

**Final Environmental Assessment
For
Naval Special Operations Training
In Western Washington State**



November 2019
Unclassified

ENVIRONMENTAL ASSESSMENT
For
NAVAL SPECIAL OPERATIONS TRAINING
IN WESTERN WASHINGTON STATE

October 2019



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Abstract

Designation: Environmental Assessment

Title of Proposed Action: Naval Special Operations Training in Western Washington State

Project Location: Western Washington State

Lead Agency for the EA: Department of the Navy

Cooperating Agency: None

Affected Region: Western Washington State

Action Proponent: Naval Special Warfare Command

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Date: October 2019

The United States (U.S.) Naval Special Warfare Command (herein after referred to as the NSWC), is the U.S. Navy's special operations force and maritime component of the U.S. Special Operations Command. The NSWC has prepared this Environmental Assessment in accordance with the National Environmental Policy Act, as implemented by the Council on Environmental Quality and Navy regulations. The Proposed Action supports small-unit, intermediate, and advanced cold-water maritime and land-based training activities for naval special operations personnel on selected nearshore lands and in the inland waters of Puget Sound, including Hood Canal, as well as the southwestern Washington coast. Training would start in 2019 and occur into the foreseeable future. This Environmental Assessment evaluates the potential environmental impacts associated with the No Action Alternative and three action alternatives (Alternatives 1, 2, and 3) on the following resource areas: socioeconomics, cultural resources, biological resources, public health and safety, and noise.

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EXECUTIVE SUMMARY

ES.1 Proposed Action

The United States (U.S.) Naval Special Warfare Command (NSWC) proposes to conduct small-unit intermediate and advanced land and cold-water maritime training activities for naval special operations personnel. U.S. Naval Special Warfare Command is the U.S. Navy's special operations force and the maritime component of the U.S. Special Operations Command (USSOCOM). The proposed training activities consist of training by naval special operations personnel with occasional integration of other USSOCOM components, including United States Army Special Operations Command, Marine Corps Special Operations Command, Air Force Special Operations Command, and Joint Special Operations Command. The occasional integration of other USSOCOM components would occur only with NSWC-led training. The proposed training would occur on selected nearshore lands and in the inland waters of Puget Sound, including Hood Canal, as well as the southwestern Washington coast.

ES.2 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to support intermediate and advanced small-unit activities of naval special operations training, with the progression of training in increasingly complex maritime and land environments, focusing on the training progression in a cold-water environment that is appropriate for training in any season. The training would involve training activities designed to further develop and sustain proficiency in the cold-water maritime and land aspects of naval special operations. The Proposed Action is needed to support meeting the requirements under 10 United States Code Section 167 for the Commander, U.S. Special Operations Command, to provide combat-ready forces.

ES.3 Alternatives Considered

NSWC considered three training area screening factors (training, safety and logistics) when identifying an area that could support cold-water naval special operations training and satisfy the training requirements. NSWC is considering a No Action Alternative and three action alternatives that meet the purpose of and need for the Proposed Action.

Training in western Washington State would be conducted in training blocks. A training block is defined as the 2–8 week period of time where up to 84 naval special operations trainees and support personnel (safety observers, medical support, boat drivers, vehicle drivers, evaluators, and equipment repair/maintenance support) arrive in western Washington State to participate in cold-water maritime and land-based training and ends when they leave. A training block consists of single or multiple simultaneous training events on land and in the water. During a training block, trainees and support personnel would disperse throughout the training study area (Figure 1-2); not all 84 personnel would be at one site for a training event.

A training event (a component of a training block) may consist of one or multiple training activities (e.g., launch and recovery, diver/swimmer, over the beach). During a typical training event, there would be up to eight trainees and up to 26 support personnel (or up to 34 people in total) at a training site within the training study area. In a few instances, there could be up to 14 trainees; however, total personnel would not exceed 34. Support personnel would be divided up to assist the in-water training activity and the on-land training activity. It is assumed for purposes of analysis that not all 34 personnel would be in the water or on land at any given time because they would be dispersed between the two areas. Training events are progressive in nature and would range between 2 and 72 hours depending on the activity.

Under the No Action Alternative, the baseline of current training activities conducted in Region 1 (Figure ES-1) over the past decades would continue at two training blocks per year in limited areas as approved under the 2015 Northwest Training and Testing Final Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) (“Personnel Insertion/Extraction – Submersible”) and its ROD was signed October 31, 2016, the Northwest Training Range Complex EIS/OEIS (“Naval Special Warfare Training”) and its ROD signed October 25, 2010, and application of event-based Categorical Exclusions, as applicable. The two EIS/OEIS documents do not cover the full range of naval special operation training activities, locations, and duration needed, or provide the diversity required of naval special operations personnel. This Environmental Assessment (EA) will supersede the “Personnel Insertion/Extraction-Submersible” and “Naval Special Warfare Training” activities as identified in the EIS/OEISs, respectively. Under the No Action Alternative, an individual site would be used no more than 10 times a year and there would be a maximum of 20 trainees and up to 50 support staff, for a total of 70 personnel per training block, times the two training periods, for a grand total of up to 140 personnel per year. Training activities would include launch and recovery of the submersible or small boats, insertion and extraction of these vessels, diver/swimmer training, over-the-beach, special reconnaissance, and the use of unmanned underwater vehicles (UUVs). Small audible recall devices would be used to communicate with diver/swimmers and submersible drivers.

Under Alternative 1, proposed training activities and locations would increase in the Region 1 training study area (Figure ES-1), from two training blocks under the No Action Alternative to four training blocks. Alternative 1 adds simulated building clearance and training with unmanned aircraft system (UAS) at the Navy properties (Naval Base Kitsap Keyport, Toandos Buffer Zone, and Naval Magazine Indian Island). Training with remote operated vehicles would be included with UUVs. Under Alternative 1, an individual site would be used no more 20 times a year, and there would be a maximum of 20 trainees plus up to 50 support staff, for a total of 70 personnel per training block, times the four training periods, for a grand total of up to 280 personnel per year.

Under Alternative 2, the locations identified for training activities, number of training blocks per year, and site usage per year are the exact same as those identified in Alternative 1 for Region 1. However, Alternative 2 adds two new regions, Region 2 and Region 3. All of the training blocks would occur in Region 1. A portion of one of the four training blocks could occur every other year in either Region 2 or 3. The total training blocks would remain at four per year. For Regions 2 and Region 3, an individual site would be used no more than three times every other year. The same training activities as identified in Alternative 1 would occur under Alternative 2, with the exception that UAS and simulated building clearance training activities would not occur in Region 3. Additional UAS training would occur in Region 2 at Restricted Area (R) 6701 (established in 1962 by the Federal Aviation Administration). Also, one new proposed training activity, high-angle climbing, would occur at Deception Pass State Park in Region 2. Alternative 2 has the same number of personnel (280) as in Alternative 1 per year.

