electromagnetic radiation may have an impact on vegetation, invertebrates, amphibians, reptiles, and non-listed birds and mammals under Alternative 2; however, it is unlikely that vegetation, invertebrates, amphibians, reptiles, and non-listed birds and mammals would be constantly exposed to electromagnetic radiation, and therefore negative effects are less likely to occur.

ESA-Listed Birds

The impact from electromagnetic radiation is expected to be minimal, short term, and recoverable based on: (1) the source of electromagnetic radiation discussed in this EA does not expose wildlife species to constant radiation; (2) beams of electromagnetic radiation may expose birds in flight to increased levels of radiation; however, the birds in flight would be moving through the area and potentially out of the area of the main beam, once again keeping them from continuous or long-duration exposure; and (3) the beam pattern emitted is directional, which minimizes the area exposed to radiation. For these reasons, long-term consequences to individual marbled murrelets and northern spotted owls, or populations are not expected to result from proposed training activities. The proposed action in the Training Study Area will have no direct or indirect changes that would have a considerable impact on the critical habitat in the Study Area. Therefore, the activities would have no effect on the critical habitat of the marbled murrelet and the northern spotted owl in the Olympic Peninsula, and will have no effect when they are conducted in the north-central and northeastern portion of the Study Area. Under Alternative 2, electromagnetic radiation from mobile emitters may affect but is not likely to adversely affect the marbled murrelet and the northern spotted owl.

ESA-Listed Mammals

The impact from electromagnetic radiation is expected to be minimal, short term, and recoverable based on: (1) the source of electromagnetic radiation discussed in this EA does not expose mammal species to constant radiation; (2) beams of electromagnetic radiation is directed at the sky where mammals will not normally occur; (3) the beam pattern emitted is directional, which minimizes the area exposed to radiation. Under Alternative 2, electromagnetic radiation from mobile emitters may affect but is not likely to adversely affect grizzly bears and Canada lynx. As indicated in the species descriptions, woodland caribou and gray wolves (individuals or populations) are not anticipated to overlap with the proposed emitter locations. Given this lack of overlap, under Alternative 2, electromagnetic radiation from mobile emitters would have no effect on woodland caribou and gray wolves. There would be no impact to the critical habitat of the Canada lynx or woodland caribou, as the Study Area and proposed sites do not overlap with either designated habitat.

3.2.4.5 Summary of Effects

Table 3.2-2 summarizes the determination of effect on ESA-listed species in the Study Area.

Table 3.2-2: Summary of Effect Determinations for ESA-listed Species

Species/ Critical Habitat	Status	Navy Effect Determination		
		No Action Alternative	Alternative 1	Alternative 2
Birds				
Northern Spotted Owl/ Critical Habitat	Endangered	No effect	May affect not likely to adversely affect/ May affect not likely to adversely affect Critical Habitat	May affect not likely to adversely affect/ May affect not likely to adversely affect Critical Habitat
Marbled Murrelet/ Critical Habitat	Endangered	No effect	May affect not likely to adversely affect/ May affect not likely to adversely affect Critical Habitat	May affect not likely to adversely affect/ May affect not likely to adversely affect Critical Habitat
Mammals				
Grizzly Bear	Endangered	No effect	No effect	May affect not likely to adversely affect
Gray Wolf	Endangered	No effect	No effect	No effect
Woodland Caribou	Endangered	No effect	No effect	No effect
Canada Lynx	Endangered	No effect	No effect	May affect not likely to adversely affect

3.3 NOISE

3.3.1 INTRODUCTION TO SOUND

This section addresses potential impacts on the human terrestrial environment in the vicinity of the Pacific Northwest EW range in Washington from sound generated by activities identified in the alternatives, including the Proposed Action. Potential impacts of sound on terrestrial biological resources are addressed in Section 3.2 (Biological Resources).

3.3.1.1 Sound Intensity

Sound intensity is expressed in decibels (dB), a logarithmic scale that compares the power of an acoustical signal to a reference power level. A sound level of zero dBs is defined as the threshold of human hearing. The human ear is not equally sensitive to all sound frequencies within the frequency range of human hearing; it cannot detect lower frequencies as well as it can detect higher frequencies. Thus, the "raw" sound intensity measured by mechanical devices is selectively weighted—or filtered—to simulate the non-linear response of the human ear. The A-weighting network is designed to duplicate the sensitivity of the human ear, and heavily discounts sound energy at low frequencies and at very high frequencies. These adjusted sound levels are termed "A-weighted" sound levels, denoted as dB(A) or simply dBA. The quietest environmental conditions yield sound levels of about 20 dBA. Typical night-time sound levels in quiet residential areas have a sound level of about 35–45 dBA. Normal speech has a sound level of about 60 dBA at a distance of about 1 m. A freight train passing by at about 15 m (49.2 ft.) yields a sound level of about 85 dBA. The human pain threshold is about 120 dBA (Table 3.3-1).

Table 3.3-1: Sound Levels of Selected Sound Sources and Environments

Source	Sound Level (dBA)	Human Perception of Loudness (relative to 70 dBA)
Military Jet Takeoff with afterburner at 50 ft. (15.2 m) Civil Defense Siren	130	**Above Threshold of Pain**
Commercial Jet Takeoff at 200 ft. (61 m)	120	**Threshold of Pain** 32 times as loud
Pile Driver at 50 ft. (15.2 m)	110	16 times as loud
Ambulance Siren at 100 ft. (30.5 m) Power Lawn Mower at 3 ft. (0.9 m)	100	**Very Loud** 8 times as loud
Motorcycle at 25 ft. (7.6 m) Propeller Plane at 1,000 ft. (304.8 m)	90	4 times as loud
Garbage Disposal at 3 ft. (0.9 m) Passenger car, 65 mph at 25 ft. (7.6 m)	80	2 times as loud
Vacuum Cleaner at 3 ft. (0.9 m) Living Room Stereo at 15 ft. (4.6 m)	70	**Moderately Loud** (Reference Loudness)
Normal Conversation at 5 ft. (1.5 m)	60	1/2 as loud
Light Traffic at 100 ft. (30.5 m)	50	1/4 as loud
Distant Bird Calls	40	**Quiet** 1/8 as loud
Soft Whisper at 5 ft. (1.5 m)	30	1/16 as loud
	0	**Threshold of Hearing**

Notes: dBA = decibels, A-weighted; ft. = feet; m = meter(s)
Source: Federal Interagency Committee on Noise 1992; U.S. Army 2005

3.3.1.2 Sound Metrics

Transient sound is defined as an "event having a beginning and an end where the sound temporarily rises above the background and then fades into it" (U.S. Army 2005). These types of sounds, measured in terms of Sound Exposure Level (SEL), are associated with vehicles driving by, aircraft overflights, or impulse noise. The SEL is based on two characteristics of transient sound, duration and intensity, where a long duration, low-intensity event can be as annoying as a high-intensity, shorter event. The SEL is the total acoustic energy in an event normalized to 1 second (U.S. Army 2005). This number represents all of the acoustic energy for the event in a 1-second period.

A continually varying sound level over a given period can be described as a single "equivalent" sound level (L_{eq}) that contains an amount of sound energy equal to that of the actual sound level. Thus, the L_{eq} is a measure of the average acoustic energy over a stated period. Equivalent sound levels can represent any length of time, but typically are associated with some meaningful period, such as an 8-hour L_{eq} for an office, or a 1-hour L_{eq} for a classroom lecture (U.S. Army 2005). The L_{eq} is averaged over a 1-, 8-, or 24-hour period. The L_{eq} is used to describe continuous sound sources and may be obtained by averaging sound levels over a selected period. This level is the estimation of the continuous sound level that would be equivalent to the fluctuating sound signal under consideration (U.S. Department of the Navy 1978). A L_{eq} that is a 24-hour average can also be termed the Day-Night Average Sound Level (DNL), with a caveat. The DNL is the average noise level over a 24-hour period. However, the noise between the hours of 10 p.m. and 7 a.m. is artificially increased by 10 dB. This noise is weighted to take into account the decrease in community background noise of 10 dB during this period.

3.3.1.3 Time-Averaged Sound Levels

Ambient sound standards regulate ambient sound levels through time-averaged sound level (L_{eq}) limits. Sound standards for land use compatibility established by DoD and civilian jurisdictions are expressed in terms of the DNL. Based on numerous sociological surveys and recommendations of federal interagency councils, the most common benchmark for assessing environmental sound impacts is a DNL of 65 dBA (Schomer 2005; Federal Interagency Committee on Noise 1992). Sound levels up to 65 dBA, DNL are considered to be compatible with land uses such as residences, transient lodging, and medical facilities. Appropriate sound mitigation is recommended for new development in areas where the DNL exceeds 65 dBA. A substantial increase in the number or intensity of intrusive sound events on nearby public or private land would indicate a substantial increase in distraction and interference with sound-sensitive activities.

3.3.1.4 Ambient Sound Guidance Documents

- Chief of Naval Operations Environmental Readiness Program Manual (M-5090.1) contains guidance for considering sound. Chapter 10 (Environmental Planning Under the National Environmental Policy Act and Executive Order 12114) and Chapter 11 (Environmental Readiness in the Acquisition Process) contain guidance for sound control and abatement of Navy shore activities.
- Planning in the Noise Environment (U.S. Department of the Navy 1978) provides compatibility criteria for various land uses.
- The U.S. Army Public Health Command (formerly Center for Health Promotion and Preventive Medicine [known as CHPPM]) has also developed DoD guidance for military operational noise, including Operational Noise Manual: An Orientation for Department of Defense Facilities (U.S. Army 2005).
- 49 U.S.C. 44715 (The Noise Control Act of 1972)

3.3.2 AFFECTED ENVIRONMENT

3.3.2.1 Olympic Peninsula

3.3.2.1.1 Sensitive Receptors

Noise-sensitive areas are those areas where noise interferes with normal activities associated with its use. Normally, noise-sensitive areas include residential, educational, health, religious structures and sites, parks, recreational areas (including areas with wilderness characteristics), wildlife refuges, and cultural and historical sites. In the context of facilities and equipment, noise-sensitive areas may include such sites in the immediate vicinity of operations, pursuant to the Noise Control Act of 1972. Users of designated recreational areas are considered sensitive receptors.

Sensitive receptors underlying the Olympic MOA are limited to populated areas near NS Everett Annex, Pacific Beach. Recreational users of USFS and WSDNR lands would also be considered sensitive receptors.

Lands directly north, east, and south of the Annex at Pacific Beach are private lands. Notable sensitive receptors include private residences approximately 492 ft. (150 m) from Building 104, which are the closest residences east of 1st Street North in Pacific Beach. Other sensitive receptors include the Pacific Beach Elementary School, which is approximately 2,000 ft. (610 m) to the southeast of Building 104.

3.3.2.1.2 Ambient Noise Conditions

The existing noise levels in the project area are influenced by traffic on Highway 101 and local roads, adjacent transmission lines, local industries, and other noise-generating activities. Ambient sounds near Building 104 within the coastal portion of the range are generated by natural sources, such as wind and surf; however, the primary sources of noise include transportation activities, to include traffic on Highway 109, and waterfront operations.

Ambient sound levels would likely vary by location for forested areas where mobile emitters would be deployed. Washington Department of Transportation (WSDOT) noise analyses on the San Juan Islands identified an ambient level of about 35 dBA, with regular noise intrusions from traffic and aircraft overflights ranging from 45 to 72 dBA (Washington Department of Transportation 1994; as cited in Washington Department of Transportation 2013). A study on the Mt. Baker-Snoqualmie National Forest listed forested ambient levels between 52 and 60 dBA (U.S. Forest Service 1996, as cited in Washington Department of Transportation 2013). The Olympic National Forest programmatic biological assessment uses an estimated ambient level of 40 dBA for undisturbed forested areas (U.S. Department of the Interior 2003).

3.3.2.2 North-Central to Northeastern Washington

3.3.2.2.1 Sensitive Receptors

As indicated above in Section 3.3.2.1.1, noise-sensitive areas are those areas where noise interferes with normal activities associated with its use. In the context of facilities and equipment, noise sensitive areas may include such sites in the immediate vicinity of operations, pursuant to the Noise Control Act of 1972. Potential areas where mobile emitters would be deployed are displayed in Figure 1-3. The closest populated areas to these sites include Oroville (approximately 3 mi. [4.8 km] away from potential sites along roads near Site 2) and North Omak and Inchelium, both over 5 mi. (8 km) away from proposed areas of use. Recreational users of USFS lands would also be considered sensitive receptors.

3.3.2.2.2 Ambient Noise Conditions

Similar to the Olympic Peninsula, ambient conditions would likely vary by location. Given the mountainous forest terrain surrounding the proposed locations, it would be expected that ambient noise is between 30 and 50 dbA, based on noise analyses presented for the Olympic Peninsula. The only contribution to ambient conditions would be occasional usage of USFS roads in the immediate vicinity of the proposed emitter locations, the National Scenic Trailhead Parking Area, and transportation noise along State Routes 20, 21, and 97 below the Okanogan and Roosevelt MOAs.

3.3.2.3 Current Requirements and Management Practices

Activities within the Pacific Northwest EW Range comply with numerous established acoustic control procedures to ensure that neither participants nor non-participants engage in activities that would endanger life or property. As stated in Chief of Naval Operations Environmental Readiness Program Manual (M-5090.1), noise control and abatement programs are developed to minimize noise impacts whenever practicable through implementation of operational alternatives that do not degrade mission requirements.

3.3.3 ENVIRONMENTAL CONSEQUENCES

Concerns over sound include hearing loss, non-auditory health effects, annoyance, speech interference, and sleep interference. Vehicular operation, construction and renovation activities, and operations do not generate sound at intensities that could contribute to hearing loss in off-site public areas. However, potential effects would be conversation interruption, sleep interference, distraction, and annoyance. Based on numerous sociological surveys, and recommendations of federal interagency councils, the most common benchmark for assessing environmental sound impacts is a DNL of 65 dB for A-weighted sound (Schomer 2005; Federal Interagency Committee on Noise 1992). When subjected to sound levels of 65 dBA DNL, approximately 12 percent of exposed individuals would be “highly annoyed.” A sound level of 75 dBA DNL is a threshold above which effects other than annoyance can occur.

3.3.3.1 Determination of Significance

The primary factor considered in determining the significance of potential noise impacts includes the extent or degree to which implementation of the Proposed Action would affect the baseline noise environment. The alternatives were examined to determine if they would produce one or more of the following effects:

- A long-term increase in the average hourly ambient sound level at any sensitive receptor of five or more dB, which would indicate a substantial degradation in the noise environment.
- A substantial increase in the number or intensity of intrusive sound events on nearby public or private lands, which would indicate a substantial increase in distraction and interference with noise-sensitive activities.

3.3.3.2 No Action Alternative

Under the No Action Alternative, very limited EW training, without the enhanced capability of fixed and mobile emitters, would continue to be conducted in the NWTRC and intermediate level EW training for certification would continue to occur at the Mountain Home Air Force Base approximately 400 nm southeast of NASWI. Consequently, baseline noise conditions would remain unchanged. Therefore, no significant impacts would occur as a result of implementation of the No Action Alternative.

3.3.3.3 Alternative 1

Under Alternative 1, existing NASWI facilities would be modified, and the fixed emitter site at NS Everett Annex Pacific Beach, the communications transmitter at Octopus Mountain, and the mobile emitter sites in the Olympic MOA would all be emplaced and operated as described in Sections 2.1.1.1, 2.1.1.2, 2.1.1.3, and 2.1.1.4 respectively.

3.3.3.3.1 Vehicle Noise

Under Alternative 1, and in accordance with the concept of operations as described in Section 2.1.1.4, vehicle noise would only occur on established public roads and forestry roads. Although pass-by noise from individual cars would be audible in the immediate vicinity of these roads, the contribution of the intermittent transits from the mobile emitters to the overall noise environment would be no more than incremental and would not be considered a substantive source of sound.

Vehicle activities on Highway 101 and 109 would be insufficient to noticeably affect ambient sound levels in the areas surrounding them. Increases in vehicle traffic on other local roads, being limited to a few minutes each occurrence, would likewise have no substantial effect on ambient community sound levels. Thus, Pacific Northwest EW Range-related traffic noise would not significantly affect the acoustic environment under Alternative 1.

3.3.3.3.2 Temporary Demolition/Construction Noise

Under Alternative 1, renovations would be completed on Building 104 at NS Everett Annex Pacific Beach as described in Section 2.1.1.2. Typical noise levels of commonly used renovation equipment are presented in Table 3.3-2.

Table 3.3-2: Typical Construction Noise Levels

Equipment	Typical Noise Level (dBA) 50 ft. (15.2 m) from source	Typical Noise Level (dBA) 500 ft. (152.4 m) from source	Approximate Noise Level (dBA) 0.5 mi. (804.6 m) from source
Air Compressor	81	61	47
Backhoe	80	60	46
Compactor	82	62	48
Concrete Mixer	85	65	51
Dozer	85	65	51
Excavator	81	61	47
Generator	81	61	47
Grader	85	65	51
Impact Wrench	85	65	51
Jack Hammer	88	68	54
Loader	85	65	51
Paver	89	69	55
Pneumatic Tools	85	65	51
Roller	74	54	40
Saw	76	56	42
Scraper	89	69	55

Table 3.3-2: Typical Construction Noise Levels (continued)

Equipment	Typical Noise Level (dBA) 50 ft. (15.2 m) from source	Typical Noise Level (dBA) 500 ft. (152.4 m) from source	Approximate Noise Level (dBA) 0.5 mi. (804.6 m) from source
Shovel	82	62	48
Torch/Welder	83	63	49
Truck	88	68	54

Notes: dBA = decibels, A-weighted; ft. = feet; m = meters; mi. = miles
Source: U.S. Department of Transportation; Federal Highway Administration 2006

The construction equipment would be used to perform demolition and renovation at Building 104 and is approximately 492 ft. (150 m) from the closest residences east of 1st Street North in Pacific Beach. Other sensitive receptors include the Pacific Beach Elementary School, which is approximately 2,000 ft. (610 m) to the southeast of Building 104. Renovation activities (demolition and construction) would be a temporary source of local daytime sound. All renovation would be completed utilizing typical construction equipment. Given the distance from all construction locations to adjacent sensitive receptors, noise levels from construction activities would be audible above typical background noise levels at some sensitive receptors. However, since the noise-generating events from renovation activities would be intermittent, the contribution of noise from renovation activities to the hourly sound levels (L_{eq}) is anticipated to be low (and thus, their contribution to the DNL). Sound levels up to 65 dBA DNL are considered to be compatible with land uses such as residences, transient lodging, and medical facilities. The number of sensitive receptors impacted from sound as a result of construction activities under Alternative 1 is expected to be low, only on an intermittent basis, and only in areas immediately adjacent to the construction activities. Therefore, construction and demolition noise would not significantly affect the acoustic environment under Alternative 1.

3.3.3.3.3 Operations Noise

Under Alternative 1, the fixed emitter and each mobile emitter could be in use for up to 9 hours per day (Table 2.1-1). Noise from the generators used to power the emitters would emanate from stationary positions, and as such would create a steady noise during the periods of operation.

Fixed Emitter Generator Noise. It is important to note that the generator at Building 104 at NS Everett Annex Pacific Beach would only be used in the event of a power outage, as the emitter will receive its power from the building itself. The specifications of the backup generator at Building 104 state that it shall not generate acoustical noise that exceeds 80 dBA at a distance 6 ft. from the unit, as dictated by the Kohler October 1992 Generator Division Report #K239DT-167. Subsequently, the sound level of this generator at 500 ft. (152.4 m) (the approximate distance to a sensitive receptor, a private residence) is estimated to be between 38 and 44 dBA, which is well below the land compatibility guideline of 65 dBA DNL.

Vehicle-mounted (Mobile) Emitter Generator Noise. In order to power the mobile emitters, 10 kW generators will be used. These generators are housed within the mobile emitter unit and operated in accordance with the discussion in Section 2.1.1.4. The generators selected to power the mobile emitters have specifications that state they meet National Park Service sound level requirements (60 dBA at 50 ft.) for National Park use. Subsequently, the sound level of these generators at 500 ft. (152.4 m) is estimated to be between 36 and 42 dBA. The generators will be encased in steel and have mufflers on

the exhaust, both of which offer an increased level of sound attenuation and are both being utilized to create a corresponding drop in noise levels to approximately 42 dBA at 50 ft. Additional attenuation may occur due to the dense vegetation that is in the immediate vicinity of some of the training sites where the mobile emitters would be operating. Studies have shown that a break in the line of sight between the noise source and the receptor can result in a 5 dB reduction. Dense vegetation can reduce noise levels by as much as 5 dB for every 100 ft. (30.5 m) of vegetation, up to a maximum reduction of 10 dB over 200 ft. (60.9 m) (U.S. Department of Transportation 1995). Subsequently, with muffling and attenuation factors, the sound level of this generator at 50 ft. (15.3 m) is estimated at or near ambient noise levels and the sound level at 100 ft. (30.5 m) is estimated to be below the expected ambient noise level (the Olympic National Forest programmatic biological assessment uses an estimated ambient level of 40 dBA for undisturbed forested areas [U.S. Department of the Interior 2003]).

Sound impacts to community noise levels from training activities under Alternative 1 are negligible in areas outside the immediate vicinity (< 500 ft. [< 152.4 m]) of construction and operations. The areas surrounding mobile emitter sites are USFS and WSDNR lands and, thus, very few members of the public would be exposed to sound from mobile emitter sites. Therefore, no significant impacts on the acoustic environment would occur under Alternative 1 as a result of operations noise.

3.3.3.4 Alternative 2

Under Alternative 2, all activities proposed under Alternative 1 would occur. In addition, Alternative 2 proposes the utilization of up to three additional mobile emitters on USFS land under the Roosevelt and Okanogan MOAs as discussed in Section 2.1.1.5.

3.3.3.4.1 Vehicle Noise

Under Alternative 2, all of the vehicular activities covered under Alternative 1 would occur. In addition, mobile emitters would operate in the Roosevelt and Okanogan MOAs as described in Section 2.1.1.5. Similar to Alternative 1, vehicle noise would only occur on established public roads and forestry roads. Additionally, pass-by noise from individual cars would be audible in the immediate vicinity of these roads, but the contribution of the intermittent transits by the mobile emitters to the overall noise environment would be no more than incremental and would not be considered a substantial source of sound.

Vehicle activities on Highways 101 and 109 and State Roads 20, 21, and 97 would be insufficient to noticeably affect ambient sound levels in the areas surrounding them. Increases in vehicle traffic on other local roads, being limited to a few minutes each occurrence, would likewise have no substantial effect on ambient community sound levels. Therefore, Pacific Northwest EW Range-related traffic noise would not significantly impact the acoustic environment under Alternative 2.

3.3.3.4.2 Temporary Demolition/Construction Noise

Under Alternative 2, the same renovations would occur as under Alternative 1. There are no additional construction activities under Alternative 2. Therefore, the conclusions for Alternative 1 are the same for Alternative 2, and renovation noise would not significantly affect the acoustic environment under Alternative 2.

3.3.3.4.3 Operations Noise

Under Alternative 2, all of the activities covered under Alternative 1 would occur. In addition, up to three mobile emitters would operate in the Okanogan and Roosevelt MOAs as described in Section 2.1.1.5. In general, however, the three mobile emitters would not be utilized concurrently.

Similar to Alternative 1, generator noise associated with fixed and mobile emitters are the main source of sound during operations. Under Alternative 2, the same generators described in Alternative 1 would be used to power both the fixed and mobile emitters. Additionally, the generator parameters and conditions of use remain the same as described under Alternative 1. Therefore, the conclusions under Alternative 1 are the same for Alternative 2, and operations noise would not significantly affect the acoustic environment under Alternative 2.

Sound impacts to community noise levels from training activities under Alternative 2 are negligible in areas outside the immediate vicinity (< 500 ft. [< 152.4 m]) of construction and operations. The areas surrounding mobile emitter sites are USFS lands and, thus, very few members of the public are exposed to sound from mobile emitter sites. Therefore, no significant impacts on the acoustic environment would occur under Alternative 2.

3.4 AIR QUALITY

3.4.1 AFFECTED ENVIRONMENT

The Olympic Peninsula and north-central Washington portions of the proposed Pacific Northwest EW Range include the following Washington counties: Clallam, Ferry, Grays Harbor, Jefferson, Okanogan, Pend Oreille, and Stevens. Therefore, all of these counties are considered the Study Area or region of influence for the air quality analysis. Clallam, Gray's Harbor, and Jefferson counties are under the regulations of the Olympic Region Clean Air Agency; Okanogan is under the Department of Ecology-Central Regional Office; and Ferry, Pend Oreille, and Stevens counties are under the Department of Ecology-Eastern Regional Office. The following section provides the regulatory framework for air quality and contains general information and definitions of terms commonly used in this section.

3.4.1.1 Regulatory Requirements

The U.S. Environmental Protection Agency (USEPA), through the CAA of 1970 and its 1977 and 1990 amendments (42 U.S.C. §7401, et seq.), is responsible for setting limits on certain air pollutants. This includes setting limits on air pollutants coming from sources like chemical plants, utilities, and steel mills. The purposes of the CAA are to classify air basins according to their attainment status under the National Ambient Air Quality Standards (NAAQS) (40 C.F.R. §50), to develop schedules and strategies to meet the NAAQS, and to regulate emissions of criteria pollutants and air toxics to protect the public health and welfare. Individual state, local, and tribal governments are the lead agencies in carrying out the CAA to enforce air pollution limits set by the USEPA. This is accomplished through State Implementation Plans (SIPs) that outline how each state will control air pollution under the CAA. A SIP is a collection of the regulations, programs, and policies that a state will use to clean up polluted areas. Individual states or tribes may have stronger air pollution laws, but they may not have weaker pollution limits than those set by the USEPA. The USEPA must approve state, tribal, and local agency plans for reducing air pollution. If a plan does not meet the necessary requirements, the USEPA can issue sanctions against the state and, if necessary, take over enforcing the CAA in that area. However, while state and local agencies are responsible for all CAA requirements, tribes may develop and implement only those parts of the CAA that are appropriate for their lands.

In the State of Washington, some counties have an established air pollution control authority, which bears the name of the county within which it is located. For counties without an air pollution control agency, the Washington Department of Ecology and its regional offices implement and enforce air quality regulations.

Criteria pollutants are carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), suspended particulate matter less than or equal to 10 micrometer (µm) in diameter (PM_{10}), fine particulate matter less than or equal to 2.5 µm in diameter ($PM_{2.5}$), and lead (Pb). Air basins that exceed a NAAQS are designated as "nonattainment" for that pollutant, while air basins that are in compliance with a NAAQS are in "attainment" for that pollutant. Nonattainment areas are required by the USEPA to develop and execute a State Implementation Plan that describes actions that will lead the state into compliance with all federal air quality standards. Areas that have achieved attainment may be designated as "maintenance areas," which are subject to maintenance plans showing how the area will continue to meet federal air quality standards. Non-criteria air pollutants that can affect human health are categorized as hazardous air pollutants under Section 112 of the Clean Air Act. The USEPA has identified 188 hazardous air pollutants, such as benzene, perchloroethylene, and methylene chloride. Hazardous air pollutants are examined individually where there is a source of these pollutants.

Section 176 (c) (1) of the CAA, commonly known as the General Conformity Rule (conformity), requires federal agencies to ensure that their actions conform to applicable implementation plans for achieving and maintaining NAAQS for criteria pollutants. To ensure conformity, a federal action must not contribute to new violations of ambient air quality standards, increase the frequency or severity of existing violations, or delay timely state or regional attainment of standards. A conformity review must be completed for every federal action that generates air emissions in nonattainment or maintenance (former non-attainment) areas. The General Conformity Rule does not apply to the Proposed Action because the Study Area is not within a nonattainment or maintenance area.

Air pollutants are classified as either primary or secondary pollutants. Primary air pollutants are those emitted directly into the atmosphere, such as CO, SO_2, Pb, and particulate matter. Secondary air pollutants, such as O_3, are those formed through atmospheric chemical reactions. Such reactions usually involve primary air pollutants and normal constituents of the atmosphere. Sunlight and meteorological conditions, such as temperature and humidity, also can affect atmospheric chemistry. Air pollutants such as organic gases and particulate matter are a combination of primary and secondary pollutants. PM_{10} and $PM_{2.5}$ are generated as primary pollutants by various mechanical processes (e.g., abrasion, erosion, mixing, or atomization) or combustion processes. PM_{10} and $PM_{2.5}$ also can be formed as secondary pollutants, however, through chemical reactions or by the condensation of gaseous pollutants into fine aerosols.

Compounds that react to form secondary air pollutants, such as O_3, are called pollutant precursors. Precursors for O_3 fall into two broad groups of chemicals: nitrogen oxides (NO_X) and organic compounds. NO_X consists of nitric oxide and NO_2. Organic compound precursors of O_3 are routinely described by a number of different terms, including volatile organic compounds, reactive organic compounds, and reactive organic gases. The latter term, reactive organic gases, is used in this document to refer to organic compound precursors of O_3.

Air pollutant emissions refer to the amount (weight or volume) of one or more specific compounds emitted into the atmosphere by a source. Most air pollutant emissions are expressed as a rate (e.g., pounds per hour, pounds per day, or tons per year). Typical measurement units for emission rates on a source activity basis include pounds per thousand gallons of fuel burned, pounds per ton of material processed, and grams per vehicle-mile of travel.

Ambient air quality is determined by the atmospheric concentrations of specific air pollutants at a particular time and location. The ambient air pollutant concentrations measured at a particular location are determined by the pollutant emissions rate, local meteorology, and atmospheric chemistry. Wind speed and direction and precipitation patterns affect the dispersal, dilution, and removal of air pollutant emissions. Ambient air quality data are generally reported as a mass per unit volume (e.g., micrograms per cubic meter of air) or as a volume fraction (e.g., parts per million by volume).

3.4.1.2 Determination of Significance

The impact analysis for air quality considered possible changes in ambient air quality that could result from the Proposed Action. Such changes could arise from air pollutant emissions associated with the proposed construction and the use of the mobile emitters (e.g., combustion emissions from vehicles, generators, and construction equipment). Factors used in determining if impacts to air quality would be significant include whether emissions from the alternatives would be expected to change the NAAQS attainment status in the air quality regions within the Study Area and whether emissions would exceed

allowable Prevention of Significant Deterioration (PSD) increments. All regions within the Study Area are currently in attainment.

3.4.1.3 Regional and Local Air Quality

The Washington Department of Ecology monitors criteria air pollutants through a network of air quality monitoring sites throughout the state, known as the Washington Air Quality Advisor. Based upon data collected from these monitoring sites, the USEPA prepares annual summaries of local air quality that identify those areas that exceed NAAQS for one or more air pollutants. Geographic areas that have not consistently met the NAAQS are designated as nonattainment areas. Maintenance areas are geographic areas that had a history of nonattainment, but are now consistently meeting NAAQS and have a maintenance plan.

The Olympic Peninsula and the north-central Washington portions of the Study Area generally have good air quality, as indicated by the lack of nonattainment areas in the region. The Olympic Peninsula and the north-central Washington portions of the Study Area are not located in a nonattainment or maintenance area. Currently, only one area in Washington (Tacoma-Pierce County) is designated as a nonattainment area for particulate matter (Department of Ecology State of Washington 2013). The most recent air emissions inventory data that are available for the Olympic peninsula and north-central Washington portions of the Study Area are from 2008 (Table 3.4-1).

Table 3.4-1: Annual Baseline (2011) Criteria and Precursor Air Pollutant Emissions for the Olympic Peninsula and North-central Washington Intrastate Air Quality Control Region 191

Geographic Area	Criteria and Precursor Air Pollutant Emissions in Tons/Year					
	CO	NO_x	HC[3]	SO_x	PM_{10}	$PM_{2.5}$
Olympic Peninsula[1]	104,993	14,531	21,059	6,108	10,457	7,928
North-Central Washington[2]	74,828	5,601	16,299	324	14,597	5,346

[1] Includes Clallam, Jefferson, and Grays Harbor counties
[2] Includes Okanogan, Ferry, Stevens, and Pend Oreille counties
[3] Presented as volatile organic compounds in U.S. Environmental Protection Agency 2008
Notes: CO = carbon monoxide, NO_x = nitrogen oxides, HC = total hydrocarbons, SO_x = sulfur oxides, PM_{10} = suspended particulate matter less than or equal to 10 micrometers in diameter, $PM_{2.5}$ = fine particulate matter less than or equal to 2.5 micrometers in diameter
Source: U.S. Environmental Protection Agency 2014

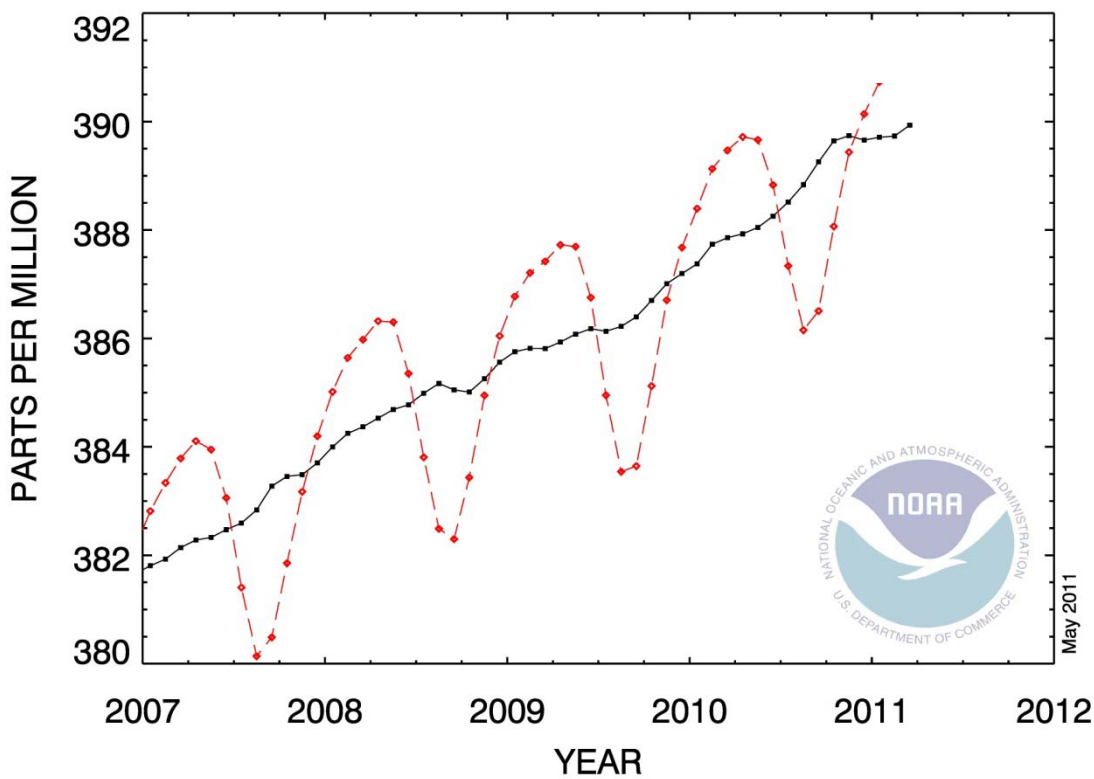
3.4.1.4 Climate Change

Global warming is the increase in the average temperature of the Earth's near-surface air and oceans since the mid-20th century. Global surface temperatures have increased by an average of about 1.3 degrees Fahrenheit during the last century (Solomon et al. 2007). Climate change has been attributed to many factors, including increasing atmospheric concentrations of carbon dioxide (CO_2), NO_2, methane, and other greenhouse gases. Figure 3.4-1 illustrates the global increase in CO_2 concentration over the past 5 years (Department of Commerce 2011). Most of the observed temperature increase since the mid-20th century is correlated with increasing amounts of greenhouse gases emitted by human activities, such as combustion of fossil fuels and deforestation (Solomon et al. 2007).

The greenhouse gas effect is the process by which certain gases in the atmosphere allow long-wave radiation in, but also keep short-wave (infrared) radiation from escaping, which then warms the planet's lower atmosphere and surface. Greenhouse gases are transparent to long-wave radiation from the sun; this radiation passes through the atmosphere without being absorbed or reflected, and warms the

earth's surface. Greenhouse gases trap short-wave radiation emitted by the earth's surface, however, preventing it from dissipating into space and causing it to re-radiate down to the surface of the earth. The existence of the greenhouse effect is not disputed. The issues and interrelationship between these issues that are not clearly defined include how the strength of the greenhouse effect changes with different concentrations of greenhouse gases, the relationships among natural sources and sinks of greenhouse gases, human sources of greenhouse gases, and atmospheric concentrations of greenhouse gases. Climate processes are understood at a general level and more research is needed before impacts may be clearly defined.

CO_2 is the major greenhouse gas emitted by human activities, primarily from the combustion of fossil fuels such as coal, oil, and natural gas. Atmospheric concentrations of CO_2 have increased by 36 percent since the mid-1700s (U.S. Environmental Protection Agency 2010). This level is much higher than at any time during the last 650,000 years (Canadell et al. 2007). Less direct geological evidence indicates that CO_2 values this high were last seen about 20 million years ago (Pearson and Palmer 2000). The burning of fossil fuel has produced about 75 percent of the increase in CO_2 from human activity over the past 20 years. The potential effects of proposed greenhouse gas emissions are by nature global and may result in cumulative impacts, as individual sources of greenhouse gas emissions are not large enough to have any noticeable effect on climate change. Therefore, the impact of proposed greenhouse gas emissions to climate change is discussed in the context of cumulative impacts in Chapter 4 (Cumulative Impacts).



Notes: The dashed red line with diamond symbols represents the monthly mean values, centered on the middle of each month. The black line with the square symbols represents the same, after correction for the average seasonal cycle.
Source: Department of Commerce 2011

Figure 3.4-1: Recent Carbon Dioxide Global Trend

3.4.1.5 Current Requirements and Management Practices

Equipment used by military units in the Study Area, including generators and vehicles, are properly maintained in accordance with applicable Navy requirements. Operating equipment meets federal and state emission standards, where applicable.

3.4.2 ENVIRONMENTAL CONSEQUENCES

3.4.2.1 No Action Alternative

Under the No Action Alternative, very limited EW training, without the enhanced capability of fixed and mobile emitters, would continue to be conducted in the NWTRC, and intermediate level EW training for certification would continue to occur at the Mountain Home Air Force Base approximately 400 nm southeast of NASWI. Consequently, baseline air quality conditions would remain unchanged. Therefore, no significant impacts would occur as a result of implementation of the No Action Alternative.

3.4.2.2 Alternative 1

Criteria Pollutants

Total emissions were estimated from proposed construction activities and EW training activities associated with the fixed and mobile emitters. Table 3.4-2 lists estimated annual criteria and precursor air pollutant emissions under Alternative 1.

All criteria and precursor pollutant emissions would increase under Alternative 1 compared to the No Action Alternative. The increases would be attributable to the construction activities and the increased ground vehicle and generator use associated with the mobile emitters. While the General Conformity Rule is not applicable to the Proposed Action, the *de minimis* levels established in 40 C.F.R. §93.153(b) for nonattainment or maintenance areas serve as a good benchmark for evaluating the magnitude of the emissions increase associated with Alternative 1. As shown in Table 3.4-2, estimated emissions would not be considered regionally significant as they would be approximately 0.00026 percent of the regional emissions. Therefore, no significant impacts to air quality would occur under Alternative 1.

Table 3.4-2: Annual Criteria and Precursor Air Pollutant Emissions under Alternative 1

Emissions Source	Criteria and Precursor Air Pollutant Emissions in Tons/Year				
	CO	NO_x	HC	SO_x	PM_{10}
Alternative 1					
Construction Activities	0.18	0.14	0.01	0.0003	0.007
Mobile Emitters	0.92	3.26	0.08	0.21	0.23
Alternative 1 Total =	**1.1**	**3.4**	**0.09**	**0.21**	**0.23**
Summary and Comparison					
De minimis levels	100	100	100	100	100
Alternative 1 emissions as a percentage of the Olympic Air Basin baseline	0.00001%	0.0002%	0.000004%	0.00003%	0.00002%

Notes: CO = carbon monoxide, NO_x = nitrogen oxides, HC = total hydrocarbons, SO_x = sulfur oxides, PM_{10} = suspended particulate matter less than or equal to 10 micrometers in diameter

3.4.2.3 Alternative 2

Criteria Pollutants

Alternative 2 would include emissions associated with the use of mobile emitters in north-central Washington, in addition to the construction of fixed and mobile emitters proposed under Alternative 1. Under Alternative 2, the additional mobile emitters in North-Central Washington (Central and Eastern Air Basin) would result in a slight increase in emissions compared to Alternative 1; however, emissions for construction and mobile emitter activities in the Olympic Air Basin would remain the same as Alternative 1.

As shown in Table 3.4-3, emission estimates for Alternative 2 do not exceeds *de minimis* levels. As discussed for Alternative 1, annual criteria and precursor air pollutant emissions from project activities would be less than the corresponding federal PSD increments. In addition, estimated emissions would not be considered regionally significant as they would be approximately 0.0031 percent of the regional emissions. Therefore, no significant impacts to air quality would occur under Alternative 2.