Alternative 3 is the Preferred Alternative. As with Alternative 2, Alternative 3 would include the same proposed training activities within Regions 1, 2, and 3. Alternative 3 would increase the number of trainees to 24 personnel and support personnel up to 60, for a total of up to 84 per training block. All of the training blocks would occur in Region 1. A portion of one of the six training blocks could occur every other year in either Region 2 or 3. The total training blocks would remain at six per a year. For Region 1, an individual site would be used not more than 36 times per year. For Region 2 and Region 3 an individual site would be used no more than three times every other year.

Under Alternative 3, there would be a grand total of 504 personnel per year.

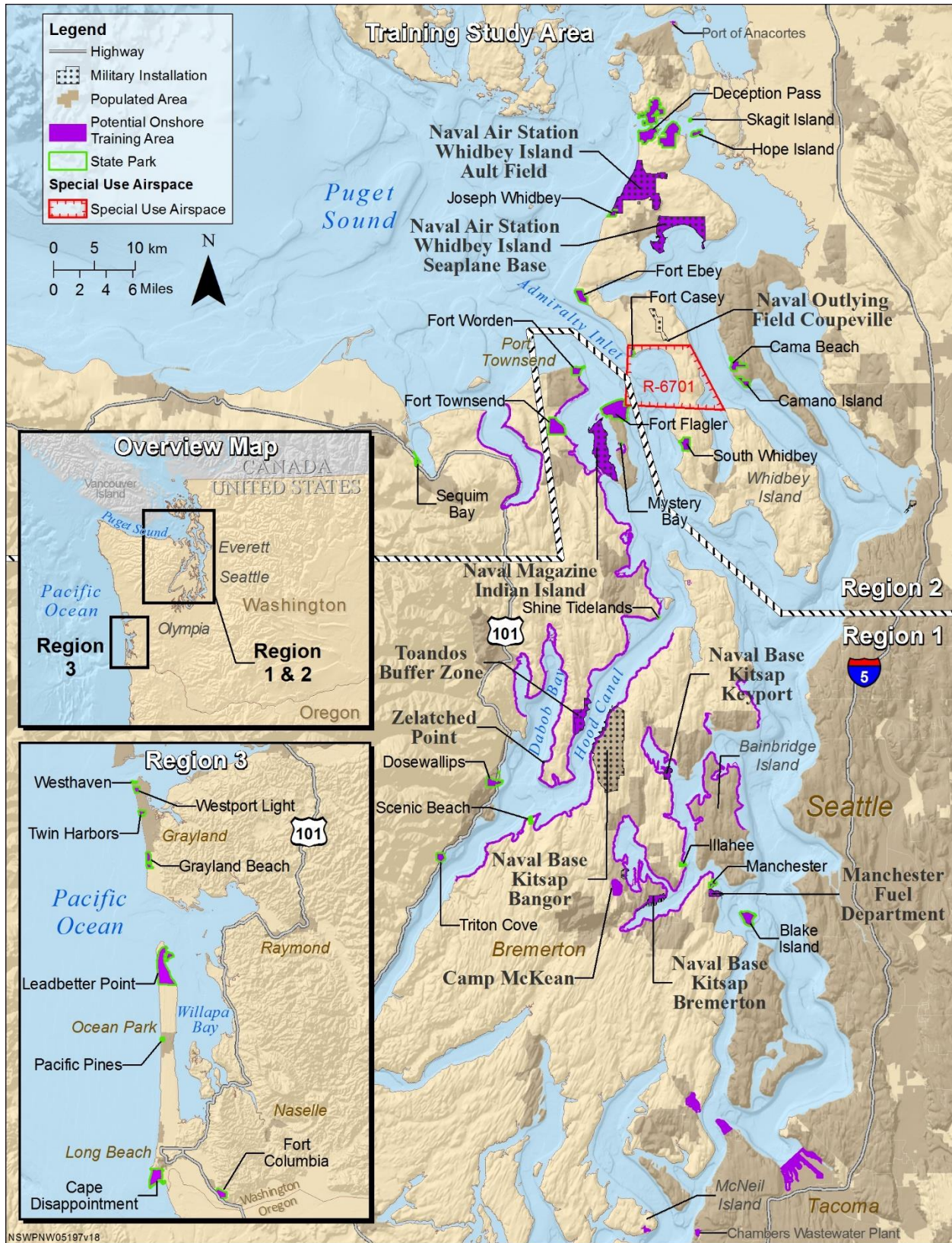


Figure ES-1: Training Study Area

For all the alternatives discussed, it should be noted that not every site will be used every year. However, for any particular site within a region and alternative, the maximums as described above would not be exceeded. Additionally, some locations would not be used for training during certain times of the year when weather, currents, scheduled public events or protected species concerns are present. Other sites may not be used at all during a given year and still yet, other sites may be used intermittently throughout a year. The size of the study area allows for this flexibility which also helps to prevent overuse. Additionally, for each alternative discussed, training aids may be used during training. Training aids consist of inert shapes that could be made of any combination of foam, metal, fiberglass, and wood. The training aids are placed alongside a pier, boat, or tree. They are silent and would not touch the ocean floor when employed in a maritime environment. All training aids would be recovered upon completion of training.

ES.4 Summary of Environmental Resources Evaluated in the Environmental Assessment

Council on Environmental Quality regulations, National Environmental Policy Act, and Navy instructions for implementing the National Environmental Policy Act, specify that an EA should address those resource areas potentially subject to impacts. In addition, the level of analysis should be commensurate with the anticipated level of environmental impact. Record of consultations can be found in Appendix B.

The Navy initiated consultation on the Endangered Species Act with NMFS in May 2018. The biological assessment addressed potential impacts to the following ESA-listed species in accordance with Section (7)(a)(2) of the ESA: Puget Sound Chinook salmon, Hood Canal summer run chum salmon, Puget Sound steelhead, Puget Sound/Georgia Basin bocaccio and yelloweye rockfishes, North American green sturgeon, Columbia River chum salmon, Southern DPS Pacific Eulachon, leatherback sea turtle, humpback whale Mexico DPS and Central America DPS, and southern resident killer whales. In October 2018, NMFS determined the preferred alternative may affect, not likely to adversely affect these species or their critical habitat designations. NMFS also determined the action may affect, not likely to adversely affect EFH and consultation under Magnuson-Stevens Act would not be required for this action.

The Navy initiated consultation on the Endangered Species Act with USFWS in May 2018. The biological assessment addressed potential impacts to the following ESA-listed species in accordance with Section (7)(a)(2) of the ESA: bull trout, marbled murrelet, streaked horn lark, and the western snowy plover. In November 2018, USFWS concurred with the Navy's may affect, not likely to adversely affect determinations for these species. To avoid the nesting season of western snowy plovers and streaked horned larks at Leadbetter Point and Grayland Beach State Parks, the Navy agreed training at these two state parks would only occur between September 15 and March 15.

The Navy submitted a CZMA Consistency Determination to the Washington State Department of Ecology in compliance with the CZMA in August of 2018. In September of 2018, the Washington State Department of Ecology responded with a letter, concurring with the Navy's determination that the proposed work is consistent with Washington's Coastal Zone Management Program.