Table 3.4-3: Annual Criteria and Precursor Air Pollutant Emissions under Alternative 2

Emissions Source	Criteria and Precursor Air Pollutant Emissions in Tons/Year				
	CO	NO_x	HC	SO_x	PM_{10}
Alternative 2					
Construction Activities	0.18	0.14	0.01	0.0003	0.007
Mobile Emitters	1.85	6.52	0.17	0.43	0.46
Alternative 2 Total =	**2.03**	**6.66**	**0.18**	**0.43**	**0.46**
Summary and Comparison					
De minimis levels	100	100	100	100	100
Alternative 2 emissions as a percentage of the Olympic Air Basin baseline	0.000019%	0.0004%	0.000008%	0.00007%	0.00005%
Alternative 2 emissions as a percentage of the Central and Eastern Air Basin baseline	0.00002%	0.00118%	0.000011%	0.00132%	0.00003%

Notes: CO = carbon monoxide, NO_x = nitrogen oxides, HC = total hydrocarbons, SO_x = sulfur oxides, PM_{10} = suspended particulate matter less than or equal to 10 micrometers in diameter

3.5 VISUAL RESOURCES

3.5.1 DEFINITION OF RESOURCE

Visual resources are the natural and manmade features that give a particular environment its aesthetic qualities. In undeveloped areas, landforms, water surfaces, and vegetation are the primary components that characterize the landscape. In developed areas, the natural landscape is more likely to provide a background for more obvious manmade features. Manmade elements (such as buildings, fences, piers, and wharves) may dominate the landscape or be relatively unnoticeable. The size, form, material, and function of buildings, structures, roadways, and infrastructure generally define the visual character of the built environment. These features form the overall impression of an area or its landscape character that an observer perceives. Attributes used to describe the visual resource value of an area include landscape character, perceived aesthetic value, and uniqueness.

For the visual resources analysis, due to the construction of the fixed emitter tower, the only potential sensitive visual receptors are located adjacent to NS Everett Annex Pacific Beach. Proposed activities at Octopus Mountain, areas underlying the Olympic MOA and W-237 in the Olympic Peninsula, and areas underlying the Okanogan and Roosevelt MOAs would not result in a change to the visual character of these areas. At Octopus Mountain, a communications transmitter would be installed and operated on an existing tower; therefore, no significant change to the visual environment would occur. For EW operations underlying the MOAs, proposed activities would be conducted using mobile emitter trucks away from population centers and any sensitive viewsheds or receptors. The mobile emitter trucks would be temporarily parked at one of the 15 pre-selected training sites during training activities (using existing and cleared pull outs or turnarounds); therefore, there would be no permanent change to the visual character of these areas.

3.5.2 AFFECTED ENVIRONMENT

The applicable component of the Proposed Action, with regard to visual resources, consists of the installation and operation of a fixed emitter tower and the renovation of Building 104 at NS Everett Annex Pacific Beach as described in Section 2.1.1.2. The fixed emitter tower would be constructed on the south side of Building 104. Figure 3.5-1 illustrates a representative picture of a fixed emitter tower (at another location) and emitter specifications. The fixed emitter would be approximately 66 ft. in height and 40 ft. at its widest point.

The NS Everett Annex Pacific Beach is Navy-owned land located on approximately 34 acres along the coastal bluff in Grays Harbor County with views of the ocean to the west (Figure 3.5-2). The Annex property is generally flat and is about 100 ft. above mean seal level (msl) at the northern boundary of the property, sloping to approximately 30 ft. (msl) at the southern boundary of the property. It is comprised of military operations buildings and the Pacific Beach Resort and Recreation Center. In the past, the military operations buildings were used for communications with Fleet assets but are currently not in use. As part of the Proposed Action, these buildings would be used in support of EW training and testing activities. The resort includes a hotel, cottages, and RV and camp sites specifically for use by military service members as part of the Morale, Welfare, and Recreation program.

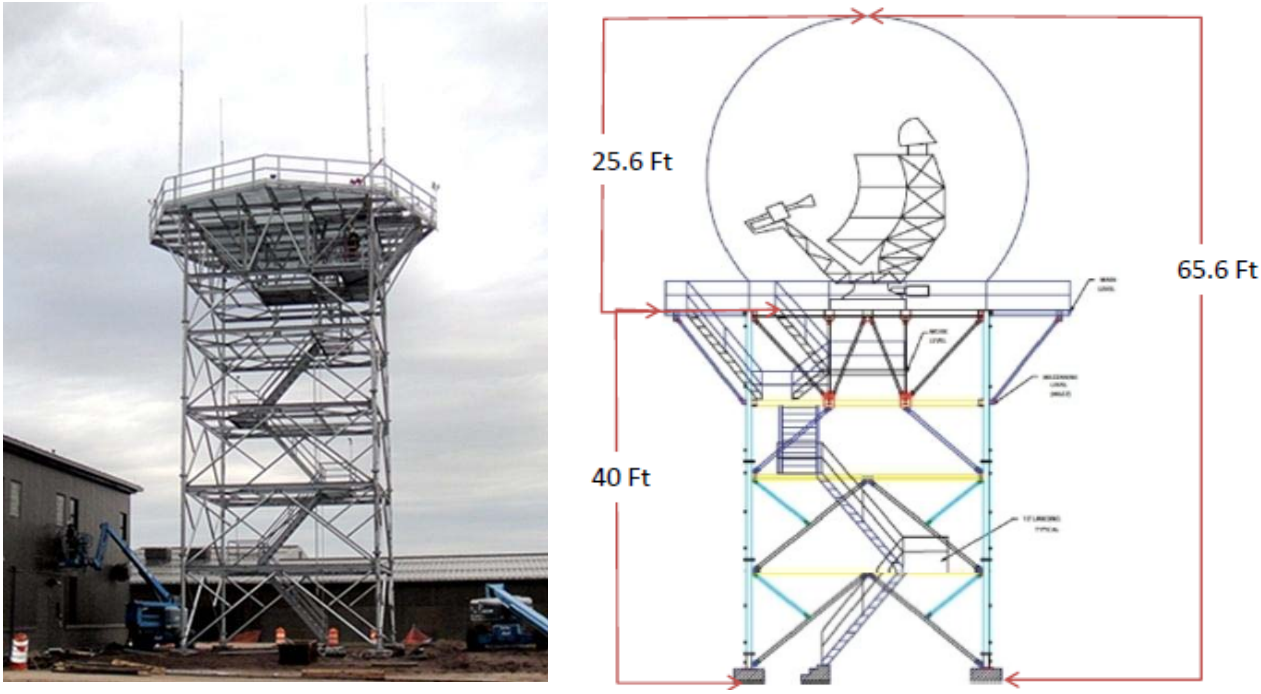


Figure 3.5-1: Example of a Fixed Emitter

Figure 3.5-2: Naval Station Everett Annex Pacific Beach

As shown in Figure 3.5-2, the area to the north of the annex is rural residential with large stands of coniferous trees. A residential neighborhood is located to the south of the annex. Areas to the east, beyond 1st Street, consist of rural and forested areas with some scattered residential homes. Part of the Annex property extends east of 1st Street and consists of beach cottages that are part of the resort. To the west of the annex is the Pacific Ocean and beach area. NS Everett Annex Pacific Beach's visual character is very similar to the surrounding area because of its density of buildings, types of buildings (mostly cottages), and consistent vegetation and tree lines. The most prevalent view of NS Everett Annex Pacific Beach from the surrounding area is from the east, looking west towards the beach area. Rural residential areas to the north, east, and south adjacent to the annex have views of the cottages, conference center, camping grounds, and base buildings. They may have some views of the Pacific Ocean to the west. The view of the cottages, resort hotel, and other military base buildings are fairly prominent depending on the viewer's distance and surrounding vegetation.

3.5.3 ENVIRONMENTAL CONSEQUENCES

3.5.3.1 Approach to Analysis

The evaluation of impacts on visual resources considers the degree of visible change that a proposed action may cause, taking into account the value and sensitivity of the visual environment. An impact on the visual character would occur if the proposed action results in changes to the landscape that substantially degrade an existing viewshed or alter the character of the viewshed by adding anomalous structures, or results in changes in character of the existing visual environment that are incompatible with the visual setting of adjacent areas.

3.5.3.2 No Action Alternative

Under the No Action Alternative, very limited EW training, without the enhanced capability of fixed and mobile emitters, would continue to be conducted in the NWTRC and intermediate-level EW training for certification would continue to occur at the Mountain Home Air Force Base approximately 400 nm southeast of NASWI. Consequently, baseline visual conditions would remain unchanged. Therefore, no significant impacts to visual resources would occur as a result of implementation of the No Action Alternative.

3.5.3.3 Alternative 1

Under Alternative 1, existing NASWI facilities would be modified, and the fixed emitter tower at NS Everett Annex Pacific Beach, the communications transmitter at Octopus Mountain, and the mobile emitter sites in the Olympic MOA would all be emplaced and operated as described in Sections 2.1.1.1, 2.1.1.2, 2.1.1.3, and 2.1.1.4.

Under Alternative 1, renovations to Building 104 and construction and operation of the fixed emitter tower at NS Everett Annex Pacific Beach would occur. The fixed emitter tower would be constructed near Building 104. As previously detailed in Figure 3.5-1, the tower would be approximately 66 ft. in height, about 49 ft. higher than Building 104 (Building 104 is 17 ft. high). The most sensitive views from the surrounding area are those from a residential property directly east of Building 104, across 1st Street (Area 1) and from a residential area located to the southeast of Building 104, east of 1st Street (Area 2) (Figure 3.5-3). For Area 1, there are no ocean or beach views from the property. Area 2 has ocean and beach views; however, these views are to the south of where the fixed emitter tower would be constructed. Figure 3.5-3 depicts a representative view of the proposed location of the fixed emitter tower from the properties of the identified visual sensitive receptors at Areas 1 and 2.

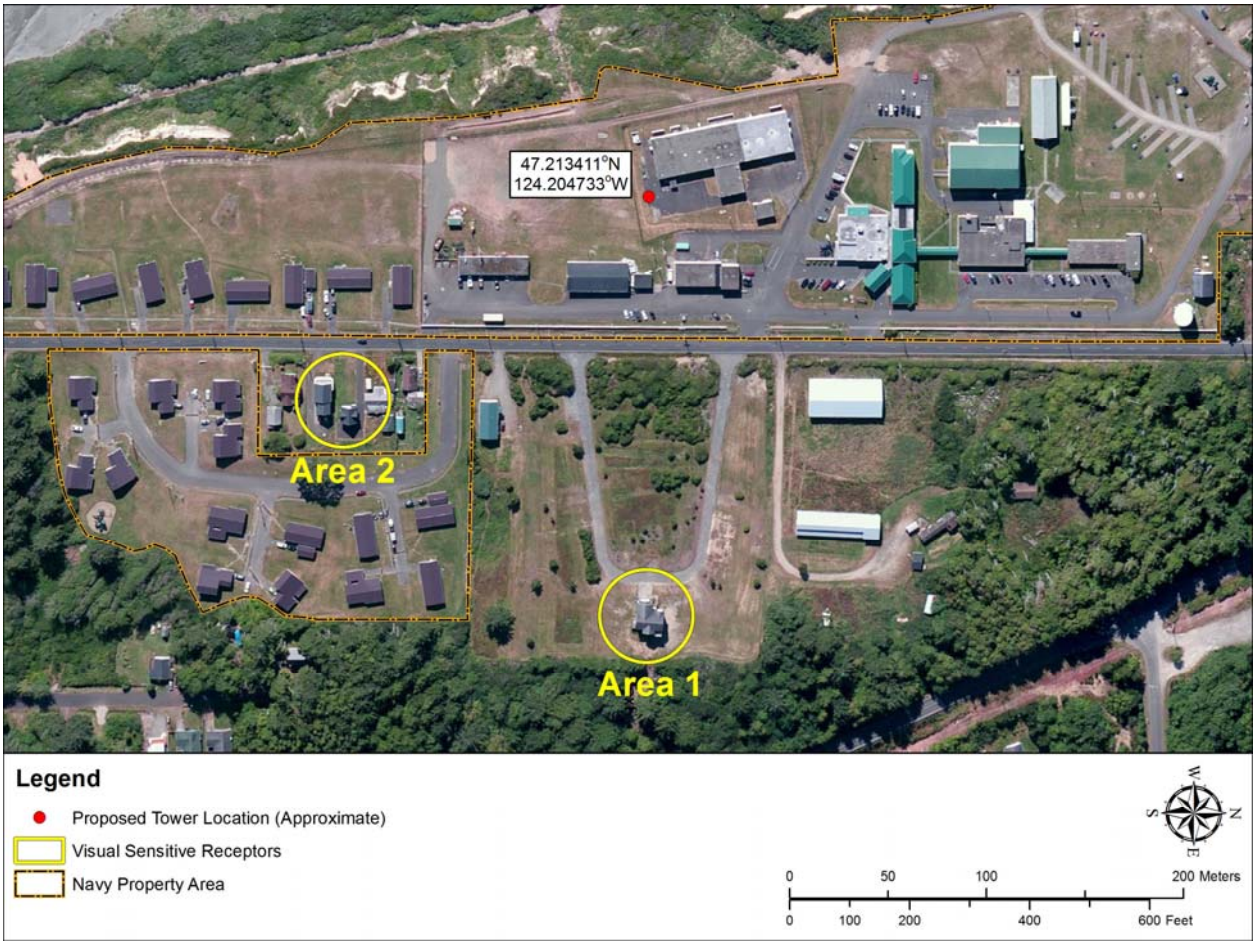


Figure 3.5-3: Visual Sensitive Receptors – Area 1 and Area 2

The location of the fixed emitter tower would not substantially degrade the existing viewshed or alter the character of the viewshed for Area 1 or Area 2 because views would be limited to forested areas, the Pacific Beach Resort and Recreation Center (and associated facilities), and military buildings. The fixed emitter tower would not substantially degrade the existing viewshed of the residential property (Area 1) located to the east of Building 104 because there are no existing views to the ocean (Figure 3.5-4 and Figure 3.5-5). Views of the ocean and beach from the residential properties (Area 2) would not be affected by construction of the fixed emitter tower because of its location to the northwest of their viewshed (Figure 3.5-6 and Figure 3.5-7). Views from Area 1 and Area 2 are compatible with the existing visual setting that consists of forested areas, power lines, buildings associated with NS Everett Annex Pacific Beach, and commercial-type buildings to the north of Area 1 and Area 2. Furthermore, the fixed emitter tower would blend in with the existing skyline and would not be lit at night. Therefore, no significant impacts to visual impacts would occur as a result of implementation of Alternative 1.

Figure 3.5-4: Overhead Perspective of Viewshed from Area 1

Figure 3.5-5: Corresponding Panoramic Ground-level Viewshed from Area 1 with Proposed Fixed Emitter Superimposed

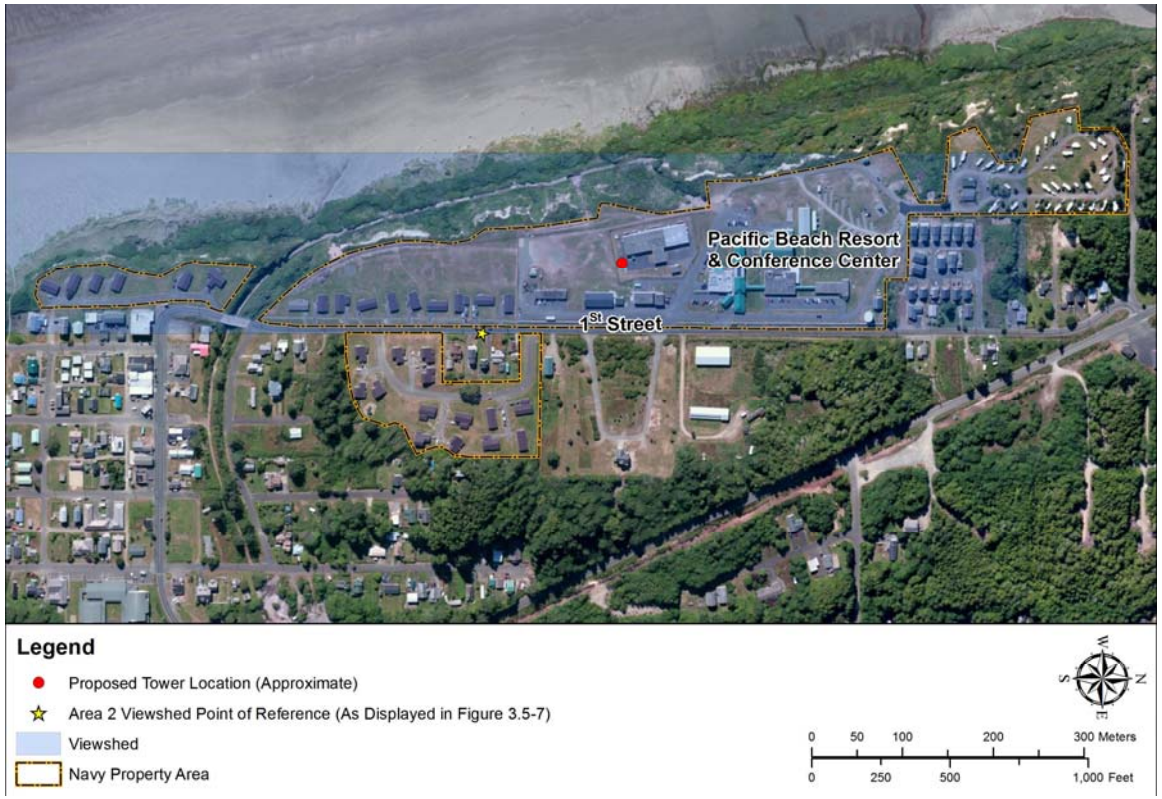


Figure 3.5-6: Overhead Perspective of Viewshed from Area 2

Figure 3.5-7: Corresponding Panoramic Ground-level Viewshed from Area 2 with Proposed Fixed Emitter Superimposed

3.5.3.4 Alternative 2

Alternative 2 would include all the components identified under Alternative 1, as well as include the operation of the mobile emitters in the Okanogan and Roosevelt MOAs. With regard to visual resources, there is no difference between Alternative 1 and Alternative 2, as the difference between the two alternatives is that under Alternative 2, additional proposed EW activities would be occurring in a different geographic area of the Pacific Northwest. Proposed renovations to Building 104 and the construction and operation of the fixed emitter tower at NS Everett Annex Pacific Beach would occur under Alternative 2, as described under Alternative 1. Therefore, impacts to visual resources under Alternative 2 would be the same as those described under Alternative 1, and no significant impacts to visual resources would occur as a result of implementation of Alternative 2.

3.5.3.5 Summary of Impacts

Impacts on aesthetics associated with the construction and operational phases of the project alternatives, along with mitigation and consultation and permit status, are summarized in Table 3.5-1.

Table 3.5-1: Summary of Impacts on Aesthetics

Alternative	Environmental Impacts on Aesthetics
Impact	
No Action Alternative	No Significant Impact
Alternative 1	No Significant Impact
Alternative 2	No Significant Impact
Mitigation: Because renovation, construction, and operation of Building 104 and the fixed emitter tower would not affect aesthetics significantly, mitigation measures are not necessary.	

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4 CUMULATIVE IMPACTS

4.0 INTRODUCTION

The assessment of cumulative impacts (or cumulative effects[1]) in the Study Area follows the objectives of the NEPA of 1969, CEQ regulations, and CEQ guidance. Council on Environmental Quality regulations (40 C.F.R. Parts 1500-1508) provide the implementing procedures for NEPA as

> … the impact on the environment which results from the incremental impact of the action when added to the 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)

While a single project may have minor impacts, overall impacts may be collectively significant when the project is considered together with other projects on a regional scale.[2] The CEQ provides guidance on cumulative impacts analysis in *Considering Cumulative Effects Under the National Environmental Policy Act* (Council on Environmental Quality 1997) and identifies cumulative effects as those environmental effects resulting "from spatial and temporal crowding of environmental perturbations."

This EA examines cumulative effects as a result of the operation of an EW Range, including renovations to Building 104 at NS Everett Annex Pacific Beach under Alternative 1, and the additional use of an EW Range in North-central Washington under Alternative 2. The scope and nature of activities associated with the Proposed Action would not change from existing activities (as defined in the NWTRC EIS/OEIS); no additional cumulative analysis is required beyond what is presented in this chapter.

4.1 APPROACH TO ANALYSIS

The cumulative impacts analysis in this EA focused on impacts that are "truly meaningful," in accordance with CEQ guidance (Council on Environmental Quality 1997). The level of analysis for each resource was commensurate with the intensity of the impacts. Variable geographic boundaries were used for analyses of cumulative impacts, depending on the resource being evaluated. The current impacts of past and present actions and the potential impacts of reasonably foreseeable future actions were analyzed, to the extent they may be additive to impacts of the Proposed Action. The cumulative impacts analysis was not limited by a specific timeframe; however, this EA dismissed from further analysis the actions and environmental considerations that were considered not reasonably foreseeable. Section 4.2 presents the other actions analyzed for cumulative impacts. Section 4.3 summarizes those effects and makes a determination of the level of significance.

4.2 OTHER ACTIONS ANALYZED IN THE STUDY AREA

Various types of reasonably foreseeable future actions relevant to the Proposed Action have the potential to affect the resources identified in Chapter 3. Descriptions of the other actions and environmental considerations carried forward for analysis are provided in the following sections.