The Navy initiated the Section 106 consultation process with the Advisory Council on Historic Preservation (ACHP), Washington State Historic Preservation Officer (WA SHPO), 25 tribes, and 33 interested parties in April 2017. In accordance with 36 CFR 800.5(c)(2)(i), Navy requested ACHP to review its finding of No Adverse Effect with the following five measures agreed upon by the Navy to ensure no historic properties are adversely affected:

1. reopen consultation per 36 CFR 800.5(d) if necessitated by a change in the undertaking;
2. ensure a Secretary of Interior (Sol) qualified archaeologist reviews new and renewed real estate agreements for new information such as the presence of eroding archaeological deposits or features;
3. implement the Inadvertent Discovery Plan;
4. ensure a Sol qualified archaeologist provides sensitivity training prior to the start of each training block; and
5. Navy's Sol qualified archaeologist would periodically confirm to WA SHPO staff that adverse effects are being avoided.

ACHP did not contact the Navy for clarification regarding the letters received in July 2019. ACHP did not ask for an extension of time. Per 36 CFR 800.5(c)(3)(i), the Navy's responsibilities under Section 106 are fulfilled.

The following resource areas have been addressed in this EA: socioeconomics, cultural resources, biological resources, public health and safety, and noise. The Draft EA had an Air Quality resource section because of PM₁₀ and PM_{2.5} maintenance areas located in a portion of Region 1, which included the Chambers Creek Regional Wastewater Treatment Plant and in waterways within the Port of Tacoma in Pierce County. However, after the publication of the Draft EA, further analysis and research found that the maintenance areas were removed in 2014 and 2015, respectively, and the areas are in attainment. The impacts to air quality are considered negligible due to the proposed emission sources would be primarily from mobile equipment (i.e., small boats, motor vehicles, etc.) and would have a negligible contribution to current air pollutants. Therefore, the air quality resource section has been removed from further analysis in the EA. Because potential impacts were considered to be negligible or nonexistent, the following additional resources were not evaluated in this EA: water resources, geological resources, visual resources, airspace, infrastructure, transportation, and hazardous materials and wastes.

ES.5 Summary of Potential Environmental Consequences of the Action Alternatives

Table ES-1 provides a summary of potential environmental consequences of the action alternatives. Below is a summary for Endangered Species Act (ESA) conclusions.

There is no designated critical habitat for the golden paintbrush, water howellia, marsh sandwort, and humpback whale. Additionally, the proposed training activities would not overlap with the following critical habitats: Oregon silverspot butterfly and marbled murrelet.

No Action Alternative – The No Action Alternative relies upon the ESA consultations conducted under the 2015 Northwest Training and Testing EIS/OEIS and the 2010 Northwest Training Range Complex EIS/OEIS. ESA species are Puget Sound Chinook salmon, Hood Canal summer run chum salmon, Puget Sound Steelhead, Puget Sound/Georgia Basin bocaccio and yelloweye rockfishes, North American green sturgeon, bull trout, humpback whale, southern resident killer whale, and the marbled murrelet. In-water. Some navel special operations training activities were covered under previous BOs. The potential environmental impact of water and land-based naval special operations training activities conducted at the unit level, from Port Townsend Marina to Naval Magazine Indian Island, were evaluated in the August 12, 2010 USFWS BO and the November 12, 2010 NMFS BO for the 2010 NWTRC and Record of Decision signed on October 10, 2010. There were no impacts identified for on-land species. The NWTRC

BO for “in-water vessel movement” was subsequently superseded by the Northwest Training and Testing BO. The potential environmental impacts of water based naval special operations training activities conducted at the unit level within inland waters were evaluated in the July 21, 2016 USFWS BO and the November 9, 2015 NMFS BO for the NWTT FEIS/OEIS, dated October 2015, and ROD signed on October 31, 2016. The NWTT training activities that are similar to ones proposed for NSWC had a may affect, not likely to adversely affect determination.

Alternative 1 – ESA-listed Species

Proposed training would have no effect on the water howellia or marsh sandwort as these species are believed to be extirpated from the training study area. Based on the analysis in Section 3.3, the proposed training activities may affect, not likely to adversely affect Puget Sound Chinook salmon, Hood Canal summer run chum salmon, Puget Sound Steelhead, Puget Sound/Georgia Basin bocaccio and yelloweye rockfishes, North American green sturgeon, bull trout, humpback whale, southern resident killer whale, and the marbled murrelet.

Alternative 1 – Critical Habitat

As described in Section 3.3, the proposed training activities would not have an effect on critical habitat in Region 1 for Puget Sound Chinook Salmon Evolutionary Significant Unit, Hood Canal summer run chum, Puget Sound Steelhead, Puget Sound/Georgia Basin DPS bocaccio, yelloweye rockfish, bull trout, and southern resident killer whale because essential physical and biological features described in that section would not be modified, either temporarily or permanently.

Alternative 2 – ESA-listed Species

Alternative 2 species will be the same as Alternative 1. The difference is, golden paintbrush, Taylor’s checkerspot butterfly, and the Oregon silverspot butterfly all occur in Region 2. Region 3 adds the western snowy plover, streaked-horned lark, leatherback sea turtle, Columbia River Chum Salmon, and the Pacific Eulachon. Proposed training would have no effect on the golden paintbrush, because known locations would be avoided. Proposed training activities would have no effect on Taylor’s checkerspot butterfly and the Oregon silverspot butterfly because activities would not overlap with existing populations of those species. Based on the analysis in Section 3.3, the proposed training activities may affect, not likely to adversely affect the western snowy plover, streaked-horned lark, leatherback sea turtle, Columbia River Chum Salmon, and the Pacific Eulachon.

Alternative 2 – Critical Habitat

Alternative 2 critical habitat would be the same as Alternative 1. The difference is the addition of designated critical habitat for the following species: Taylor’s checkerspot butterfly (only at Deception Pass State Park), western snowy plover, streaked-horned lark, Columbia River chum salmon, Pacific eulachon, North American green sturgeon, and the leatherback sea turtle. Based on the analysis in Section 3.3, the proposed training activities would not have an effect on critical habitat for these species in Regions 1, 2, and 3 because essential physical and biological features described in that section would not be modified, either temporarily or permanently.

Alternative 3 – ESA-listed Species and Critical Habitats

Alternative 3 species and habitats would be the same as Alternative 2. The only difference is Alternative 3 would increase the training blocks in Region 1 to six times per year and an individual site would be used no more than 36 times per year. Training activities associated with the Proposed Action are low

impact and activities would occur at infrequent intervals and for a brief duration of time. Because the goal of training is for the trainees to be in the field undetected, the environment tends to be minimally disturbed and materials (e.g., gear and trash) are not left behind. In addition, identical travel routes would rarely be used; the level of foot traffic associated with each group would not wear paths in the training study area. Therefore, the increase in the number of training blocks and site usage is not expected to change the impacts, analysis, and determinations as described in Alternative 2.

In May 2018, the Navy initiated informal consultation with NMFS regarding the potential effects of the Preferred Alternative and they concurred with the Navy's may affect, not likely to adversely affect determination in October 2018. Also in May 2018, the Navy initiated informal consultation with USFWS. As a result of the consultation, the Navy agreed to train at Leadbetter Point and Grayland Beach State Parks between September 15 and March 15, which is outside the nesting season for the western snowy plover and the streaked horned lark. In November 2018, USFWS concurred with the Navy's may affect, not likely to adversely affect determination.

ES.6 Public Involvement

The Navy, on behalf of NSWC, welcomed public and agency comments during an early outreach period from April 18, 2017, through May 18, 2017. Early outreach meetings were held on May 2, 3, and 4, 2017, in Poulsbo, Port Townsend, and Oak Harbor, Washington. During the early outreach meetings, NSWC provided information on the training activities, training locations, Section 106 process and NEPA process for the purpose of introducing the Proposed Action to the public, answering general questions about the Proposed Action, and receiving comments from the public. Information received during the early outreach period was considered in preparing the EA.

For the Draft EA, NSWC circulated it for public review and comment from January 22, 2018 to February 21, 2018. However, due to requests by the public and government officials, NSWC extended the comment period an additional 30 days to March 23, 2018. NSWC held three public meetings from February 6, 2018, through February 8, 2018, at:

- North Kitsap High School, Commons, Poulsbo, WA;
- Blue Heron School, Command, Port Townsend, WA; and
- Oak Harbor School District, ASC Board Room, Oak Harbor, WA.

Additional details regarding public involvement can be found in Appendix C.

Table ES-1: Summary of Potential Impacts on Resource Areas

Resource Area: Socioeconomics			
No Action Alternative	Alternative 1	Alternative 2	Alternative 3
There would be no change to the socioeconomics of the local area or region from the No Action Alternative. Training would not restrict transportation and shipping patterns, commercial and recreational fishing activities, or the ability of individuals to use or access recreational activities. Public parks and waterways remain open to the public during training and access is not restricted.	There would be no adverse impact to the socioeconomics of the local area or region from slight increases in the number of personnel trained by NSWC. Compared to the No Action Alternative, the aggregate impact on socioeconomic and recreation resources would not observably differ from current conditions, and impacts are negligible.	There would be no adverse impact to the socioeconomics of the local area or region from slight increases in the number of personnel trained by NSWC. Compared to the No Action Alternative, the aggregate impact on socioeconomic and recreation resources would not observably differ from current conditions, and impacts are negligible.	There would be no adverse impact to the socioeconomics of the local area or region from slight increases in the number of personnel trained by NSWC. Compared to the No Action Alternative, the aggregate impact on socioeconomic and recreation resources would not observably differ from current conditions, and impacts are negligible.
Resource Area: Cultural Resources			
No Action Alternative	Alternative 1	Alternative 2	Alternative 3
There would be no impact to cultural resources. The proposed training activities would be non-invasive in nature with a training goal to leave no trace of their presence during or after training activities. Use of the underwater audible recall device is not expected to affect any potential underwater cultural resources due to the small force of the double-based propellant.	The increase in proposed training blocks and locations in Region 1 would have no adverse impacts to cultural resources compared to the No Action Alternative. The same training activities in the No Action Alternative and the introduction of simulated building clearance and UAS activities would be non-invasive in nature and would follow protocols to minimize the potential for impacts on archeological resources and architectural resources.	The increase in proposed training blocks and locations in Region 2 and 3 would have no adverse impacts to cultural resources compared to the No Action Alternative. The same training activities in the No Action Alternative and introduction of simulated building clearance, UAS, and high-angle climbing activities would be non-invasive in nature and would follow protocols to minimize the potential for impacts on archeological resources and architectural resources.	The increase in proposed training blocks and locations in Region 2 and 3 plus the slight increase in number of personnel, and increase in training blocks in Region 1 would have no adverse impacts to cultural resources compared to the No Action Alternative. The training activities and introduction of simulated building clearance, UAS, and high-angle climbing activities would be non-invasive in nature and would follow protocols to minimize the potential for impacts on archeological resources and architectural resources.

Table ES-1: Summary of Potential Impacts on Resource Areas (continued)

Resource Area: Cultural Resources			
No Action Alternative	Alternative 1	Alternative 2	Alternative 3
			The proposed training would be non-invasive in nature and the Navy would follow the five measures. The Navy consulted with the Advisory Council on Historic Preservation, Washington State Historic Preservation Officer, 25 tribes and 33 interested parties. The Per 36 CFR 800.5(c)(3)(i), the Navy's responsibilities under Section 106 are fulfilled.
Resource Area: Biological Resources			
No Action Alternative	Alternative 1	Alternative 2	Alternative 3
The No Action Alternative would not have an adverse effect on terrestrial and marine biological resources. The training activities would not impact forage fish spawning habitat. The No Action Alternative training activities relies on the 2010 USFWS <i>Biological Opinion on the 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</i> . The activities were also covered under the 2010 NMFS <i>Biological Opinion on the U.S. Navy's Military readiness activities in the Northwest Training Range Complex</i> .	Proposed training activities and the associated disturbances would have minimal effects on terrestrial and marine biological resources because of the short duration, infrequency of occurrence, and low intensity of the proposed training activities. Based on the analysis in Section 3.3, the proposed training activities may affect, not likely to adversely affect Puget Sound Chinook salmon, Hood Canal summer run chum salmon, Puget Sound Steelhead, Puget Sound/Georgia Basin bocaccio and yelloweye rockfishes, North American green sturgeon, bull trout, humpback whale, southern resident killer whale, and the marbled murrelet. There would be no effect for critical habitat.	Alternative 2 species will be the same as Alternative 1. The difference is, golden paintbrush, Taylor's checkerspot butterfly, and the Oregon silverspot butterfly all occur in Region 2. Region 3 adds the western snowy plover, streaked-horned lark, leatherback sea turtle, Columbia River Chum Salmon, and the Pacific Eulachon. Proposed training would have no effect on the golden paintbrush, because known locations would be avoided. Proposed training activities would have no effect on Taylor's checkerspot butterfly and the Oregon silverspot butterfly because activities would not overlap with existing populations of those species.	The types of impacts would be the same as under Alternative 2, with an increase in tempo of training activities in Region 1. As with Alternative 2, Alternative 3 may affect, not likely to adversely affect ESA-listed species and a no effect for critical habitat. The Navy consulted with NMFS on Puget Sound Chinook salmon, Hood Canal summer run chum salmon, Puget Sound steelhead, Puget Sound/Georgia Basin bocaccio and yelloweye rockfishes, North American green sturgeon, Columbia River chum salmon, Southern DPS Pacific Eulachon, leatherback sea turtle, humpback whale Mexico DPS and Central America DPS, and southern resident killer whales.