[1] CEQ regulations consider the terms "cumulative impacts" and "cumulative effects" as synonymous (40 C.F.R. § 1508.8[b]); the terms are used interchangeably.
[2] A cumulative impact is the additive effect of all projects in the geographic area.

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4.2.1 OTHER MILITARY ACTIONS

4.2.1.1 P-8A Poseidon Multi-Mission Aircraft

The Navy decided in 2008 to provide facilities and functions to support home basing 12 P-8A Poseidon Multi-Mission Maritime Aircraft squadrons and one FRS into the U.S. Navy Fleet. The P-8A Poseidon will replace the current maritime patrol aircraft, the P-3C Orion, at existing maritime patrol homebases. The action will result in the homebasing of four fleet squadrons (24 aircraft) at NASWI, Washington. The introduction of the Poseidon squadrons in the U.S. Navy Fleet began in 2012 and is to be completed by 2019 (U.S. Department of the Navy 2008). In November 2012, a Notice of Intent (NOI) was published (77 FR 68113) for a Supplemental EIS to the 2008 decision, which addressed a two-basing alternative. This Supplemental EIS was completed in April 2014. The Record of Decision, dated 3 June 2014, documented the Navy's decision to implement Alternative 1 of the Final Supplemental EIS. Alternative 1 includes the home basing of six fleet squadrons and the Fleet Replacement Squadron at Naval Air Station Jacksonville, Florida and six fleet squadrons at NASWI. This Alternative includes a permanent rotating squadron detachment at Marine Corps Base Hawaii, Kaneohe Bay, Hawaii with periodic squadron detachments to Naval Base Coronado, California.

4.2.1.2 Environmental Assessment for Replacement of EA-6B Aircraft with EA-18G Aircraft at Naval Air Station Whidbey Island, Washington

This document analyzed the environmental consequences of transitioning the Electronic Attack squadrons at NASWI from the older EA-6B Prowler aircraft to the newer EA-18G Growler aircraft. The EA for the transition to the EA-18G Growler also analyzed an increase of one additional aircraft assigned to each Electronic Attack squadron. EA-6B squadrons have four aircraft each, while EA-18G squadrons have five aircraft each. This document also included the disestablishment of the Expeditionary Electronic Attack squadrons by 2012. At the time, the Navy anticipated an overall decrease in the number of both carrier deployable and Expeditionary Electronic Attack aircraft and personnel at NASWI. This EA was completed in January 2005.

4.2.1.3 Environmental Assessment for the Expeditionary Transition of EA-6B Prowler Squadrons to EA-18G Growler at Naval Air Station Whidbey Island, Oak Harbor, WA.

Commander Electronic Attack Wing, Pacific, based at NASWI, Washington, provides EW support to both Pacific and Atlantic Fleets (U.S. Department of the Navy 2012). In 2010 the Wing began a transition, by individual squadron, from the EA-6B Prowler to the EA-18G Growler aircraft. There are a total of 14 EA-6B/EA-18G squadrons based at NASWI (three of which are expeditionary squadrons), including the Fleet Replacement squadron. Each fleet squadron consists of either 4 EA-6B Prowlers or 5 EA-18G Growlers and approximately 180 support personnel. The Fleet Replacement Squadron, which provides initial and refresher training to Navy Growler aircrew, consists of 17 EA-18G aircraft. All Whidbey Electronic Attack squadrons are expected to transition to the EA-18G by 2016. The Wing's mission is to support U.S. Naval Air Forces and the Unified Command Structure by providing combat-ready Tactical Electronic Attack squadrons which are fully trained, properly manned, interoperable, well-maintained, and supported. The Wing provides Tactical Electronic Warfare leadership and expertise worldwide. Note that the proposed action in this document reversed the decision to disestablish the Expeditionary Electronic Attack squadrons that was proposed in the "Environmental Assessment for Replacement of EA-6B Aircraft with EA-18G Aircraft at Naval Air Station Whidbey Island, Washington" mentioned above. A FONSI for this document was signed on 30 October 2012.

4.2.1.4 EA-18G Growler Airfield Operations at Naval Air Station Whidbey Island, Washington Environmental Impact Statement

In September 2013, a NOI was published in the Federal Register (78 FR 54635) announcing the Navy's decision to prepare an EIS for EA-18G Growler airfield operations at NASWI, Washington. The EIS builds upon analyses previously completed in 2005 and 2012 and assesses the noise environment as well as specific airfield operations at NASWI. Additionally, the EIS evaluates the potential environmental effects associated with ongoing and future Growler operations at NASWI's Ault Field and Outlying Landing Field (OLF) Coupeville. The EA mission-related Navy functions have been performed almost exclusively at NASWI since 1970, and the need for the ongoing use of Ault Field and OLF Coupeville will continue. As such, the EIS evaluates the proposed introduction of two additional Expeditionary Electronic Attack squadrons and the addition of aircraft to the training squadron. The purpose of the proposed action is to continue to support the Navy's Electronic Attack aircraft capabilities at NASWI, maintain Electronic Attack squadron operational readiness to support national defense requirements, and to sustain and continue to support all other aircraft missions at NASWI.

4.2.1.5 Northwest Training Range Complex Environmental Impact Statement/Overseas Environmental Impact Statement

The NWTRC EIS/OEIS did not involve extensive changes to the facilities, activities, or training capacities of the area; instead the action resulted in focused but critical enhancements and increases in training that was necessary to ensure the NWTRC supports the Navy training and readiness objectives. The naval activities discussed in the NWTRC EIS/OEIS would continue into the reasonably foreseeable future at levels similar to those already assessed. As necessary, the activities implemented from the NWTRC EIS/OEIS will be reviewed and permits updated through the subsequent Northwest Training and Testing (NWTT) EIS/OEIS action described below.

4.2.1.6 Northwest Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement

The NOI to prepare the NWTT EIS/OEIS was published in February 2012 (77 FR 11497). The NWTT EIS addresses adjustments to training and testing activities previously analyzed in the NWTRC EIS/OEIS and other environmental documents from current levels to levels needed to support Navy requirements in 2015, and to accommodate evolving mission requirements associated with force structure changes. However, most of the training and testing activities analyzed in the NWTT EIS/OEIS have been evaluated in previous environmental documents. The public draft of the EIS/OEIS was released on 24 January 2014. The continued training supported by the installation of the EW range that is covered in this EA is being addressed in the NWTT EIS/OEIS. Because training levels would continue at present levels with regard to the Proposed Action, the net effect on cumulative impacts should be negligible.

4.2.2 OTHER ENVIRONMENTAL CONSIDERATIONS

The analysis of cumulative impacts included other environmental considerations as well as a review of federal, State, and local projects. This EA analyzed cumulative impacts that focused only on the relevant actions that currently affect, or reasonably could affect, the resources in the Study Area. Past and present actions are considered part of the affected environment.

4.2.2.1 Okanogan County All-Terrain Vehicles Policy

Okanogan County has proposed allowing all-terrain vehicles to use 597 additional miles of county roads, both paved and unpaved, with speed limits up to 35 miles per hour. There are already 336 miles of county roads open to all-terrain vehicle riders. In June 2014, environmental groups began appealing the

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policy decision with the Okanogan County commissioners asking for an environmental impact statement or to revise the proposal to eliminate paved roads, roads that lead to public lands, and roads with only short sections open to all-terrain riders.

4.2.2.2 South End Motorized Recreation Management Project

In May 2014, the Colville National Forest published A Finding of No Significant Impact to implement Alternative 3 of the Environmental Assessment which includes Forest Plan Amendment #33. Alternative 3 will improve the system of designated routes for motor vehicle use, manage dispersed camping sites, and rehabilitate resource damage linked to motor vehicle use.

4.2.2.3 National Forests Management Plans

As required by the National Forest Management Act of 1976, each national forest administrative unit has its own land and resource management plan. The plans are intended to be strategic and programmatic in nature. They are intended to have a 15-year life and amendments are utilized to accommodate changes in the landscape and advances in knowledge, science, and technology.

The Colville National Forest land and resource management plan was published in 1988 and has benefited from amendments and supplementation by the Northeast Washington Forestry Coalition by creation of timber management, restoration, and wilderness protection plans.

Management of the Olympic National Forest is guided by the 1990 Land and Resource Management Plan as amended by the 1994 Northwest Forest Plan. The plan establishes areas designed to serve as habitat for late-successional and old growth related species including the northern spotted owl; adaptive management areas, and riparian reserves.

The Okanogan National Forest Land and Resource(s) Management Plan was developed in 1989 and is a tool that provides a framework and broad guidance for making management decisions.

4.2.2.4 Climate Change and Greenhouse Gas Emissions

Climate change is a global concern, and greenhouse gas emissions are a concern from a cumulative perspective because individual sources of greenhouse gas emissions are not large enough to have an appreciable impact on climate change. Greenhouse gases trap heat within the surface and the lowest portion of the earth's atmosphere, causing heating at the surface of the earth. Scientific evidence indicates a trend of increasing global temperature over the past century due to increasing greenhouse gas emissions from human activities (Council on Environmental Quality 2010). The Council on Environmental Quality (2010) provided guidance on consideration of the impacts of climate change and greenhouse gas emissions, which states that "if a proposed action would be reasonably anticipated to cause direct emissions of 25,000 metric tons or more of carbon dioxide equivalent greenhouse gas emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public."

The Navy is committed to improving energy security and environmental stewardship by reducing reliance on fossil fuels. The Navy is actively developing and participating in energy, environmental, and climate change initiatives that will increase use of alternative energy and help conserve the world's resources for future generations. The Navy Climate Change Roadmap (U.S. Department of the Navy 2010b) identifies actions the Environmental Readiness Division is taking to implement EO 13514 (*Federal Leadership in Environmental, Energy, and Economic Performance*) and EO 13423 (*Strengthening Federal Environmental, Energy, and Transportation Management*). The Navy's Task Force Energy is responding

to the Secretary of the Navy's energy goals through energy security initiatives that reduce the Navy's carbon footprint. The 5-year Climate Change Roadmap action items, objectives, and desired impacts are organized to focus on strategies, policies and plans, operations and training, investments, strategic communications and outreach, and environmental assessment and prediction.

4.3 SUMMARY OF CUMULATIVE IMPACTS

In accordance with Council on Environmental Quality guidance (Council on Environmental Quality 2010), the cumulative impacts analysis focused on impacts that are "truly meaningful." The level of analysis for each resource was commensurate with the intensity of the impacts identified in Chapter 3 (Affected Environment and Environmental Consequences). No significant contribution of military activities associated with the Proposed Action to cumulative impacts were identified when added to other past, present, and reasonably foreseeable future actions. The discussions presented in Chapter 3 of this EA indicate that implementation of the Proposed Action, Alternative 1, or Alternative 2 would not significantly impact the resources that have been evaluated (public health and safety, biological resources, noise, air quality, and visual resources). The evaluation of other actions that are reasonably foreseeable in the Study Area, and other environmental considerations, indicated that procedures and processes are implemented to minimize or avoid cumulative impacts. Therefore, the proposed activities under Alternative 1 and Alternative 2 would not result in significant cumulative impacts on the resources evaluated.

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5 OTHER CONSIDERATIONS

5.1 CONSISTENCY WITH OTHER FEDERAL, STATE, AND LOCAL PLANS, POLICIES, AND REGULATIONS

Based on evaluation with respect to consistency and statutory obligations, the Navy's Proposed Action for the Pacific Northwest EW Range EA does not conflict with the objectives or requirements of federal, state, regional, or local plans, policies, or legal requirements. Table 5-1 summarizes environmental compliance requirements that were considered in preparing this EA.

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)	United States Environmental Protection Agency (USEPA)/State of Washington	The CAA is the comprehensive federal law that regulates air emissions from stationary and mobile sources. 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.)	USEPA/State of Washington	The CWA is an act to provide for water pollution control activities in the Public Health Service of the Federal Security Agency and in the Federal Works Agency, and for other purposes. The Act's objective is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The Proposed Action would not conflict with goals established in SIPs. No permits are required under the CWA Sections 401, 402, or 404 (b)(1).
Rivers and Harbors Act (33 U.S.C. §§401–426)	U.S. Army Corps of Engineers	No permit is required under the Rivers and Harbors Act as no construction in navigable waterways is proposed.
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	This EA has been prepared in accordance with NEPA, CEQ regulations, and the Navy's NEPA procedures. The Proposed Action would not result in significant impacts, and thus an EIS is not required.
Endangered Species Act (ESA) (16 U.S.C. §§ 1531 et seq.)	U.S. Fish and Wildlife Service (USFWS)	The ESA established protection over and conservation of threatened and endangered species and the ecosystems upon which they depend. The Navy has determined that the activities associated with the Proposed Action would result in an effect determination of "may affect, not likely to adversely affect" for all ESA-listed species present within the action area.. An informal consultation will be conducted using the EA analysis.
Marine Mammal Protection Act (MMPA) (16 U.S.C. §§1361–1407)	National Marine Fisheries Service (NMFS)	The MMPA governs activities with the potential to harm, disturb, or otherwise "harass" marine mammals. The Proposed Action is not expected to result in injury or harassment of any marine mammal as defined by the MMPA.

Table 5-1: Summary of Environmental Compliance for the Proposed Action (continued)

Plans, Policies, and Controls	Responsible Agency	Status of Compliance
Migratory Bird Treaty Act (16 U.S.C. §§ 703–712)	USFWS	The Migratory Bird Treaty Act prohibits the taking, killing, or possessing of migratory birds or the parts, nests, or eggs of such birds, unless permitted by regulation. The 2003 National Defense Authorization Act provides that the Armed Forces may take migratory birds incidental to military readiness activities provided that, for those ongoing or proposed activities that the Armed Forces determine may result in a significant adverse effect on a population of a migratory bird species, the Armed Forces confer and cooperate with the Service to develop and implement appropriate conservation measures to minimize or mitigate such significant adverse effects. Implementation of the Proposed Action would cause no significant adverse effect on a population of migratory bird species. The Proposed Action would not have a significant impact on migratory birds and would comply with applicable requirements of the MBTA.
Bald and Golden Eagle Protection Act (16 U.S.C. 668–668d)	USFS	This Act prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. Implementation of the Proposed Action would not result in an adverse effect on Bald or Golden Eagles as their protection is defined in the Bald and Golden Eagle Protection Act.
National Historic Preservation Act (36 C.F.R. §800)	Navy/SHPO	The Proposed Action would not result in any negative impacts, change, or alter cultural resources of surrounding areas. In a letter from the SHPO dated October 16, 2012, the extant building of the Navy Facility Pacific Beach has been determined not eligible for inclusion in the National Register of Historic Places due to low integrity. In an additional letter from the SHPO dated May 22, 2014, the SHPO has concurred with the Navy's findings that no historic properties would be affected by the Proposed Action.
Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §§1801–1891)	NMFS	The Proposed Action would have no adverse effect on EFH. Therefore, EFH consultation with the NMFS is not 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. No significant unavoidable impacts on traditional cultural resources are anticipated to result from the Proposed Action. In the event that previously unrecorded or unevaluated cultural resources are encountered, the Navy would manage these resources in accordance with the NHPA and other federal and State laws, Navy and DoD regulations and instructions, and DoD American Indian Policy.
EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (62 FR 19885 [23 April 1997])	Navy	The Proposed Action would not result in environmental health risks and safety risks that may disproportionately affect children.

Table5-1: Summary of Environmental Compliance for the Proposed Action (continued)

Plans, Policies, and Controls	Responsible Agency	Status of Compliance
EO 13175, Consultation and Coordination with Indian Tribal Governments	Navy/USFS	This order is to establish a regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes. The Proposed Action is consistent with the comprehensive national policy for the Consultation and Coordination with Indian Tribal Governments. Tribal notification and coordination occurred during April and May 2014 (See Appendix B). Additionally, Tribal notification of the availability of the Draft EA for review and comment will occur 2 weeks prior to release of the EA to the public.

Notes: CEQ = Council on Environmental Quality, C.F.R. = Code of Federal Regulations, DoD = Department of Defense, EA = Environmental Assessment, EIS = Environmental Impact Statement, EO = Executive Order, ESA = Endangered Species Act, MBTA = Migratory Bird Treaty Act, Navy = United States (U.S.) Department of the Navy, NEPA = National Environmental Policy Act, NHPA = National Historic Preservation Act, SHPO = State Historic Preservation Officer, USFS = United States Forestry Service, USFWS = U.S. Fish and Wildlife Service, U.S.C. = U.S. Code

5.2 Irreversible or Irretrievable Commitment of Resources

NEPA requires that environmental analysis include identification of "any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented." [NEPA Sec. 102 (2)(C)(v), 42 U.S.C. §4332]. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy or minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., the disturbance of a cultural site). For the alternatives, including the Proposed Action, most resource commitments are neither irreversible nor irretrievable. Most impacts are short term and temporary or, if long lasting, are negligible. No habitat associated with threatened or endangered species would be lost as result of implementation of the Proposed Action.

The renovation of Building 104 and the construction of a tower would result in the irretrievable commitment of nonrenewable energy resources, primarily in form of fossil fuels. Implementation of the proposed action would require fuels used by generators and ground vehicles. Therefore, consumption of fuel would temporarily increase and this nonrenewable resource would be considered irreversibly lost. However, the fuel and greenhouse gas emissions savings over the 20-year time span of the special use permit from aircraft not having to make the 800 nm round trip to Mountain Home Air Force Base, as described under the No Action Alternative, would result in a dramatic reduction in total fuel consumption and a corresponding reduction in green house gases.

5.3 Relationship between Local Short-Term Uses of the Environment and Maintenance and Enhancement of Long-Term Biological Productivity

NEPA requires an analysis of the relationship between a project's short-term impacts on the environment and of the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial

uses of the environment are of particular concern. This refers to the possibility that choosing one development option reduces future flexibility in pursuing other options, or that giving over a parcel of land or other resource to a certain use eliminates the possibility of other uses being performed at the site. The Proposed Action would occur on government-owned lands, either operated by the Navy or the USFS. The nature of activities for the Proposed Action would not differ from current uses of these areas. Therefore, implementation of the Proposed Action would not result in significant impacts on sensitive resources. As a result, it is not anticipated that the Proposed Action would result in any environmental impacts that would permanently narrow the range of beneficial uses of the environment or pose long-term risks to health, safety, or the general welfare of the public.

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7 REFERENCES

ABSTRACT

There are no references in this section.

EXECUTIVE SUMMARY

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CHAPTER 5: OTHER CONSIDERATIONS

There are no references in this chapter.

CHAPTER 6: LIST OF PREPARERS

There are no references in this chapter.

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APPENDIX A

LIST OF SPECIES POTENTIALLY FOUND IN THE STUDY AREA

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Table A-1: List of Species Potentially Found in the Study Area.

Common Name	Species Name	ESA Status	Region 6 Forest Service Status
Birds			
Aleutian Canada goose	*Branta canadensis leucopareia*	Species of Concern	
American Peregrine Falcon	*Falco peregrinus anatum*		Sensitive Species
Bald Eagle	*Haliaeetus leucocephalus*	Species of Concern	Management Indicator Species, Sensitive Species
Barred Owl	*Strix varia varia*		Management Indicator Species
Black swift	*Cypseloides niger*	Species of Concern	
Black-Backed Woodpecker	*Picoides arcticus*		Management Indicator Species
Blue Grouse	*Dendragapus obscurus*		Species of Interest
Brown pelican	*Pelecanus occidentalis*	Species of Concern	
Burrowing owl	*Athene cunicularia*	Species of Concern	
Cassin's auklet	*Ptychoramphus aleuticus*	Species of Concern	
Columbian sharp-tailed grouse	*Tympanuchus phasianellus columbianus*	Species of Concern	Sensitive Species
Common Loon	*Gavia immer*		Sensitive Species
Cooper's Hawk	*Accipiter cooperii*		Management Indicator Species
Downy Woodpecker	*Picoides pubescens*		Management Indicator Species
Dusky (Blue) Grouse	*Dendragapus obscurus*		Management Indicator Species
Gray Flycatcher	*Empidonax wrightii*		Sensitive Species
Great Blue Heron	*Ardea herodias*		Management Indicator Species
Great Gray Owl	*Strix nebulosa*		Sensitive Species
Greater sage grouse	*Centrocercus urophasianus*	Candidate	
Hairy Woodpecker	*Picoides villosus*		Management Indicator Species
Harlequin Duck	*Histrionicus histrionicus*		Sensitive Species
Lewis's Woodpecker	*Melanerpes lewis*		Management Indicator Species, Sensitive Species
Loggerhead shrike	*Lanius ludovicianus*	Species of Concern	
Marbled Murrelet	*Brachyramphus marmoratus*	Threatened	
Northern Flicker	*Colaptes auratus*		Management Indicator Species
Northern goshawk	*Accipiter gentilis*	Species of Concern	
Northern Spotted Owl	*Strix occidentalis caurina*	Threatened	Management Indicator Species
Olive-sided flycatcher	*Contopus cooperi*	Species of Concern	
Oregon vesper sparrow	*Pooecetes gramineus affinis*	Species of Concern	
Peregrine falcon	*Falco peregrinus*	Species of Concern	
Pileated Woodpecker	*Dryocopus pileatus*		Management Indicator Species
Ruffed Grouse	*Bonasa umbellus*		Management Indicator Species
Sandhill Crane	*Grus canadensis*		Sensitive Species
Sharp-skinned Hawk	*Accipiter striatus*		Management Indicator Species
Sharp-Tailed Grouse	*Tympanuchus phasianellus*		Sensitive Species
Short-tailed albatross	*Phoebastria albatrus*	Endangered	
Spruce Grouse (Franklin's)	*Falcipennis canadensis franklinii*		Management Indicator Species

Table A-1: List of Species Potentially Found in the Study Area (continued).

Common Name	Species Name	ESA Status	Region 6 Forest Service Status
Birds (continued)			
Streaked horned lark	*Eremophila alpestris strigata*	Proposed	
Three-Toed Woodpecker	*Piocoides tridactylus*		Management Indicator Species
Tufted puffin	*Fratercula cirrhata*	Species of Concern	
Western snowy plover	*Charadrius alexandrinus nivosus*	Listed	
White-Headed Woodpecker	*Picoides albolarvatus*		Sensitive Species
Williamson's Sapsucker	*Sphyrapicus thyroideus*		Management Indicator Species
Yellow-Bellied Sapsucker	*Sphyrapicus varius*		Management Indicator Species
Yellow-billed cuckoo	*Coccyzus americanus*	Candidate	
Mammals			
American Marten	*Martes americana*		Management Indicator Species
American Moose	*Alces americanus*		Management Indicator Species, Sensitive Species
Bighorn Sheep	*Ovis canadensis*		Species of Interest
Canada Lynx	*Lynx canadensis*	Threatened	Management Indicator Species
Columbia Black-tailed Deer	*Odocoileus hemionus columbianus*		Management Indicator Species
Destruction Island shrew	*Sorex trowbridgii destructioni*	Species of Concern	
Fisher	*Martes pennanti*	Candidate	Sensitive Species
Gray Wolf	*Canis lupis*	Endangered	
Gray Wolf (Rocky Mountain DPS)	*Canis lupis*		Sensitive Species
Grizzly Bear	*Ursus arctos horribilis*		Threatened
Keen's Myotis	*Myotis keenii*		Sensitive Species
Long-Eared Myotis	*Myotis evotis*	Species of Concern	
Mountain Goat	*Oreamnos americanus*		Sensitive Species
Mule Deer	*Odocoileus hemionus*		Management Indicator Species
North American Beaver	*Castor canadensi*		Management Indicator Species
North American Wolverine	*Gulo gulo luteus*	Proposed	Sensitive Species
Northern sea otter	*Enhydra lutris kenyoni*	Species of Concern	
(Olympic) Mazama pocket gopher	*Thomomys mazama ssp. melanops)*	Species of Concern	Sensitive Species
Olympic Marmot	*Marmota olympus*		Sensitive Species
Pacific Townsend's big-eared bat	*Corynorhinus townsendii townsendii*	Species of Concern	
Pine Marten	*Martes americana*		Management Indicator Species
Pygmy Shrew	*Sorex hoyi*		Sensitive Species
Red-tailed Chipmunk	*Tamias Ruficaudus*		Sensitive Species
Roosevelt Elk	*Cervus canadensis roosevelti*		Management Indicator Species
Townsend's Big-Eared Bat	*Corynorhinus townsendii*		Sensitive Species
Western gray squirrel	*Sciurus griseus griseus*	Species of Concern	Sensitive Species
White-tailed deer	*Odocoileus virginianus*		Management Indicator Species
Woodland Caribou	*Rangifer tarandus*	Endangered	

Table A-1: List of Species Potentially Found in the Study Area (continued).

Common Name	Species Name	ESA Status	Region 6 Forest Service Status
Fish			
Bull Trout	*Salvelinus confluentus*	Threatened	
Coastal cutthroat trout	*Oncorhynchus clarki clarki*	Species of Concern	
Dolly Varden	*Salvelinus malma*	Proposed	
Olympic Mudminnow	*Novumbra hubbsi*		Sensitive Species
Pacific lamprey	*Lampetra tridentata*	Species of Concern	
Pygmy whitefish	*Prosopium coulteri*	Species of Concern	
Redband trout	*Oncorhynchus mykiss*	Species of Concern	
River lamprey	*Lampetra ayresi*	Species of Concern	Sensitive Species
Umatilla Dace	*Rhinichthys umatilla*		Sensitive Species
Western brook lamprey	*Lampetra richardsoni*	Species of Concern	
Westslope cutthroat trout	*Oncorhynchus clarki lewisi*	Species of Concern	
Reptiles			
Sagebrush lizard	*Sceloporus graciosus*	Species of Concern	
Amphibians			
Cascades frog	*Rana cascadae*	Species of Concern	
Columbia torrent salamander	*Rhyacotriton kezeri*	Species of Concern	
Olympic Torrent Salamander	*Rhyacotriton olympicus*	Species of Concern	Sensitive Species
Tailed frog	*Ascaphus truei*	Species of Concern	
Van Dyke's Salamander	*Plethodon vandykei*	Species of Concern	Sensitive Species
Western toad	*Bufo boreas*	Species of Concern	
Invertebrates			
Blue-gray tail-dropper	*Prophysaon coeruleum*		Sensitive Species
Broadwhorl Tightcoil Snail	*Pristiloma johnsoni*		Sensitive Species
Delicate Emerald	*Somatochlora franklini*		Sensitive Species
Eastern Tailed Blue	*Cupido comyntas*		Sensitive Species
Fir Pinwheel	*Radiodiscus abietum*		Sensitive Species
Giant Columbia spire snail	*Fluminicola columbiana*	Species of Concern	
Golden Hairstreak	*Habrodais grunus*		Sensitive Species
Great Basin Fritillary	*Speyeria egleis*		Sensitive Species
Johnson's Hairstreak	*Callophrys johnsoni*		Sensitive Species
Keeled Jumping slug	*Hemphillia burringtoni*		Sensitive Species
Lupine Blue Butterfly	*Plebejus lupini spangelatus*		Sensitive Species
Lustrous copper	*Lycaena cupreus*		Sensitive Species
Magnum Mantleslug	*Magnipelta mychophaga*		Sensitive Species
Makah Copper	*Lycaena mariposa charlottensis*	Species of Concern	Sensitive Species
Malone jumping slug	*Hemphillia dromedarius*		Sensitive Species

Table A-1: List of Species Potentially Found in the Study Area (continued).

Common Name	Species Name	ESA Status	Region 6 Forest Service Status
Invertebrates (continued)			
Meadow fritillary	*Boloria bellona*		Sensitive Species
Melissa arctic	*Oeneis melissa*		Sensitive Species
Newcomb's littorine snail	*Algamorda newcombiana*	Species of Concern	
Olympic Arctic	*Oeneis chryxus valerata*		Sensitive Species
Oregon silverspot butterfly	*Speyeria zerene hippolyta*	Listed	
Peck's Skipper	*Polites peckius*		Sensitive Species
Puget Blue or Blackmore's Blue	*Plebejus icariodes blackmorei*		Sensitive Species
Puget Oregonian	*Cryptomastix devia*		Sensitive Species
Rosner's Hairstreak	*Callophrys nelsoni rosneri*		Sensitive Species
Subartic Bluet	*Coenagrion interrogatum*		Sensitive Species
Subartic Damer	*Aeshna subarctica*		Sensitive Species
Tawny-edged Skipper	*Polites themistocles*		Sensitive Species
Taylor's checkerspot butterfly	*Euphydryas editha taylori*	Proposed	Sensitive Species
Valley Silverspot	*Speyeria zerene bremnerii*	Species of Concern	Sensitive Species
Whitehouse Emerald	*Somatochlora whitehousei*		Sensitive Species
Zigzag darner	*Aeshna sitchensis*		Sensitive Species
Plants			
Adder's tongue	*Ophioglossum pusillum*		Sensitive Species
Alpine azalea	*Loiseleuria procumbens*		Sensitive Species
Arctic aster	*Eurybia merita*		Sensitive Species
Aster curtus	*white-top aster*	Species of Concern	
Beaked sedge	*Carex rostrata*		Sensitive Species
Beaked spike rush	*Eleocharis rostellata*		Strategic Species
Black snake root	*Sanicula marilandica*		Sensitive Species
Blackened sedge	*Carex atrosquama*		Sensitive Species
Blandow's feather moss	*Helodium blandowii*		Strategic Species
Bluntleaved orchid	*Platanthera obtusata*		Sensitive Species
Bog clubmoss	*Lycopodiella inundata*		Sensitive Species
Boreal bog sedge	*Carex magellanica ssp. irrigua*		Sensitive Species
Bristly sedge	*Carex comosa*		Sensitive Species
Brook lichen	*Dermatocarpon meiophyllizum*		Strategic Species
Bulb bearing water hemlock	*Cicuta bulbifera*		Sensitive Species
Canadian single spike sedge	*Carex scirpoidea var. scirpoidea*		Sensitive Species
Canadian St. John's-wort	*Hypericum majus*		Strategic Species
Cardot's pohlia moss	*Pohlia cardotii*		Strategic Species
Common twinpod	*Physaria didymocarpa*		Sensitive Species
Cotton's milk vetch	*Astragalus australis var. olympicus*	Species of Concern	
Cord root sedge	*Carex chordorrhiza*		Sensitive Species

Table A-1: List of Species Potentially Found in the Study Area (continued).

Common Name	Species Name	ESA Status	Region 6 Forest Service Status
Plants (continued)			
Coyote tobacco	*Nicotiana attenuate*		Sensitive Species
Creeping snowberry	*Gaultheria hispidula*		Sensitive Species
Crenulate moonwort	*Botrychium crenulatum*	Species of Concern	Sensitive Species
Crested shield fern	*Dryopteris cristata*		Sensitive Species
Demangeon's phylliscum lichen	*Phylliscum demangeonii*		Strategic Species
Dermatocarpon meiophyllizum lichen	*Dermatocarpon meiophyllizum*		Sensitive Species
Diverse leaved cinquefoil	*Potentilla diversifolia var. perdissecta*		Sensitive Species
Dodecatheon austrofrigidum	*frigid shootingstar*	Species of Concern	
Erect blackened sedge	*Carex heteroneura*		Sensitive Species
False mountain willow	*Salix pseudomonticola*		Sensitive Species
Felt lichen	*Peltigera lepidophora*		Strategic Species
Five leaved cinquefoil	*Potentilla rubricaulis*		Sensitive Species, Strategic Species
Flat-leaved bladderwort	*Utricularia intermedia*		Sensitive Species
Footsteps of spring; bear's-foot sanicle	*Sanicula arctopoides*	Species of Concern	
Glaucous gentian	*Gentiana glauca*		Sensitive Species
Glaucous willow	*Salix glauca*		Sensitive Species
Golden draba	*Draba aurea*		Sensitive Species
Green keeled cotton grass	*Eriophorum viridicarinatum*		Sensitive Species
Hair like sedge	*Carex capillaries*		Sensitive Species
Hoary willow	*Salix candida*		Sensitive Species
Howellia	*Howellia aquatilis*		Sensitive Species
Idaho gooseberry	*Ribes oxyacanthoides ssp. Irriguum*		Sensitive Species
Intermediate sedge	*Carex media*		Sensitive Species
Kalm's lobelia	*Lobelia kalmii*		Strategic Species
Kidney leaved violet	*Viola renifolia*		Sensitive Species
Kidney lichen	*Nephroma occultum*		Strategic Species
Kotzebue's grass of Parnassus	*Parnassia kotzebuei*		Sensitive Species
Lance leaved draba	*Draba cana*		Sensitive Species
Least bladdery milk vetch	*Astragalus microcystis*		Sensitive Species
Least powderhorn	*Cladonia norvegica*		Strategic Species
Lesser bladderwort	*Utricularia minor*		Strategic Species
Long bract frog orchid	*Coeloglossum viride*		Sensitive Species
Long sepal globe mallow	*Iliamna longisepala*		Sensitive Species
Long-bract frog orchid	*Coeloglossum viride*		Sensitive Species
Lowland toothcup	*Rotala ramosior*		Sensitive Species
Luminous moss	*Schistotega pennata*		Strategic Species
MacCall's willow	*Salix maccalliana*		Sensitive Species

Table A-1: List of Species Potentially Found in the Study Area (continued).

Common Name	Species Name	ESA Status	Region 6 Forest Service Status
Plants (continued)			
Many headed sedge	*Carex sychnocephala*		Sensitive Species
Marsh muhly	*Muhlenbergia glomerata*		Sensitive Species
Meadow pussy-toes	*Antennaria corymbosa*		Sensitive Species
Mexican muhly	*Muhlenbergia mexicana var. mexicana*		Sensitive Species
Nagoon berry	*Rubus acaulis*		Sensitive Species
Narrow leaved sedge	*Carex stenophylla*		Sensitive Species
Narrowleaf skull cap	*Scutellaria angustifolia ssp. micrantha*		Sensitive Species, Strategic Species
Navel lichen	*Umbilicaria vellea*		Strategic Species
Nodding saxifrage	*Saxifraga cernua*		Sensitive Species
Northern golden carpet	*Chrysosplenium tetrandrum*		Sensitive Species
Nuttall's pussy toes	*Antennaria parvifolia*		Sensitive Species
Pacific felt lichen	*Peltigera pacifica*		Sensitive Species
Pale alpine forget me not	*Eritrichium nanum var. elongatum*		Sensitive Species
Pasque flower	*Anemone nuttalliana*		Sensitive Species
Poor sedge	*Carex magellanica ssp. irrigua*		Sensitive Species
Porcupine sedge	*Carex hystericina*		Sensitive Species
Porter's butterweed	*Packera porter*		Sensitive Species
Prairie cordgrass	*Spartina pectinata*		Sensitive Species
Pringle's rim lichen	*Lecanora pringlei*		Strategic Species
Pulsifer's monkey flower	*Mimulus pulsiferae*		Sensitive Species
Purple meadowrue	*Thalictrum dasycarpum*		Sensitive Species
Purple spike rush	*Eleocharis atropurpurea*		Sensitive Species
Purple water avens	*Geum rivale*		Sensitive Species
Quill sedge	*Carex tenera*		Sensitive Species
Rock willow	*Salix vestita var. erecta*		Sensitive Species
Russet sedge	*Carex saxitalis var. major*		Sensitive Species
Salish fleabane	*Erigeron salishii*		Sensitive Species
Sandberg desert parsley	*Lomatium sandbergii*		Sensitive Species
Scandinavian sedge	*Carex media*		Sensitive Species
Sierra cliff brake	*Pellaea brachyptera*		Sensitive Species
Skinny moonwort	*Botrychium lineare*		Sensitive Species
Skunk polemonium	*Polemonium viscosum*		Sensitive Species
Slender crazyweed	*Oxytropis campestris var. gracilis*		Sensitive Species
Slender gentian	*Gentianella tenella ssp tenella*		Sensitive Species
Small northern bog orchid	*Platanthera obtusata*		Sensitive Species
Smoky Mountain sedge	*Carex proposita*		Sensitive Species
Snow cinquefoil	*Potentilla nivea*		Sensitive Species
Sparse leaved sedge	*Carex tenuiflora*		Sensitive Species

Table A-1: List of Species Potentially Found in the Study Area (continued).

Common Name	Species Name	ESA Status	Region 6 Forest Service Status
Plants (continued)			
Spiranthes diluvialis	*Ute ladies'-tresses*	Listed	
Splashzone moss	*Scouleria marginata*		Sensitive Species
Stalked leaved monkey flower	*Mimulus patulus*		Sensitive Species
Stalked moonwort	*Botrychium pedunculosum*		Sensitive Species
Stellar's rockbrake	*Cryptogramma stelleri*		Sensitive Species
Strict blue-eyed grass	*Sisyrinchium montanum*		Sensitive Species
Subalpine aster	*Eurybia merita*		Sensitive Species
Suksdorf's monkey flower	*Mimulus suksdorfii*		Sensitive Species
Tall agoseris	*Agoseris elata*		Sensitive Species
Tall bitter fleabane	*Trimorpha elata*		Sensitive Species
Tall bugbane	*Cimicifuga elata*	Species of Concern	
Teacher's sedge	*Carex praceptorum*		Strategic Species
Tetraphis moss	*Tetraphis geniculata*		Strategic Species
Toothed wood fern	*Dryopteris carthusiana*		Strategic Species
Tree like club moss	*Lycopodium dendroideum*		Sensitive Species
Triangular lobed moonwort	*Botrychium ascendens*		Sensitive Species
Two spiked moonwort	*Botrychium paradoxum*		Sensitive Species
Upswept moonwort	*Botrychium ascendens*		Sensitive Species
Urn lichen	*Tholurna dissimilis*		Strategic Species
Ute ladies' tresses	*Spiranthes diluvialis*		Sensitive Species
Valley sedge	*Carex vallicola*		Sensitive Species
Velvet leaved blueberry	*Vaccinium myrtilloides*		Sensitive Species
Water avens	*Geum rivale*		Sensitive Species
Western fine leaf pondweed	*Potamogeton filiformis var. occidentalis*		Sensitive Species, Strategic Species
Western ladies' tresses	*Spiranthes porrifolia*		Sensitive Species
Western moonwort	*Botrychium hesperium*		Sensitive Species
Whitebark pine	*Pinus albicaulis*		Sensitive Species
Yellow bog sedge	*Carex gynocrates*		Sensitive Species
Yellow lady's slipper	*Cypripedium parviflorum*		Sensitive Species
Yellow mountain avens	*Dryas drummondii var drummondii*		Sensitive Species
Yellow sedge	*Carex flava*		Sensitive Species
Fungi			
n/a	*Clavariadelphus sachalinensis*		Sensitive Species
n/a	*Cudonia monticola*		Sensitive Species
n/a	*Gomphus bonarii*		Sensitive Species
n/a	*Gomphus kaufmanii*		Sensitive Species
n/a	*Leucogaster citrinus*		Sensitive Species

Table A-1: List of Species Potentially Found in the Study Area (continued).

Common Name	Species Name	ESA Status	Region 6 Forest Service Status
Fungi			
n/a	*Pseudorhizina californica*		Sensitive Species
n/a	*Ramaria aurantiisiccescens*		Sensitive Species
n/a	*Sarcodon fuscoindicus*		Sensitive Species
Bivalves			
California floater	*Anodonta californiensis*	Species of Concern	

Notes: (1) Management Indicator Species, Sensitive Species, Strategic Species, and Species of Interest as identified in Forest Plans for Olympic, Okanogan and Colville National Forests; (2) ESA = Endangered Species Act, n/a = not applicable

APPENDIX B

REGULATORY COMPLIANCE COMMUNICATIONS

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APPENDIX B REGULATORY COMPLIANCE COMMUNICATIONS

B.1 U.S. DEPT OF AGRICULTURE, FOREST SERVICE, CORRESPONDENCE WITH THE CONFEDERATED TRIBES OF THE COLVILLE RESERVATION

USDA United States Department of Agriculture | Forest Service | Okanogan -Wenatchee National Forest Tonasket Ranger District | 1 West Winesap Tonasket, WA 98855 (509) 486-2186

File Code: 1950/2710
Date: April 28, 2014

Michael Finley
Business Council Chairperson
Confederated Tribes of the Colville Reservation
P.O. Box 150
Nespelem, WA 99155

Dear Chairperson Finley,

The Tonasket Ranger District of the Okanogan-Wenatchee National Forest is proposing to do environmental analysis for three projects: replacement of the power line to the Tunk Mountain Communications Site, annual renewal of the District's special forest products program; and authorizing the Department of the Navy to operate up to three, temporary mobile emitters beneath the Okanogan and Roosevelt Military Operation Areas. The analysis for all three projects is currently underway.

The replacement power line at Tunk Mountain is in Section 8, Township 35 North, Range 29 East, W.M. The special forest products program is District-wide. The temporary mobile emitters are proposed to be parked alongside open roads on the east side of the Tonasket District. The likely locations for the temporary mobile emitters are:

- Mt. Hull block; Township 39 North, Range 28 East, in Sections 17 and 21
- Bannon block; Township 36 North, Range 29 East, in Section 21
- Cocoa Mountain area; Township 35 North, Range 31 East, in Sections 11 and 12

Proposed Actions:

Tunk Mountain Power Line Replacement: The original power line to Tunk Mountain was installed by hand, without a road, over 50 years ago and needs to be replaced since the poles are no longer safe to climb. The Okanogan County Public Utility District proposes to install on the surface or with minimal burial, where possible, a power line cable. The cable may be installed in the maintenance trail, 1730 feet, on the upper section of the 2750 foot line. In rocky areas the cable will be anchored to solid rock. Cable will be pulled using rope trailers and portable capstan winches. All old power line, metal parts, and glass insulators will be removed from the site. Old power poles will be cut off at ground level and used to divert any run off on the cable route. The maintenance trail will be reclaimed, re-contoured to the original slope and seeded.