Table ES-1: Summary of Potential Impacts on Resource Areas (continued)

Resource Area: Biological Resources			
No Action Alternative	Alternative 1	Alternative 2	Alternative 3
	<p>Impacts from the activities under Alternative 1 would not result in a significant adverse effect on migratory bird populations. In accordance with BGEPA, no eagles would be taken by the proposed training activities, nor would the activities limit use of nesting locations in the future.</p> <p>Known eagles and other raptors nest sites would be avoided. Training would not occur within 330 feet of eagle nests.</p> <p>No take, as defined by the MMPA, of marine mammals would occur.</p> <p>There would be no adverse effect on Essential Fish Habitat (EFH) under Alternative 1.</p>	<p>Based on the analysis in Section 3.3, the proposed training activities may affect, not likely to adversely affect the western snowy plover, streaked-horned lark, leatherback sea turtle, Columbia River Chum Salmon, and the Pacific Eulachon. There would be no effect for critical habitat.</p> <p>Impacts from the activities under Alternative 2 would not result in a significant adverse effect on migratory bird populations. In accordance with BGEPA, no eagles would be taken by the proposed training activities, nor would the activities limit use of nesting locations in the future.</p> <p>Known eagles and other raptors nest sites would be avoided. Training would not occur within 330 feet of eagle nests.</p> <p>No take, as defined by the MMPA, of marine mammals would occur.</p> <p>There would be no adverse effect on EFH under Alternative 2.</p>	<p>NMFS determined the preferred alternative was not likely to adversely affect these species or their critical habitat designations. NMFS also determined the action would not adversely affect EFH and consultation under Magnuson-Stevens Act would not be required for this action.</p> <p>The Navy consulted with USFWS on bull trout, marbled murrelet, streaked horn lark, and the western snowy plover. USFWS concurred with the Navy's may affect, not likely to adversely affect determinations for these species. To avoid the nesting season of western snowy plovers and streaked horned larks at Leadbetter Point and Grayland Beach State Parks, the Navy agreed training at these two state parks would only occur between September 15 and March 15.</p> <p>No take, as defined by the MMPA, of marine mammals would occur.</p>

Table ES-1: Summary of Potential Impacts on Resource Areas (continued)

Resource Area: Biological Resources			
No Action Alternative	Alternative 1	Alternative 2	Alternative 3
			<p>Impacts from the activities under Alternative 3 would not result in a significant adverse effect on migratory bird populations. In accordance with BGEPA, no eagles would be taken by the proposed training activities, nor would the activities limit use of nesting locations in the future.</p> <p>Known eagles and other raptors nest sites would be avoided. Training would not occur within 330 feet of eagle nests.</p>
Resource Area: Public Health and Safety			
No Action Alternative	Alternative 1	Alternative 2	Alternative 3
<p>There would be no impacts to public health and safety under the No Action Alternative. Training activities are delayed, moved, or cancelled if there is a question about the safety of the public. NSWC incorporates several best management practices into their different types of training, such as having safety vessels and support personnel on site during the training to not only ensure the safety of trainees, but also to ensure the safety of the public.</p>	<p>There would be no impacts to public health and safety under Alternative 1. The same safety parameters, considerations, and impacts as the No Action Alternative would take place. Alternative 1 adds UAS training over three Navy owned properties. UAS would carry non-hazardous payloads and be operated within FAA safety regulations and the Department of Defense's memorandum of agreement with the FAA.</p>	<p>There would be no impacts to public health and safety under Alternative 2. The same parameters, considerations, and impacts as No Action Alternative would take place under Alternative 2, but with the additional locations of Regions 2 and 3.</p> <p>Alternative 2 also adds UAS training in Region 2 restricted airspace R-6701, which covers a portion of Whidbey Island. This airspace is currently authorized for UAS use.</p>	<p>There would be no impacts to public health and safety under Alternative 3. The same parameters, considerations, and impacts as the No Action Alternative would take place under Alternative 3, with an increased training tempo in Region 1 and additional locations of Regions 2 and 3.</p> <p>Alternative 3 also adds UAS training in Region 2 restricted airspace R-6701, which covers a portion of Whidbey Island. This airspace is currently authorized for UAS use.</p>

Table ES-1: Summary of Potential Impacts on Resource Areas (continued)

Resource Area: Public Health and Safety			
No Action Alternative	Alternative 1	Alternative 2	Alternative 3
<p>Under the No Action Alternative, trainees do not carry loaded weapons or explosives during training events. All personnel transit to and from training areas using existing roads, and waterways in compliance with all applicable safety regulations.</p> <p>All training events on land and within state-owned harbors are conducted in accordance with real estate agreements and approvals. Support staff would ensure a safety buffer would be established around land and maritime training areas, and the NSWC dedicates a vehicle for emergency response during training events.</p>	<p>Potential impacts would not be significant for UAS training because NSWC would coordinate with the Federal Aviation Administration to obtain a Certificate of Authorization for UAS operations. NSWC would operate UASs within the limits of the Certificate of Authorization and issue a Notice to Airmen.</p> <p>Alternative 1 also adds simulated building clearance. The same safety parameters, considerations, and impacts as the No Action Alternative would take place.</p>	<p>Simulated building clearance would be added to Region 2. The same safety parameters, considerations, and impacts as the No Action Alternative would take place.</p>	<p>Simulated building clearance would be added to Region 2. The same safety parameters, considerations, and impacts as the No Action Alternative would take place.</p>

Table ES-1: Summary of Potential Impacts on Resource Areas (continued)

Resource Area: Noise			
No Action Alternative	Alternative 1	Alternative 2	Alternative 3
<p>There would be no significant impacts on the environment due to noise. Training events would continue to be performed with the training objective that the activities be undetected. Independent of location, the amount of noise created by these activities would likely be similar to ambient noise levels or, if above ambient, similar to a general public user of the area and not sufficient enough to affect the community noise levels.</p>	<p>There would be no significant impacts on the environment due to noise.</p> <p>The increase in tempo, location, and UAS activity proposed in Region 1 under Alternative 1 would result in the same parameters, consideration and impacts as presented under the No Action Alternative. The amount of noise created would be similar to ambient noise levels, or if above ambient, similar to a general public user of the area and not sufficient enough to affect the community noise levels.</p>	<p>There would be no significant impacts on the environment due to noise.</p> <p>The increase in tempo, location, personnel, and UAS activity proposed in Region 1, Region 2, and Region 3 would result in the same parameters, consideration and impacts as presented under the No Action Alternative. The amount of noise created would be similar to ambient noise levels, or if above ambient, similar to a general public user of the area and not sufficient enough to affect the community noise levels.</p>	<p>There would be no significant impacts on the environment due to noise.</p> <p>The increase in tempo, location, personnel, and UAS activity proposed in Region 1, Region 2, and Region 3 would result in the same parameters, consideration and impacts as presented under the No Action Alternative. The amount of noise created would be similar to ambient noise levels, or if above ambient, similar to a general public user of the area and not sufficient enough to affect the community noise levels.</p>

Notes: BGEPA = Bald and Golden Eagle Protection Act, EFH = Essential Fish Habitat, ESA = Endangered Species Act, FAA = Federal Aviation Administration; MBTA = Migratory Bird Treaty Act, MMPA=Marine Mammal Protection Act, NWTT EIS/OEIS = Northwest Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement, NWTRC = Northwest Training Range Complex, UAS = Unmanned Aircraft System, U.S. = United States

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Final Environmental Assessment