Special Forest Products Program Description: The 2014 special forest products analysis covers the entire Tonasket Ranger District. Gathering of forest products is prohibited in the Pasayten Wilderness and the District's four Research Natural Areas (RNA) and Designated Botanical Areas (DBA): Roger's Lake RNA, Maple Mountain RNA, Chewuch RNA, and Tiffany Springs Botanical Area. As per current management direction in the Inland Native Fish Strategy, PACFISH and special forest products' policy, gathering within Riparian Habitat Conservation Areas is also prohibited. No changes are proposed for the 2014 program. The Forest Service must review the program annually, to ensure no changes have occurred that would

affect issuance of permits for special forest products such as firewood. Special forest products includes firewood, boughs, Christmas trees, cones, floral cuttings/greens, huckleberries, mushrooms, post and poles, transplants, and miscellaneous other products that people gather annually. On the Tonasket Ranger District, demand for special forest products is limited primarily to requests for firewood, post and poles, and Christmas trees with infrequent requests for other products. Mushroom permits are usually not requested, unless a large wildland fire has occurred recently.

Usually the collection of special forest products has little or no impact on Forest resources, though the unauthorized activities of illegal firewood cutters remain some of the most serious threats to the Forest environment, including illegal removal of large-diameter snags and illegal road construction. After completion of this environmental analysis process, the Tonasket Ranger District will annually review extraordinary circumstances for any changes which may have occurred and prepare Letters to the File including consultation with other agencies for Threatened and Endangered Species and Heritage Resources.

Mobile Emitters beneath the Okanogan and Roosevelt Military Operation Areas (MOAs): The purpose of the proposed action is to sustain and enhance the level and type of training; to provide the ability to accommodate growth in future training requirements; to maximize the ability of local aerial military units to achieve their training requirements locally instead of traveling to Idaho, Nevada, or California; and to reduce fossil fuel consumption from transit to and from training sites outside the state of Washington. The mobile emitters, mounted on 1-ton trucks, will emit electromagnetic energy that simulates systems operated by enemy combatants. The emitters would be frequently relocated, challenging the crews in determining the emitter's location. The mobile emitters would be driven to locations within the Tonasket Ranger District each day of training, parked in existing road turnouts or dispersed use areas, and removed from the Forest each night. Flight events would be up to 6 events per day for a 5-day work week. Actual training events last on average 75 – 120 minutes per event. The three vehicles used throughout the Okanogan and Roosevelt MOAs would rarely be used simultaneously. These mobile emitters would be housed and stored at Naval Air Station Whidbey Island.

Planning-

Interdisciplinary studies will be conducted as part of the analysis process for each of these projects. In accordance with the National Historic Preservation Act as amended (NHPA) and its implementing regulation (36 CFR 800), a cultural resource literature review and/or inventory will be conducted in accordance with our 1997 programmatic agreement regarding cultural resource management on National Forests in Washington State for the replacement of the power line at Tunk Mountain, renewal of the special forest products program, and the operation of mobile emitters beneath the Okanogan and Roosevelt MOAs. Included in those studies, a Section 106 report will be prepared for each project. If our research indicates the potential for traditional cultural properties on this project, your Tribal Historic Preservation Officer (THPO) will be contacted.

Comments or Concerns about the Projects:

I recognize that the Confederated Colville Tribes may have special interests or knowledge of traditional cultural uses or properties, or other cultural resources within the properties. If you have any information or concerns regarding cultural properties that could be affected by these

projects, please contact Powys Gadd, Forest Archeologist at (509) 664-9394.

If you have any questions or need more information about the projects, please contact Phil Christy at (509) 486-5137 or me at (509) 486-5110. If you would like to meet with me or with other Forest Service project personnel, please contact me at the number above. I would appreciate any comments, concerns, and suggestions 30 days from receipt of this letter.

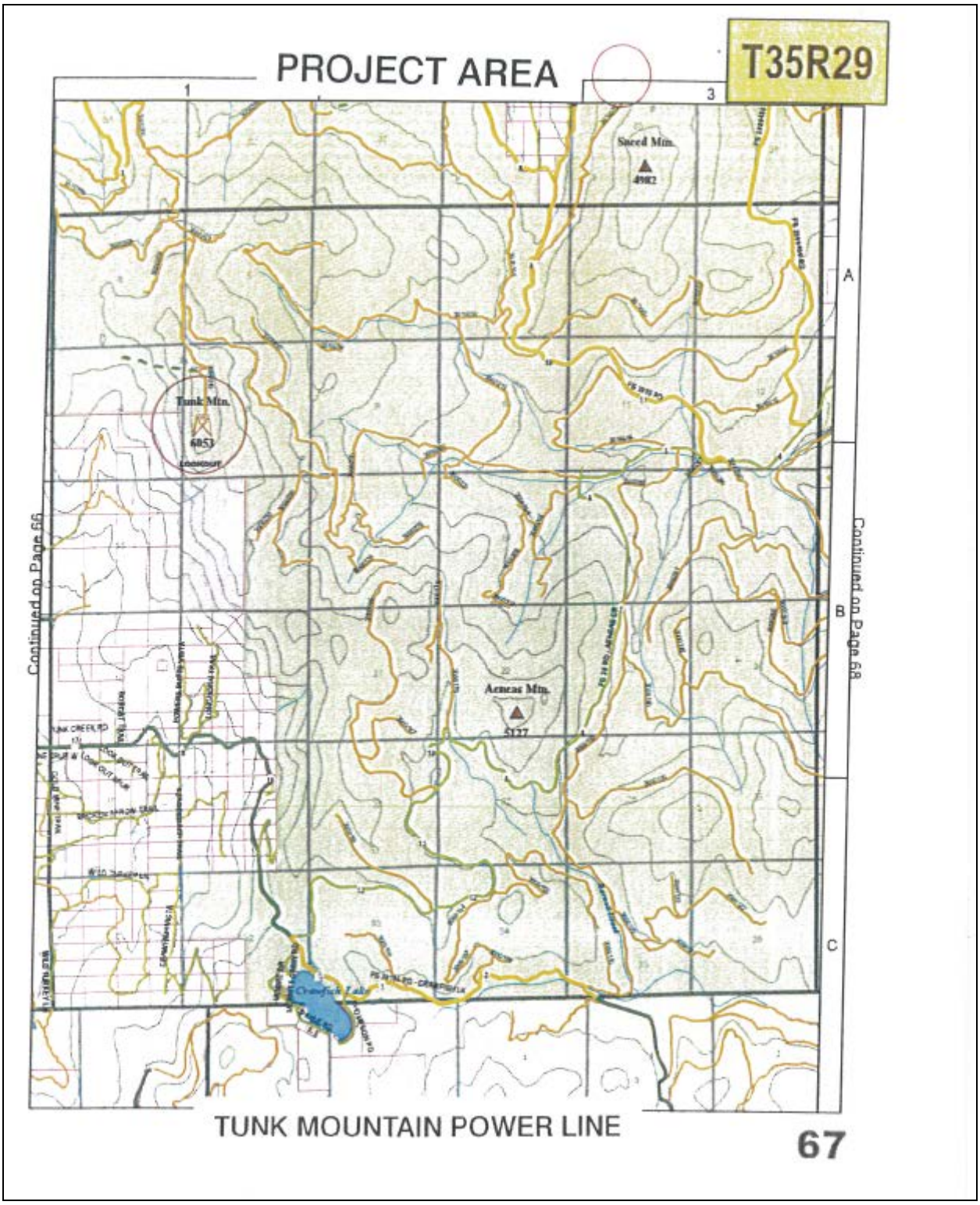
Thank you for your interest in management of the Okanogan-Wenatchee National Forest.

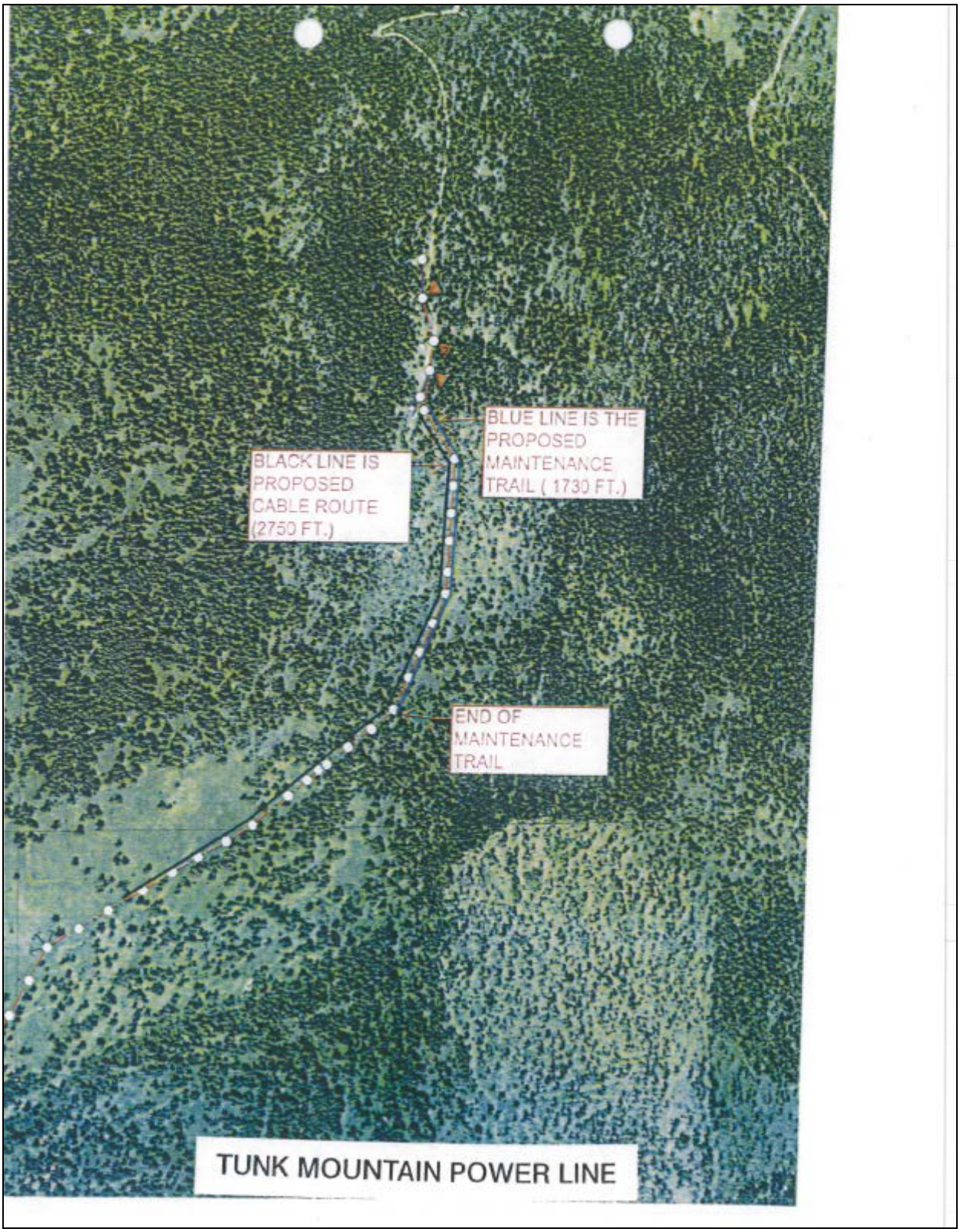
Sincerely,

DALE OLSON
Tonasket Ranger

enc: Tunk Mountain maps (2)

cc: Joseph Somday, Natural Resource Committee Chair
Guy Moura, THPO
Stevey Seymour, Cultural Committee Chair
Chasity Watt, IRMP Coordinator
Brian Gunn, Drinker, Biddle & Reath, LLP
Powys Gadd, Heritage Program Manager, Okanogan-Wenatchee N.F.


PROJECT AREA
T35R29
1
3
Saeed Mtn.
4982
A
Tunk Mtn.
6053
LOOKOUT
Continued on Page 66
Continued on Page 68
B
Aeneas Mtn.
5127
C
Crawfish Falls
TUNK MOUNTAIN POWER LINE
67


BLUE LINE IS THE PROPOSED MAINTENANCE TRAIL (1730 FT.)
BLACK LINE IS PROPOSED CABLE ROUTE (2750 FT.)
END OF MAINTENANCE TRAIL
TUNK MOUNTAIN POWER LINE

B.2 U.S. DEPT OF AGRICULTURE, FOREST SERVICE, CORRESPONDENCE WITH THE YAKAMA NATION

USDA United States Department of Agriculture | Forest Service | Okanogan -Wenatchee National Forest Tonasket Ranger District | 1 West Winesap Tonasket, WA 98855 (509) 486-2186

File Code: 1950/2710
Date: April 28, 2014

Harry Smiskin, Chairman
Yakama Nation
P.O. Box 151
Toppenish, WA 98948

Dear Chairman Smiskin

The Tonasket Ranger District of the Okanogan-Wenatchee National Forest is proposing to do environmental analysis for three projects: replacement of the power line to the Tunk Mountain Communications Site; annual renewal of the District's special forest products program; and authorizing the Department of the Navy to operate up to three, temporary mobile emitters beneath the Okanogan and Roosevelt Military Operation Areas. The analysis for all three projects is currently underway.

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- Cocoa Mountain area; Township 35 North, Range 31 East, in Sections 11 and 12

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Special Forest Products Program Description: The 2014 special forest products analysis covers the entire Tonasket Ranger District. Gathering of forest products is prohibited in the Pasayten Wilderness and the District's four Research Natural Areas (RNA) and Designated Botanical Areas (DBA): Roger's Lake RNA, Maple Mountain RNA, Chewuch Mountain RNA, and Tiffany Springs Botanical Area. As per current management direction in the Inland Native Fish Strategy, PACFISH and special forest products' policy, gathering within Riparian Habitat Conservation Areas is also prohibited. No changes are proposed for the 2014 program. The Forest Service must review the program annually, to ensure no changes have occurred that would

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affect issuance of permits for special forest products such as firewood. Special forest products includes firewood, boughs, Christmas trees, cones, floral cuttings/greens, huckleberries, mushrooms, post and poles, transplants, and miscellaneous other products that people gather annually. On the Tonasket Ranger District, demand for special forest products is limited primarily to requests for firewood, post and poles, and Christmas trees with infrequent requests for other products. Mushroom permits are usually not requested, unless a large wildland fire has occurred recently.

Usually the collection of special forest products has little or no impact on Forest resources, though the unauthorized activities of illegal firewood cutters remain some of the most serious threats to the Forest environment, including illegal removal of large-diameter snags and illegal road construction. After completion of this environmental analysis process, the Tonasket Ranger District will annually review extraordinary circumstances for any changes which may have occurred and prepare Letters to the File including consultation with other agencies for Threatened and Endangered Species and Heritage Resources.

Mobile Emitters beneath the Okanogan and Roosevelt Military Operation Areas (MOAs): The purpose of the proposed action is to sustain and enhance the level and type of training; to provide the ability to accommodate growth in future training requirements; to maximize the ability of local aerial military units to achieve their training requirements locally instead of traveling to Idaho, Nevada, or California; and to reduce fossil fuel consumption from transit to and from training sites outside the state of Washington. The mobile emitters, mounted on 1-ton trucks, will emit electromagnetic energy that simulates systems operated by enemy combatants. The emitters would be frequently relocated, challenging the crews in determining the emitter's location. The mobile emitters would be driven to locations within the Tonasket Ranger District each day of training, parked in existing road turnouts or dispersed use areas, and removed from the Forest each night. Flight events would be up to 6 events per day for a 5-day work week. Actual training events last on average 75 – 120 minutes per event. The three vehicles used throughout the Okanogan and Roosevelt MOAs would rarely be used simultaneously. These mobile emitters would be housed and stored at Naval Air Station Whidbey Island.

Planning:

Interdisciplinary studies will be conducted as part of the analysis process for each of these projects. In accordance with the National Historic Preservation Act as amended (NHPA) and its implementing regulation (36 CFR 800), a cultural resource literature review and/or inventory will be conducted in accordance with our 1997 programmatic agreement regarding cultural resource management on National Forests in Washington State for the replacement of the power line at Tunk Mountain, renewal of the special forest products program, and the operation of mobile emitters beneath the Okanogan and Roosevelt MOAs. Included in those studies, a Section 106 report will be prepared for each project. If our research indicates the potential for traditional cultural properties on this project, your Tribal Historic Preservation Officer (THPO) will be contacted.

Comments or Concerns about the Projects:

I recognize that the Yakama Nation may have special interests or knowledge of traditional cultural uses or properties, or other cultural resources within the properties. If you have any information or concerns regarding cultural properties that could be affected by these projects,

please contact Powys Gadd, Forest Archeologist at (509) 664-9394.

If you have any questions or need more information about the project, please contact Phil Christy at (509) 486-5137 or me at (509) 486-5110. If you would like to meet with me or with other Forest Service project personnel, please contact me at the number above. I would appreciate any comments, concerns, and suggestions 30 days from receipt of this letter.

Thank you for your interest in management of the Okanogan-Wenatchee National Forest.

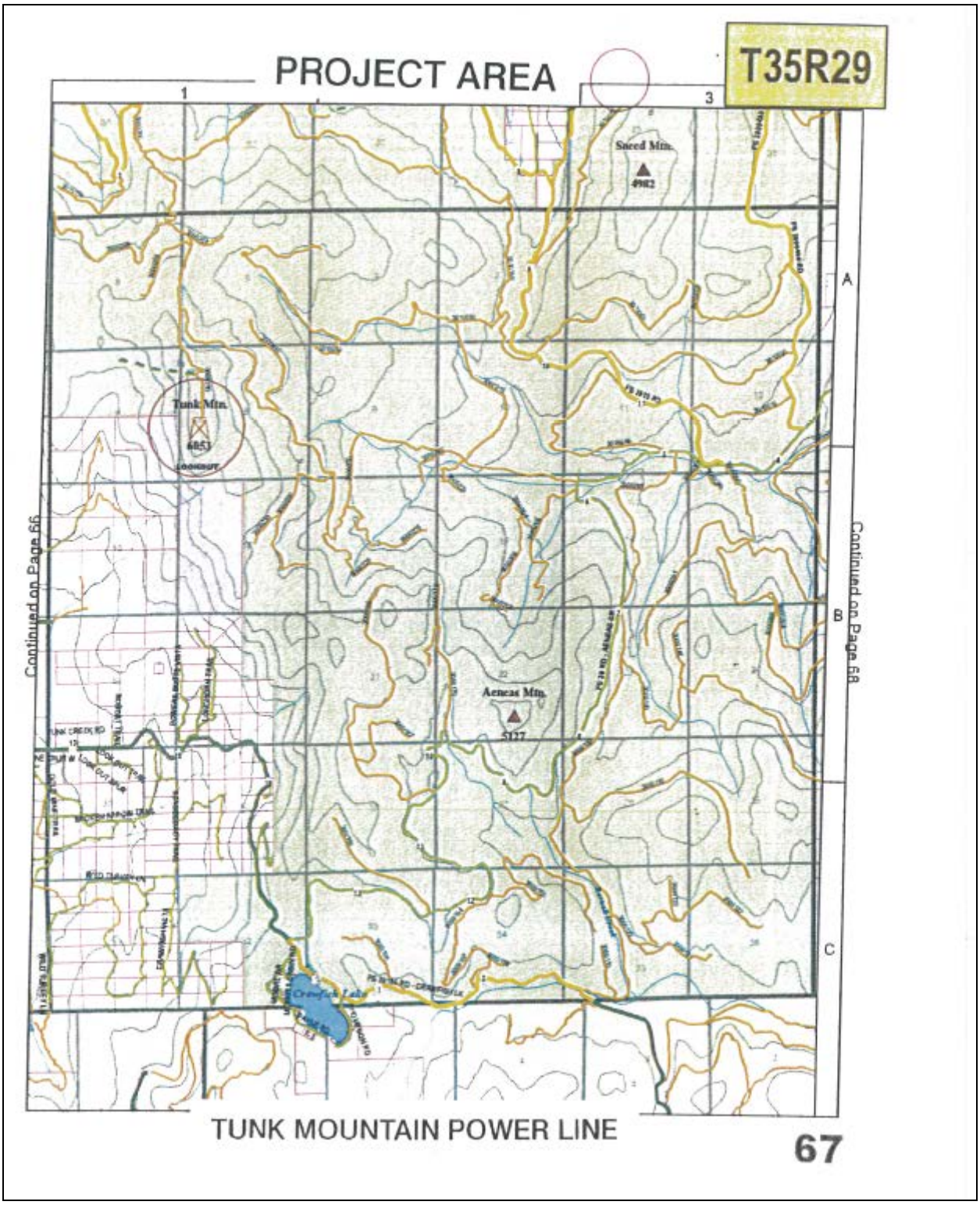
Sincerely,

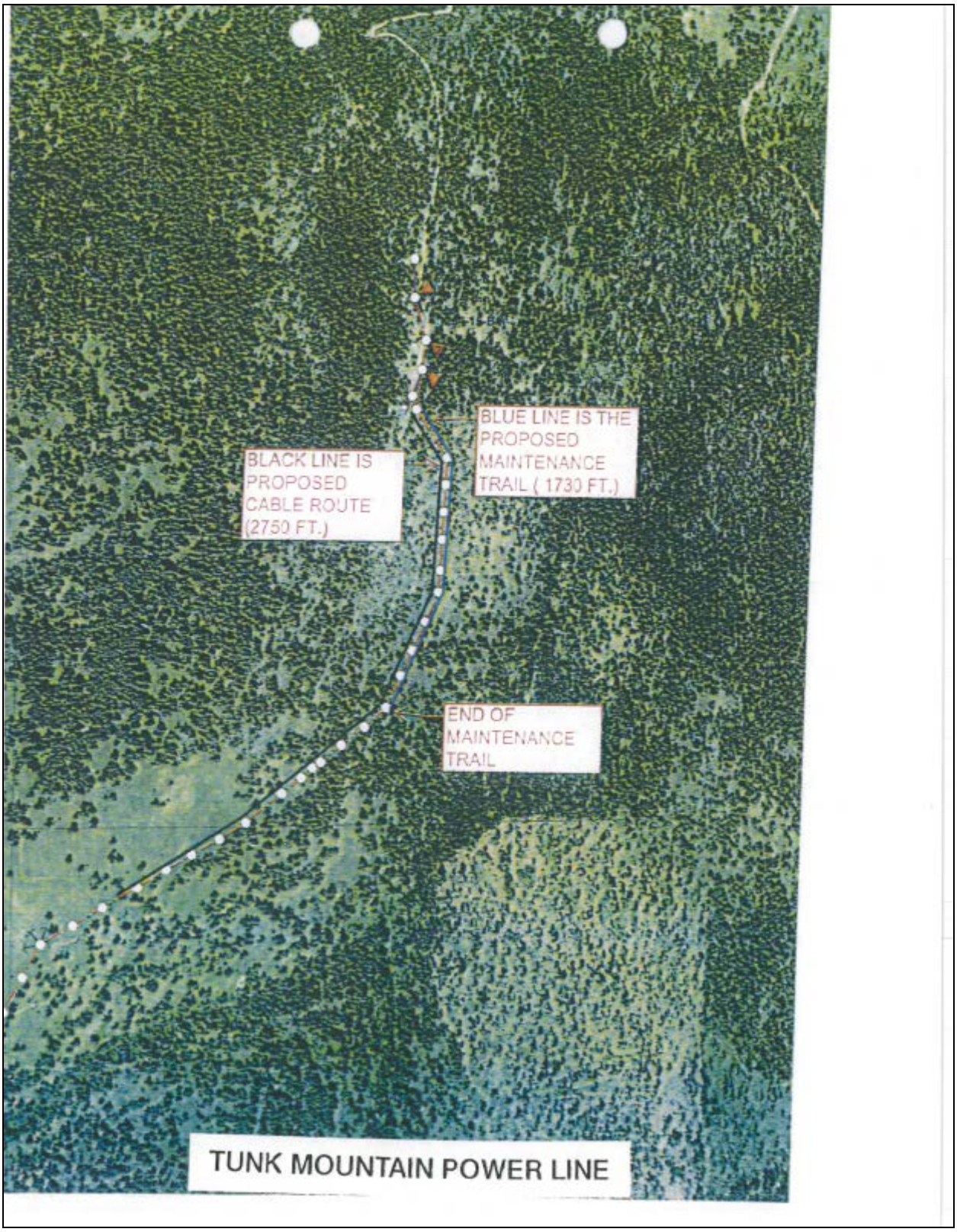
Dale Olson

DALE OLSON
Tonasket Ranger

enc: Tunk Mountain maps (2)

cc: Ruth Jim, Cultural Committee Chair,
Kate Valdez, THPO,
Johnson Meninick, Cultural Program Chair,
Lee Carlson, Tribal,
Philip Rigdon, Dept. of Natural Resources,
Elizabeth Sanchey, Environmental Program Manager
Powys Gadd, Heritage Program Manager, Okanogan-Wenatchee N.F.


PROJECT AREA
T35R29
1
3
Sneed Mtn.
4982
A
Tunk Mtn.
6853
LOOKOUT
Continued on Page 66
Continued on Page 68
B
Aeneas Mtn.
5127
C
TUNK MOUNTAIN POWER LINE
67


BLUE LINE IS THE PROPOSED MAINTENANCE TRAIL (1730 FT.)
BLACK LINE IS PROPOSED CABLE ROUTE (2750 FT.)
END OF MAINTENANCE TRAIL
TUNK MOUNTAIN POWER LINE

B.3 U.S. DEPT OF AGRICULTURE, FOREST SERVICE, CORRESPONDENCE WITH THE HOH TRIBE

United States Department of Agriculture | Forest Service | Olympic National Forest | Pacific Ranger District, 437 Tillicum Lane, Forks, WA 98331

File Code: 1560/1950
Date: May 19, 2014

Maria Lopez, Chairwoman
Hoh Tribe
PO Box 2196
Forks, WA 98331

Dear Chairwoman Lopez;

The Forest Service, Olympic National Forest, Pacific Ranger District, is preparing to adopt an Environmental Assessment (EA) prepared by the Navy called the Electronic Warfare (EW) Range project.

PROPOSED ACTION

The project proposes to install and operate communication equipment on an existing tower in the Olympic Military Operations Area (MOA) at Octopus Mountain and Operation of Mobile Electronic Warfare Training System (MEWTS) mobile emitters in the Olympic Peninsula on USFS lands (existing roads) to facilitate training in the Olympic MOAs and Warning Area. The enclosed map shows the project's proposed locations on the Pacific Ranger District.

PURPOSE AND NEED

The purpose of the Proposed Action is to sustain and enhance the level and type of EW training currently being conducted by Navy assets using the Northwest Training Range Complex (NWTRC), to provide the ability to accommodate growth in future training requirements, and to maximize the ability of local units to achieve their training requirements on local ranges. The following identifies the EW training and needs that will be met by establishment of the Pacific Northwest EW Range: (1) EA-18G and EA-6B Fleet Replacement Squadron (FRS) personnel and Fleet Squadron Personnel training requirements; (2) support of basic and intermediate EW training for all user requirements of the NWTRC, primarily the locally assigned air, surface, and subsurface units; (3) live training, augmented by virtual training; (4) support of unit EW certifications and sustainment level training; (5) maximization and balance of local unit quality of training with local unit quality of life; (6) reduction in costs of training by conducting more training locally; and (7) reduction in the use of fossil fuel consumption from transit to and from training sites outside the state of Washington.

In recognition of the government-to-government relationship that we share, I would like to invite you to formally consult on this project to ensure that the Tribe is afforded an opportunity to identify any concerns regarding the effects of the proposed actions. If you would like to initiate formal consultation, please contact me at (360) 374-1222.

If the Tribe has information with respect to these areas that might be affected by the proposal, that input would be valuable in ensuring that there are no adverse effects. Please respond by

Caring for the Land and Serving People

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June 20, 2014. If you need more time, please notify us as soon as possible. If you have no comments at this time but would like to remain involved, please let us know.

For additional information concerning this decision contact Greg Wahl, Environmental Coordinator, at the Olympic National Forest Supervisor's Office, 1835 Black Lake Blvd. SW, Suite A, Olympia, WA 98512, by phone 360-956-2375, or by email at gtwahl@fs.fed.us.

Sincerely,

/s/ Dean R. Millett
DEAN R. MILLETT
District Ranger

cc: Steve Allison
Hoh NR Director

B.4 U.S. DEPT OF AGRICULTURE, FOREST SERVICE, CORRESPONDENCE WITH THE QUILEUTE TRIBE

United States Department of Agriculture | Forest Service | Olympic National Forest | Pacific Ranger District, 437 Tillicum Lane, Forks, WA 98331

File Code: 1560/1950
Date: May 19, 2014

Charles Woodruff, Chairman
Quileute Tribe
PO Box 279
La Push, WA 98350

Dear Chairman Woodruff;

The Forest Service, Olympic National Forest, Pacific Ranger District, is preparing to adopt an Environmental Assessment (EA) prepared by the Navy called the Electronic Warfare (EW) Range project.

PROPOSED ACTION

The project proposes to install and operate communication equipment on an existing tower in the Olympic Military Operations Area (MOA) at Octopus Mountain and Operation of Mobile Electronic Warfare Training System (MEWTS) mobile emitters in the Olympic Peninsula on USFS lands (existing roads) to facilitate training in the Olympic MOAs and Warning Area. The enclosed map shows the project's proposed locations on the Pacific Ranger District.

PURPOSE AND NEED

The purpose of the Proposed Action is to sustain and enhance the level and type of EW training currently being conducted by Navy assets using the Northwest Training Range Complex (NWTRC), to provide the ability to accommodate growth in future training requirements, and to maximize the ability of local units to achieve their training requirements on local ranges. The following identifies the EW training and needs that will be met by establishment of the Pacific Northwest EW Range: (1) EA-18G and EA-6B Fleet Replacement Squadron (FRS) personnel and Fleet Squadron Personnel training requirements; (2) support of basic and intermediate EW training for all user requirements of the NWTRC, primarily the locally assigned air, surface, and subsurface units; (3) live training, augmented by virtual training; (4) support of unit EW certifications and sustainment level training; (5) maximization and balance of local unit quality of training with local unit quality of life; (6) reduction in costs of training by conducting more training locally; and (7) reduction in the use of fossil fuel consumption from transit to and from training sites outside the state of Washington.

In recognition of the government-to-government relationship that we share, I would like to invite you to formally consult on this project to ensure that the Tribe is afforded an opportunity to identify any concerns regarding the effects of the proposed actions. If you would like to initiate formal consultation, please contact me at (360) 374-1222.

If the Tribe has information with respect to these areas that might be affected by the proposal, that input would be valuable in ensuring that there are no adverse effects. Please respond by June 20, 2014. If you need more time, please notify us as soon as possible. If you have no

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comments at this time but would like to remain involved, please let us know.

For additional information concerning this decision contact Greg Wahl, Environmental Coordinator, at the Olympic National Forest Supervisor's Office, 1835 Black Lake Blvd. SW, Suite A, Olympia, WA 98512, by phone 360-956-2375, or by email at gtwahl@fs.fed.us.

Sincerely,

/s/ Dean R. Millett
DEAN R. MILLETT
District Ranger

cc: Mel Moon
Quileute NR Director
Mark Ufkef
Quileute Executive Director
Cultural Resource Specialist
Gregory T Wahl

B.5 U.S. DEPT OF AGRICULTURE, FOREST SERVICE, CORRESPONDENCE WITH THE QUINAULT INDIAN NATION

United States Department of Agriculture | Forest Service | Olympic National Forest | Pacific Ranger District
437 Tillicum Lane
Forks, WA 98331

File Code: 1560/1950
Date: May 19, 2014

Fawn Sharp, President
Quinault Indian Nation
PO Box 189
Taholah, WA 98587

Dear President Sharp;

The Forest Service, Olympic National Forest, Pacific Ranger District, is preparing to adopt an Environmental Assessment (EA) prepared by the Navy called the Electronic Warfare (EW) Range project.

PROPOSED ACTION

The project proposes to install and operate communication equipment on an existing tower in the Olympic Military Operations Area (MOA) at Octopus Mountain and Operation of Mobile Electronic Warfare Training System (MEWTS) mobile emitters in the Olympic Peninsula on USFS lands (existing roads) to facilitate training in the Olympic MOAs and Warning Area. The enclosed map shows the project's proposed locations on the Pacific Ranger District.

PURPOSE AND NEED

The purpose of the Proposed Action is to sustain and enhance the level and type of EW training currently being conducted by Navy assets using the Northwest Training Range Complex (NWTRC), to provide the ability to accommodate growth in future training requirements, and to maximize the ability of local units to achieve their training requirements on local ranges. The following identifies the EW training and needs that will be met by establishment of the Pacific Northwest EW Range: (1) EA-18G and EA-6B Fleet Replacement Squadron (FRS) personnel and Fleet Squadron Personnel training requirements; (2) support of basic and intermediate EW training for all user requirements of the NWTRC, primarily the locally assigned air, surface, and subsurface units; (3) live training, augmented by virtual training; (4) support of unit EW certifications and sustainment level training; (5) maximization and balance of local unit quality of training with local unit quality of life; (6) reduction in costs of training by conducting more training locally; and (7) reduction in the use of fossil fuel consumption from transit to and from training sites outside the state of Washington.

In recognition of the government-to-government relationship that we share, I would like to invite you to formally consult on this project to ensure that the Tribe is afforded an opportunity to identify any concerns regarding the effects of the proposed actions. If you would like to initiate formal consultation, please contact me at (360) 374-1222.

If the Tribe has information with respect to these areas that might be affected by the proposal, that input would be valuable in ensuring that there are no adverse effects. Please respond by June 20, 2014. If you need more time, please notify us as soon as possible. If you have no

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comments at this time but would like to remain involved, please let us know.

For additional information concerning this decision contact Greg Wahl, Environmental Coordinator, at the Olympic National Forest Supervisor's Office, 1835 Black Lake Blvd. SW, Suite A, Olympia, WA 98512, by phone 360-956-2375, or by email at gtwahl@fs.fed.us.

Sincerely,

/s/ Dean R. Millett
DEAN R. MILLETT
District Ranger

cc: Dave Bingaman, QIN NR Director, Justine James Jr., QIN Cultural Resource Specialist, Gregory T Wahl

Enclosure

B.6 NAVY CORRESPONDENCE WITH STATE HISTORIC PRESERVATION OFFICER, DEPARTMENT OF ARCHAEOLOGY AND HISTORIC PRESERVATION

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR, HAWAII 96860-3131

IN REPLY REFER TO:
5090
Ser N01CE1/0407
April 23, 2014

Allyson Brooks, PhD
State Historic Preservation Officer
Department of Archaeology & Historic Preservation
P.O. Box 48343
Olympia, WA 98504-8343

Dear Dr. Brooks:

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION FOR PACIFIC NORTHWEST ELECTRONIC WARFARE RANGE, WASHINGTON

The U.S. Navy requests your concurrence with its determination of eligibility, defining of the Area of Potential Effects (APE) and finding of No Historic Properties Affected by proposed actions for enhancing electronic warfare training. The proposed action will include the following activities at the following locations (Enclosure 1):

A. Naval Station Everett Annex in Pacific Beach - placing a fixed threat emitter atop a 40-foot tower, increasing the paved area at the tower base to support equipment, some combination of demolition, renovation and/or new construction to Building 104 to support the threat emitter and house vehicles with mobile emitters, and increasing the paved area on the north side of Building 104 to facilitate vehicle access;

B. Octopus Mountain - installing communications transmitter on an existing tower; and

C. Olympic, Roosevelt and Okanogan Military Operations Areas - using mobile emitters on U.S. Forest Service (USFS) and Washington State Department of Natural Resources (WDNR) logging roads.

A brief description of each location and activity is provided below.

Naval Station Everett Annex in Pacific Beach

The Navy requests your concurrence with its finding of No Historic Properties Affected on the proposed placement of a

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION FOR PACIFIC NORTHWEST ELECTRONIC WARFARE RANGE, WASHINGTON

threat emitter simulator at Naval Station Everett Annex in Pacific Beach (PACBEACH). PACBEACH is located along the coast at the western edge of Washington's Olympic Peninsula (Enclosure 2) in Grays Harbor County, adjacent to the town of Pacific Beach.

The fixed threat emitter will sit on top of a 40-foot tower placed immediately to the southeast of Building 104 (Enclosures 3-7). Construction of this tower would require excavation to install footings for the tower, grading to prepare the area beneath the tower for paving and pouring of a concrete slab to support tower-mounted equipment. This project proposes some combination of demolition, renovation and/or new construction to Building 104 pending architectural and engineering analysis to support the simulator and to develop facilities to support and house up to three mobile threat emitters. To enable the mobile emitters to safely enter and exit Building 104, the north side of the building would require an expanded paved area to accommodate vehicle turning. The fence line on the north side would also be expanded (Enclosure 6). Grading and limited excavation would be required to prepare the area for paving and relocation of the fence line. Geotechnical analysis consisting of Standard Penetration Testing (performed by driving a 2-inch outer-diameter spit-spoon to a depth of 18 inches to collect approximately 10 or more samples) and a single, approximately 40-foot deep geotechnical boring would be conducted within the APE (Enclosure 6). The APE consists of Building 104 and adjoining areas that fall within its view shed.

Extant buildings on PACBEACH have been determined not eligible for inclusion in the National Register of Historic Places (NRHP) with State Historic Preservation Officer (SHPO) concurrence, either individually or collectively as a historic district (DAHP Log No. 100912-11-USN). The area where this project is proposed has been heavily disturbed over the years and has a low probability of containing archaeological material *in situ*.

However, if archaeological material is encountered during construction, work will immediately stop and the Naval Facility Engineering Command Northwest's archaeologist will be contacted. The archaeologist will assess the material for eligibility for inclusion in the NRHP with consultation with the SHPO and appropriate federally recognized Tribes. If the material is determined not eligible for inclusion in the NRHP, work will be

2

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION FOR PACIFIC NORTHWEST ELECTRONIC WARFARE RANGE, WASHINGTON

permitted to proceed. If it is determined eligible, consultation with the SHPO and appropriate Tribes will determine appropriate mitigation measures to be conducted prior to the restart of work.

Octopus Mountain

The Navy requests your concurrence with its determination that Octopus Mountain tower is not eligible for inclusion in the NRHP and with the finding of No Historic Properties Affected on the proposed placement of a communication transmitter on a this tower. The tower was constructed in 1999 and it is located on WDNR land in a remote area of Jefferson County (lat. 47°44'56.33" N, long. 124°10'41.91" W). The tower has not achieved exceptional importance as required by Criteria G for properties less than 50 years of age. Since there is not an established historic context for the post-Cold War years that can be used for evaluation, this tower is not eligible for inclusion in the NRHP. The APE consists of the existing tower. Proposed action will install a new communications transmitter on this tower. The Navy finds No Historic Properties Affected by the placement of this new transmitter.

Olympic, Roosevelt and Okanogan Military Operations Areas

The Navy requests your concurrence with its finding of No Historic Properties Affected on the proposed use of mobile emitters (Figure 1) on USFS and WDNR logging roads in the Olympic Peninsula beneath the Olympic Military Operations Area (Enclosure 2) and in north-central Washington State beneath the Okanogan and Roosevelt Military Operations Areas (Enclosure 8). The APE consists of the existing logging roads.

Figure 1 - Conceptual Drawing of Mobile Emitter

3

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION FOR PACIFIC NORTHWEST ELECTRONIC WARFARE RANGE, WASHINGTON

For the Olympic Military Operations Area, three mobile emitters would be driven to locations each day of training; rarely would all three mobile emitters be used simultaneously. Over the course of the year, the mobile emitters would be driven out to the sites approximately 260 times. Emitters would be energized for the actual training events, which last on average 75-120 minutes per event. The mobile emitters would be on station only for the duration needed to support the training events. After completion of the training events, the mobile emitters would return to PACBEACH.

For the Roosevelt and Okanogan Military Operations Areas, the same training configuration described above for the Olympic Military Operations Area would be used. Three mobile emitters would be driven to locations each day of training. The mobile emitters used here would be separate vehicles than the ones being used in the Olympic Military Operations Area. These mobile emitters would be stationed at Naval Air Station Whidbey Island, but could be forward deployed to various locations in eastern Washington as necessary to cover operational requirements. All mobile emitters would be deployed on established roads, requiring no new ground disturbing activities. The Navy finds No Historic Properties Affected by the deployment of these mobile emitters.

The Navy respectfully requests concurrence with its determination that Octopus Mountain Tower is not eligible for inclusion in the NRHP, its defining of the APE, and the finding of No Historic Properties Affected by the proposed undertaking. We look forward to receiving your comments within 30 days of receipt of this letter. If you have any questions or wish to discuss this in greater detail, please contact Mr. Ben Keasler at 360-315-1122 or ben.keasler@navy.mil.