Naval Special Operations Training in Western Washington State

TABLE OF CONTENTS

1	PURPOSE AND NEED FOR THE PROPOSED ACTION.....	1-1
1.1	Introduction	1-1
1.2	Background	1-2
1.3	Proposed Training Locations.....	1-3
1.4	Purpose of and Need for the Proposed Action	1-4
1.5	Scope of Environmental Analysis	1-5
1.6	Key Documents	1-5
1.7	Public and Agency Participation and Intergovernmental Coordination	1-8
2	DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES.....	2-1
2.1	Proposed Action.....	2-1
2.1.1	Training Activities	2-2
2.1.1.1	Water-Based Training	2-3
2.1.1.2	Land-Based Training Activities.....	2-4
2.1.1.3	Unmanned Aircraft Systems Training Activities	2-6
2.1.2	Training Sites.....	2-6
2.1.3	Training Equipment	2-6
2.2	Training Area Screening Factors	2-8
2.3	Alternatives Development and Alternatives Carried Forward for Analysis	2-9
2.3.1	No Action Alternative	2-10
2.3.2	Alternative 1 – Region 1 Training	2-11
2.3.3	Alternative 2 – Region 1, 2, and 3 Training.....	2-11
2.3.4	Best Management Practices and Standard Operating Procedures	2-12
2.4	Alternatives Considered but not Carried Forward for Detailed Analysis.....	2-16
2.4.1	United States Coast Guard Base Kodiak Island, Alaska	2-17
2.4.2	San Francisco Bay Area, California.....	2-17
2.4.3	Newport, Rhode Island	2-17
3	AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES	3-1
3.1	Socioeconomics.....	3.1-1
3.1.1	Regulatory Setting	3.1-1
3.1.2	Affected Environment.....	3.1-1
3.1.2.1	Transportation and Shipping	3.1-1
3.1.2.2	Commercial and Recreational Fishing	3.1-2

3.1.2.3	Fishing Communities	3.1-3
3.1.2.4	Recreation.....	3.1-3
3.1.2.5	Tourism	3.1-4
3.1.3	Environmental Consequences	3.1-4
3.1.3.1	No Action Alternative	3.1-4
3.1.3.2	Alternative 1	3.1-6
3.1.3.3	Alternative 2	3.1-6
3.1.3.4	Alternative 3 (Preferred Alternative).....	3.1-7
3.2	Cultural Resources	3.2-1
3.2.1	Regulatory Setting	3.2-1
3.2.2	Affected Environment.....	3.2-1
3.2.2.1	Archaeological Resources	3.2-3
3.2.2.2	Architectural Resources.....	3.2-5
3.2.2.3	Traditional Cultural Properties	3.2-12
3.2.3	Environmental Consequences	3.2-12
3.2.3.1	No Action Alternative	3.2-13
3.2.3.2	Alternative 1	3.2-14
3.2.3.3	Alternative 2	3.2-14
3.2.3.4	Alternative 3 (Preferred Alternative).....	3.2-15
3.3	Biological Resources.....	3.3-1
3.3.1	Regulatory Setting	3.3-1
3.3.1.1	Endangered Species Act.....	3.3-1
3.3.1.2	Marine Mammal Protection Act	3.3-1
3.3.1.3	Migratory Bird Treaty Act	3.3-1
3.3.1.4	Bald and Golden Eagle Protection Act.....	3.3-2
3.3.1.5	Magnuson-Stevens Fishery Conservation and Management Act.....	3.3-2
3.3.2	Affected Environment.....	3.3-2
3.3.2.1	Terrestrial Biological Resources.....	3.3-2
3.3.2.2	Aquatic Biological Resources	3.3-4
3.3.2.3	Special Status Species	3.3-11
3.3.3	Environmental Consequences	3.3-37
3.3.3.1	No Action Alternative	3.3-39
3.3.3.2	Alternative 1	3.3-40

3.3.3.3	Alternative 2	3.3-51
3.3.3.4	Alternative 3 (Preferred Alternative).....	3.3-58
3.4	Public Health and Safety	3.4-1
3.4.1	Regulatory Setting	3.4-1
3.4.2	Affected Environment.....	3.4-2
3.4.3	Environmental Consequences	3.4-2
3.4.3.1	No Action Alternative	3.4-3
3.4.3.2	Alternative 1	3.4-5
3.4.3.3	Alternative 2	3.4-6
3.4.3.4	Alternative 3 (Preferred Alternative).....	3.4-7
3.5	Noise	3.5-1
3.5.1	Basics of Sound and A-weighted Sound Level	3.5-1
3.5.2	Affected Environment.....	3.5-1
3.5.2.1	Sensitive Receptors.....	3.5-1
3.5.2.2	Ambient Noise Conditions	3.5-2
3.5.3	Environmental Consequences	3.5-2
3.5.3.1	No Action Alternative	3.5-3
3.5.3.2	Alternative 1	3.5-4
3.5.3.3	Alternative 2	3.5-4
3.5.3.4	Alternative 3 (Preferred Alternative).....	3.5-5
3.6	Summary of Potential Impacts on Resources	3.6-1
3.6.1	No Action Alternative	3.6-1
3.6.2	Alternative 1	3.6-1
3.6.2.1	ESA-Listed Species	3.6-1
3.6.2.2	Critical Habitat	3.6-1
3.6.3	Alternative 2	3.6-1
3.6.3.1	ESA-Listed Species	3.6-1
3.6.3.2	Critical Habitat	3.6-2
3.6.4	Alternative 3	3.6-2
3.6.4.1	ESA-listed Species and Critical Habitats.....	3.6-2

4	CUMULATIVE IMPACTS.....	4-1
4.1	Definition of Cumulative Impacts	4-1
4.2	Scope of Cumulative Impacts Analysis.....	4-2
4.3	Past, Present, and Reasonably Foreseeable Actions	4-2
4.3.1	Other Ongoing Activities.....	4-8
4.3.1.1	Coastal and Marine Spatial Planning	4-8
4.3.1.2	Coastal Land Development and Tourism.....	4-8
4.3.1.3	Commercial and Recreational Fishing	4-9
4.3.1.4	Maritime Traffic.....	4-9
4.3.1.5	Ocean Pollution	4-10
4.3.1.6	Academic Research.....	4-10
4.4	Cumulative Impact Analysis	4-10
4.4.1	Socioeconomics	4-11
4.4.1.1	Description of Geographic Study Area.....	4-11
4.4.1.2	Relevant Past, Present, and Future Actions.....	4-11
4.4.1.3	Cumulative Impact Analysis.....	4-11
4.4.2	Cultural Resources	4-11
4.4.2.1	Description of Geographic Study Area.....	4-11
4.4.2.2	Relevant Past, Present, and Future Actions.....	4-11
4.4.2.3	Cumulative Impact Analysis.....	4-11
4.4.3	Biological Resources	4-12
4.4.3.1	Description of Geographic Study Area.....	4-12
4.4.3.2	Relevant Past, Present, and Future Actions.....	4-12
4.4.3.3	Cumulative Impact Analysis.....	4-12
4.4.4	Public Health and Safety.....	4-14
4.4.4.1	Description of Geographic Study Area.....	4-14
4.4.4.2	Relevant Past, Present, and Future Actions.....	4-14
4.4.4.3	Cumulative Impact Analysis.....	4-14
4.4.5	Noise	4-15
4.4.5.1	Description of Geographic Study Area.....	4-15
4.4.5.2	Relevant Past, Present, and Future Actions.....	4-15
4.4.5.3	Cumulative Impact Analysis.....	4-15

5	OTHER CONSIDERATIONS REQUIRED BY NEPA.....	5-1
5.1	Consistency with Other Federal, State, and Local Laws, Plans, Policies and Requisitions .	5-1
5.1.1	Coastal Zone Management Act	5-4
5.1.2	American Indian Traditional Resources	5-4
5.1.3	National Historic Preservation Act Section 106 Compliance	5-5
5.2	Irreversible or Irretrievable Commitments of Resources	5-9
5.3	Relationship between Short-Term Use of the Environment and Long-Term Productivity	5-10
6	REFERENCES	6-1
7	LIST OF PREPARERS	7-1
8	DISTRIBUTION LIST	8-1

List of Figures

1	Purpose and Need for the Proposed Action	
	Figure 1-1: Examples of Different Construction Environments	1-3
	Figure 1-2: Training Study Area.....	1-6
2	Description of Proposed Action and Alternatives	
	There are no figures in this chapter.	
3	Affected Environment and Environmental Consequences	
	There are no figures in this chapter.	
3.1	Socioeconomics	
	There are no figures in this section.	
3.2	Cultural Resources	
	There are no figures in this section.	
3.3	Biological Resources	
	There are no figures in this section.	
3.4	Public Health and Safety	
	There are no figures in this section.	
3.5	Noise	
	Figure 3.5-1: A-Weighted Sound Levels from Typical Sources.....	3.5-2
3.6	Summary of Potential Impacts to Resources	
	There are no figures in this section.	
4	Cumulative Impacts	
	There are no figures in this chapter.	
5	Other Considerations Required By NEPA	
	There are no figures in this chapter.	
6	References	
	There are no figures in this chapter.	
7	List of Preparers	
	There are no figures in this chapter.	
8	Distribution List	
	There are no figures in this chapter.	

List of Tables

1 Purpose and Need for the Proposed Action

Table 1-1: Proposed State Parks for Training.....	1-4
Table 1-2: Newspapers and Publication Dates	1-9

2 Description of Proposed Action and Alternatives

Table 2-1: Current and Proposed Equipment for Naval Special Operations Training	2-7
Table 2-2: Proposed Training Activities by Alternative.....	2-10
Table 2-3: Proposed Number of Training Blocks and Maximum Potential Site Usage by Alternative	2-11
Table 2-4: Best Management Practices for Naval Special Operations Training.....	2-13
Table 2-5: Relevant Range Operations Procedures for NAVSEA NUWC Keyport Range Complex	2-15

3 Affected Environment and Environmental Consequences

There are no tables in this chapter.

3.1 Socioeconomics

There are no tables in this section.

3.2 Cultural Resources

Table 3.2-1: NRHP Listed/Eligible Archaeological Sites in the Region 2 Training Area.....	3.2-4
Table 3.2-2: NRHP Listed/Eligible Archaeological Sites/Shipwrecks in the Region 3 Training Area	3.2-5
Table 3.2-3: NRHP Listed/Eligible Buildings and Structures in the Region 2 Training Area	3.2-8
Table 3.2-4: NRHP Listed/Eligible Buildings and Structures in the Region 3 Training Area	3.2-11

3.3 Biological Resources

Table 3.3-1: Threatened and Endangered Species Known to Occur or Potentially Occurring in the Training Study Area and Critical Habitat Present in Training Study Area	3.3-12
---	--------

3.4 Public Health and Safety

There are no tables in this section.

3.5 Noise

There are no tables in this section.

3.6 Summary of Potential Impacts to Resources

Table 3.6-1: Summary of Potential Impacts on Resource Areas.....	3.6-3
--	-------

4 Cumulative Impacts

Table 4-1: Cumulative Action Evaluation	4-3
---	-----

5 Other Considerations Required By NEPA

Table 5-1: Executive Orders and Principal Federal and State Laws Applicable to the Proposed Action ...	5-1
--	-----

Acronyms and Abbreviations

Acronym	Definition	Acronym	Definition
µg/m ³	Micrograms per cubic meter	dba	A-Weighted Decibel(s)
ac.	Acre(s)	DE	Determined Eligible
ACQR	Air Quality Control Region	DNL	Day-Night Level
AIRSTA	Air Station	DNR	Department of Natural Resources
APE	Area of Potential Effect	DoD	Department of Defense
ATC	Air Traffic Control	DPS	Distinct Population Segment
BGEPA	Bald and Golden Eagle Protection Act	DPSPHD	Deception Pass State Park Historic District
BMP	Best Management Practice	EA	Environmental Assessment
BP	Before Present	EFH	Essential Fish Habitat
CAA	Clean Air Act	EIS	Environmental Impact Statement
CATEX	Categorical Exclusion	EO	Executive Order
CDHD	Cape Disappointment Historic District	ESA	Endangered Species Act
CEQ	Council on Environmental Quality	ESU	Evolutionary Significant Unit
CFR	Code of Federal Regulations	FAA	Federal Aviation Administration
CO	Carbon Monoxide	FR	Federal Register
CO ₂	Carbon Dioxide	ft.	Foot/feet
CO ₂ e	Carbon Dioxide equivalent	ft. ²	Square feet
COMNAVREGNW	Commander, Navy Region Northwest	FY	Fiscal Year
CP	Chinook Point	GHG	Greenhouse Gas
CRRC	Combat Rubber Reconnaissance Craft	HAP	Hazardous Air Pollutant
CWIHD	Central Whidbey Island Historic District	Hz	Hertz
D/S	Diver/Swimmer	IHA	Incidental Harassment Authorization
DAHP	Department of Archaeology and Historic Preservation	in.	Inch(es)
dB	Decibel(s)	km	Kilometer(s)
		km ²	Square kilometer(s)
		L _{eq}	Equivalent Sound Level

Acronym	Definition	Acronym	Definition
L _{max}	Maximum A-Weighted Sound Level	NM	Nautical Mile(s)
LWD	Large Woody Debris	NMFS	National Marine Fisheries Service
MBTA	Migratory Bird Treaty Act	NO ₂	Nitrogen Dioxide
MEM	Military Expended Material	NOAA	National Oceanic and Atmospheric Administration
mi.	Mile(s)	NOTAM	Notice to Airmen
mi. ²	Square mile(s)	NOTMAR	Notice to Mariners
MMA	Mission Maritime Aircraft	NO _x	Nitrogen Oxide
MMPA	Marine Mammal Protection Act	NRHP	National Register of Historic Places
MOA	Military Operations Area	NSW	Naval Special Warfare
mph	Miles per hour	NSWC	Naval Special Warfare Command
MSAT	Mobile Source Air Toxic	NUWC	Naval Undersea Warfare Center
NAAQS	National Ambient Air Quality Standards	NWIFC	Northwest Indian Fisheries Commission
NAGPRA	Native American Graves Protection and Repatriation Act	NWTRC	Northwest Training Range Complex
NAS	Naval Air Station	NWTT	Northwest Training and Testing
NAVBASE	Naval Base	OEIS	Overseas Environmental Impact Statement
NAVMAAG	Naval Magazine	OPAREA	Operating Area
NAVSTA	Naval Station	Pb	Lead
Navy	United States Department of the Navy	PCE	Primary Constituent Element
NCO	Noncommissioned Officers	PM _{2.5}	Particulate matter less than or equal to 2.5 microns in diameter
NEPA	National Environmental Policy Act	PM ₁₀	Particulate matter less than or equal to 10 microns in diameter
NHL	National Historic Landmark	ppm	Parts per million
NHPA	National Historic Preservation Act	PSD	Prevention of Significant Deterioration
NIPTS	Noise Induced Permanent Threshold Shift		