Sincerely,

L. M. FOSTER
By direction

Enclosures:
1. Pacific Northwest Electronic Warfare Range Study Area

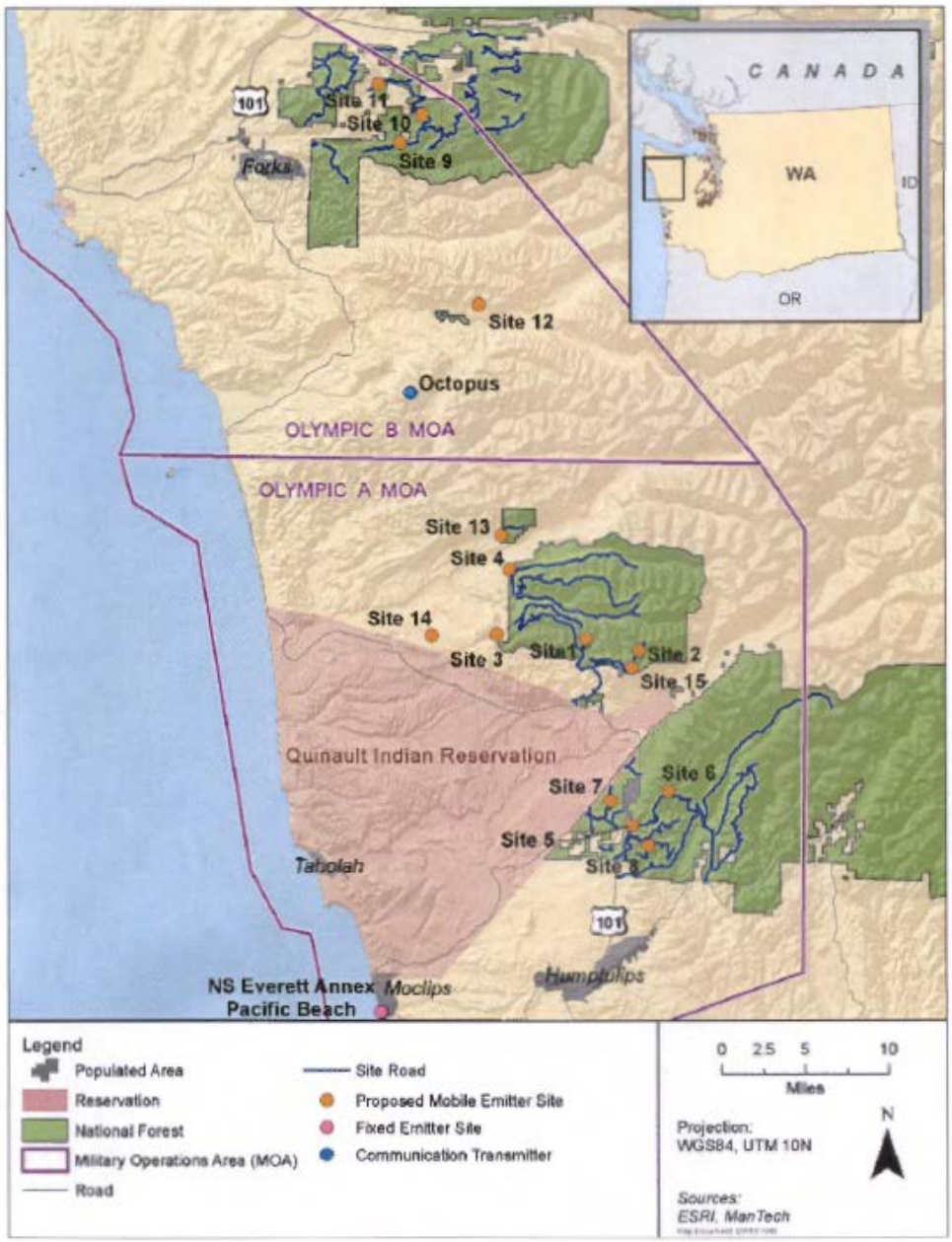
4

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION FOR PACIFIC NORTHWEST ELECTRONIC WARFARE RANGE, WASHINGTON

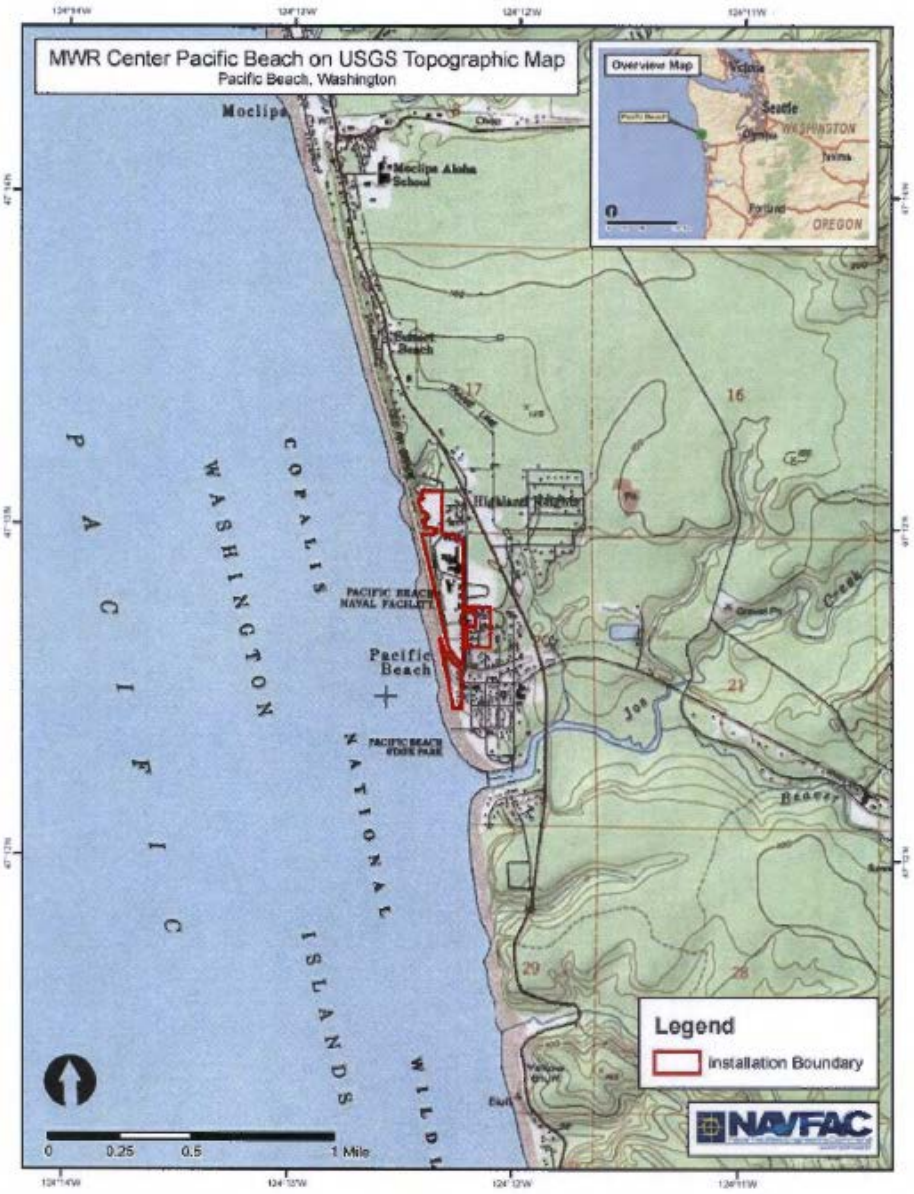
2. Proposed Emitter Sites in the Olympic Military Operations Area
3. Naval Station Everett Annex, Pacific Beach
4. Building 104
5. Present Condition of Building 104
6. Proposed Changes to Building 104 Site
7. Building 104 Preliminary Site Plan
8. Proposed Mobile Emitter Sites in the Roosevelt and Okanogan Military Operations Areas

Copy to:
COMNAVREGNW BANGOR, WA (N40/N45)
CO Naval Station Everett, WA

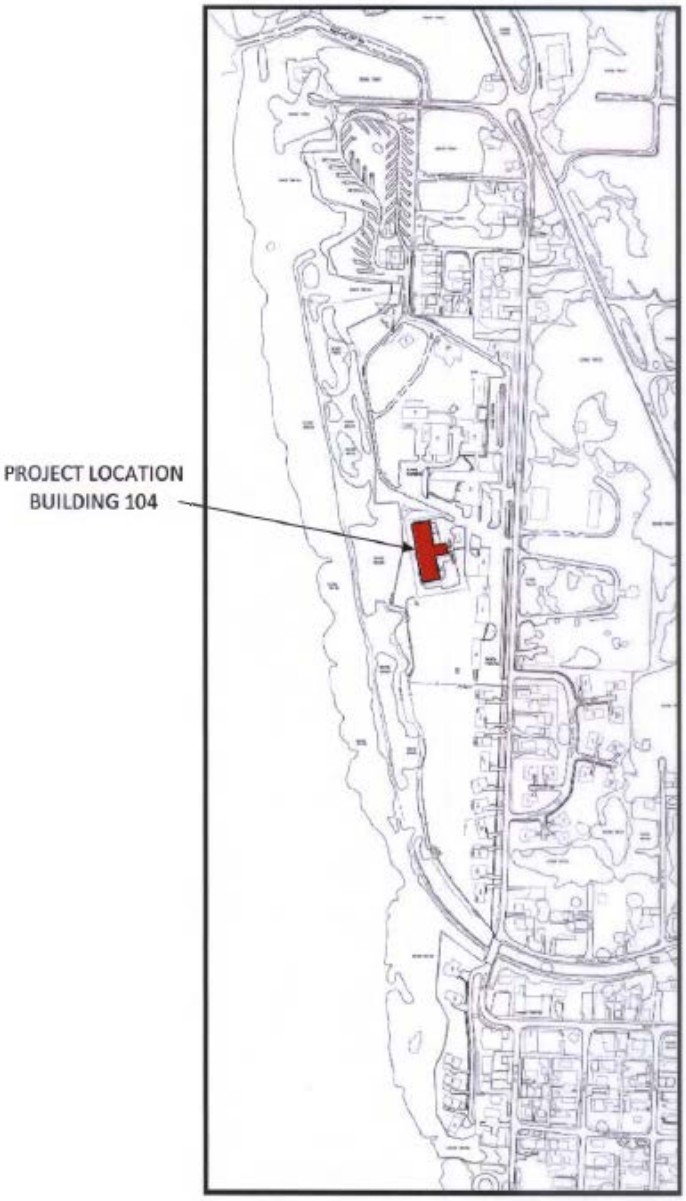
5



Enclosure 2. Proposed Emitter Sites in the Olympic Military Operations Area

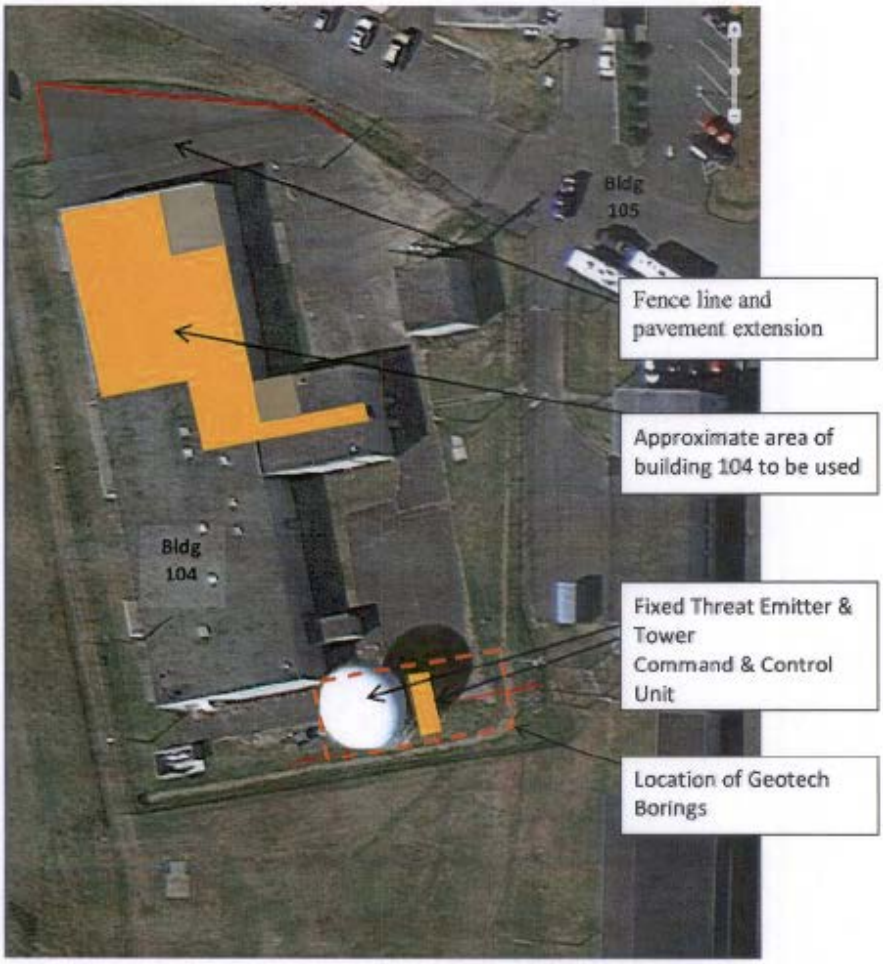


Enclosure 3. Naval Station Everett Annex, Pacific Beach



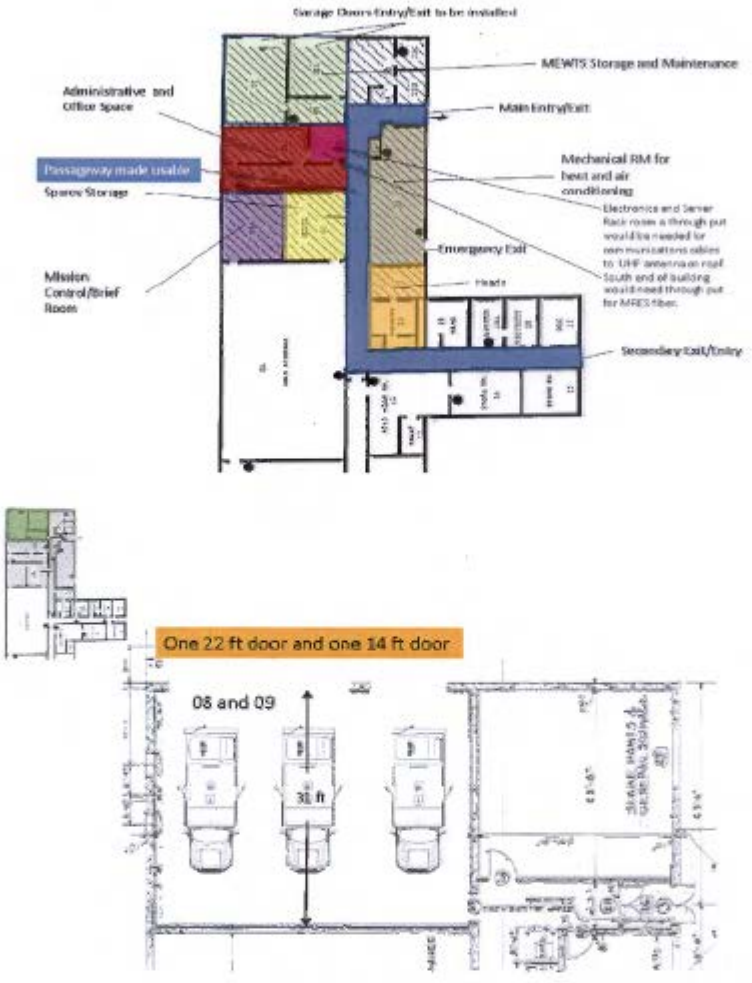
Enclosure 4. Building 104

Enclosure 5. Present Condition of Building 104



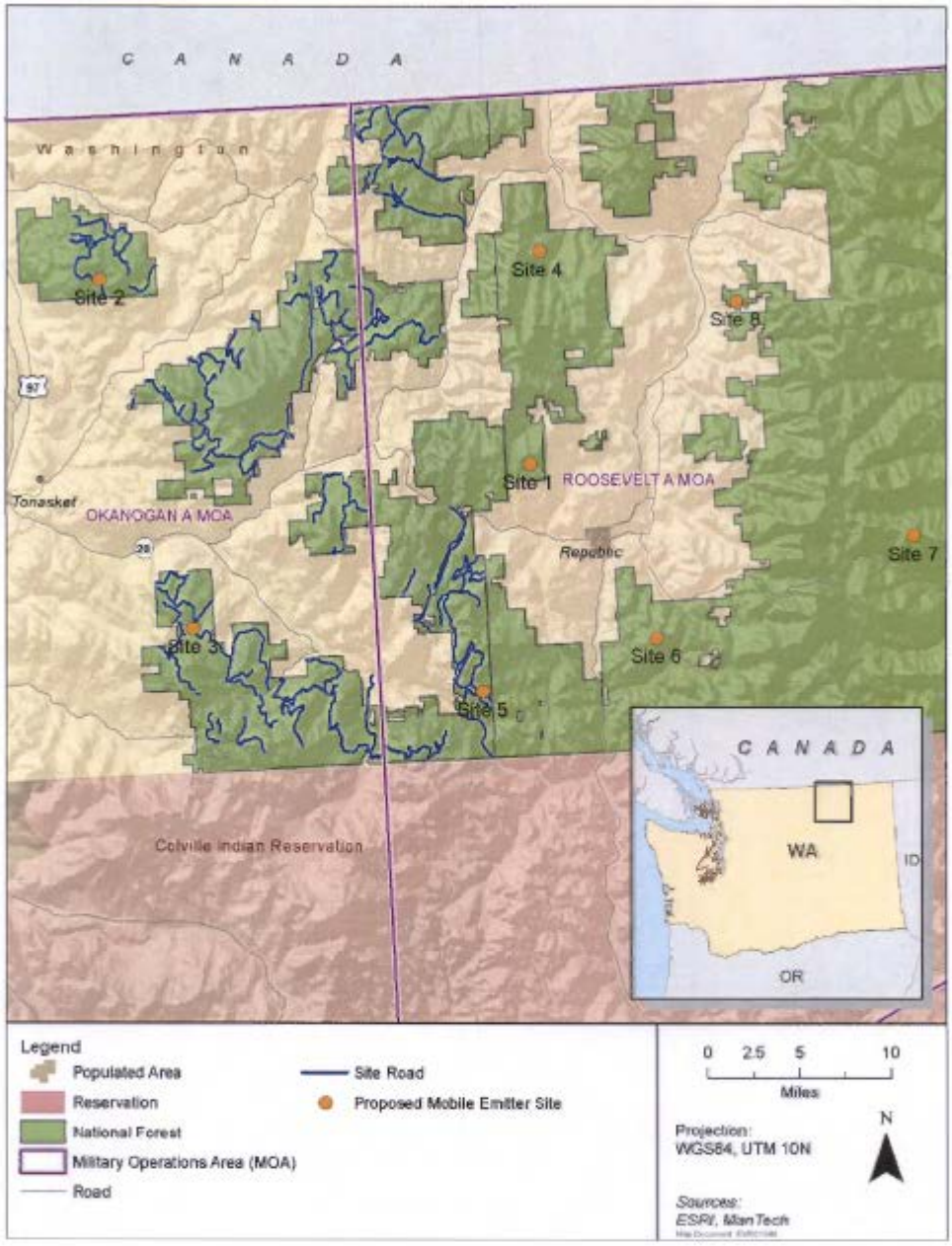
Enclosure 6. Proposed Changes to Building 104 Site

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION FOR PACIFIC NORTHWEST ELECTRONIC WARFARE RANGE, WASHINGTON



Enclosure 7. Building 104 Preliminary Site Plan

12



Enclosure 8. Proposed Mobile Emitter Sites in the Roosevelt and Okanogan Military Operations Area

B.7 STATE OF WASHINGTON, DEPARTMENT OF ARCHAEOLOGY AND HISTORIC PRESERVATION, STATE HISTORIC PRESERVATION OFFICER CORRESPONDENCE WITH NAVY

DEPARTMENT OF ARCHAEOLOGY & HISTORIC PRESERVATION
Protect the Past. Shape the Future

Allyson Brooks Ph.D., Director
State Historic Preservation Officer

May 22, 2014

Capt. James Duke
Commander
US Navy
Naval Station Everett
2000 West Marine View Drive
Everett, WA 98207

In future correspondence please refer to:
Log: 051914-27-USN
Property: Improvements to Building 104 Emitter Tower
Re: No Historic Properties Affected

Dear Capt. Duke:

Thank you for contacting the Washington State Department of Archaeology and Historic Preservation (DAHP). The above referenced project at the US Naval Station Everett Annex at Pacific Beach has been reviewed on behalf of the State Historic Preservation Officer under provisions of Section 106 of the National Historic Preservation Act of 1966 (as amended) and 36 CFR Part 800. My review is based upon documentation contained in your communication.

We concur that no historic properties will be affected by the current project as proposed. It is my opinion that the installation of a new transmitter on a non-historic tower and the deployment of mobile emitters would not constitute an undertaking as defined in 36CFR800.16. If additional information on the project becomes available, or if any archaeological resources are uncovered during construction, please halt work in the area of discovery and contact the appropriate Native American Tribes and DAHP for further consultation.

Thank you for the opportunity to review and comment. Should you have any questions, please contact me.

Sincerely,

Russell Holter
Project Compliance Reviewer
(360) 586-3533
russell.holter@dahp.wa.gov

State of Washington • **Department of Archaeology & Historic Preservation**
P.O. Box 48343 • Olympia, Washington 98504-8343 • (360) 586-3065
www.dahp.wa.gov

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