Acronym	Definition	Acronym	Definition
R	Restricted Area	U&A	Usual and Accustomed
ROD	Record of Decision		
ROI	Region of Influence	U.S.	United States
ROV	Remote Operated Vehicle	U.S.C.	United States Code
		UAS	Unmanned Aircraft System
SBHD	Seaplane Base Historic District	USCG	U.S. Coast Guard
SECNAVINST	Secretary of the Navy Instruction	USEPA	U.S. Environmental Protection Agency
SFO	Sector Field Office	USSOCOM	U.S. Special Operations Command
SHPO	State Historic Preservation Office		
SIP	State Implementation Plan	USFWS	U.S. Fish and Wildlife Service
SO ₂	Sulfur Dioxide	UUV	Unmanned Underwater Vehicle
SPBHD	Seaplane Base Historic District	VAQ	Electronic Attack Squadron
TCP	Traditional Cultural Property	VHHD	Victory Homes Historic District
tpy	Tons per year	VOC	Volatile Organic Compound
		WWII	World War II

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1 Purpose and Need for the Proposed Action

1.1 Introduction

The United States (U.S.) Naval Special Warfare Command (NSWC) proposes to conduct small-unit intermediate and advanced land and cold-water maritime training activities for naval special operations personnel. U.S. Naval Special Warfare Command is the U.S. Navy's special operations force and the maritime component of the U.S. Special Operations Command (USSOCOM). The proposed training activities consist of training by naval special operations personnel with occasional integration of other USSOCOM components, including United States Army Special Operations Command, Marine Corps Special Operations Command, Air Force Special Operations Command, and Joint Special Operations Command. The occasional integration of other USSOCOM components would occur only with NSWC-led training. The proposed training would occur on selected nearshore lands and in the inland waters of Puget Sound, including Hood Canal, as well as the southwestern Washington coast. The NSWC has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA), as implemented by Council on Environmental Quality (CEQ) and Navy regulations.

The intent of the proposed training is to build trainees' skills, experience, and confidence by challenging them in a location with dynamic weather and land/cold-water conditions. As part of the rigorous training, the trainees learn skills needed to avoid detection along with the goal of leaving no trace of their presence during or after training activities. Proposed training activities broadly fit into two categories: water-based training and land-based training. Water-based training generally includes naval special operations personnel diving/swimming, launching/recovering small vehicles designed to operate underwater (submersible) as discreet activities, or in combination. Water-based training may also incorporate inserting and extracting naval special operations personnel and/or equipment using watercraft as part of a training event and prior to performing a land-based training component. Land-based training would include personnel transiting over the beach on foot, simulating building clearance activities using simulated munitions in a few selected sites, high angle climbing would occur at Deception Pass State Park, and using observation techniques in a pre-arranged scenario (special reconnaissance operations). Naval special operations training would include the use of unmanned aircraft systems during no more than 10 percent of the time training is taking place. Section 2.1.1 (Training Activities) of the EA provides greater detail on the proposed training activities. The Proposed Action would not include the use of live-fire ammunition, explosive demolitions, off-road driving, manned air operations, digging, vegetation cutting or removal, tree climbing, or the building of campfires or infrastructure.

The proposed training in western Washington State would involve naval special operations trainees and support personnel for each training block. Naval special operations personnel would travel from their home-based areas to western Washington State to conduct cold-water maritime and land-based training. During a training block, trainees would conduct a variety of activities supporting training requirements. Training would occur on an as-needed basis up to six training blocks a year, depending on the alternative selected. Training would occur on both federal and non-federal properties within western Washington State. As the trainees progress in their training, subsequent training requirements are identified and scheduled, sites included in this EA would be selected based on the type of training to be conducted, ability of a site to support and facilitate the training, and pending receipt of real estate agreements/right-of-entry permits. For example, some locations would not be used for training during certain times of the year when weather, currents, scheduled public events or protected species concerns are present. Other sites may not be used at all during a given year and still yet, other sites may

be used intermittently throughout a year. The size of the study area allows for this flexibility which also helps to prevent overuse. Site selection is also based on the availability of a site at the time the training would be scheduled to occur. Support staff would typically visit a site prior to the training event to ensure there is minimal public in the area; if the public is present, the safety support personnel will assess the situation and, based upon safety considerations of all, they will either not start the training, continue the training, temporarily suspend the training, completely stop the training, or relocate the training to another approved training site.

This EA also supports Naval Facilities Engineering Command Northwest obtaining appropriate real-estate agreements or right-of-entry permits, on behalf of NSWC, for the proposed training areas located off federal property. No training would occur on non-federal property until the required real estate agreement or right of entry permit is obtained. For safety and coordination purposes, land managers of public property and owners of private property, where training has been authorized, would typically be contacted 24 hours in advance of training. Local law enforcement personnel would also be contacted for safety purposes. Naval Facilities Engineering Command Northwest will coordinate any required real estate agreements/right-of-entry permits.

1.2 Background

Naval special operations personnel have been training in certain areas of the Pacific Northwest for decades. Western Washington State is considered by NSWC as an important training location due to the Puget Sound, including Hood Canal, and the southwestern Washington coast offering unique hydrographic and bathymetric conditions, which create opportunities for realistic and challenging special operations training in a safe, sheltered, cold-water environment. The presence of other Navy forces in western Washington State affords superior logistics to support and secure the necessary equipment employed during training activities and enables a high degree of safety due to the proximity of critical Navy facilities.

The potential environmental impacts of water-based naval special operations training activities conducted at the unit level within offshore (coastal) and inland waters were evaluated in the 2015 Northwest Training and Testing (NWTT) Final Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS), dated October 2015, and Record of Decision signed on October 31, 2016. The NWTT Final EIS/OEIS included water-based training activities that did not have a land-based component. Additionally, NWTT only provided environmental coverage for Naval Special Warfare “Personnel Insertion/Extraction-Submersible” at five locations and it did not include activities inside the 3 nautical mile (NM) limit from Westport to the Columbia river. The 2010 Northwest Training Range Complex (NWTRC) EIS/OEIS, and Record of Decision signed on October 10, 2010, evaluated “NSW (Naval Special Warfare) Training” from Port Townsend marina to Naval Magazine Indian Island. This training was twice a year for up to three weeks. It included land-based activities (over the beach and special reconnaissance) and limited water-based activities (launch and recovery from Port Townsend, Insertion and Extraction and Diver/Simmer). The NWTT and the NWTRC EIS/OEISs do not cover the full range of activities, locations, and duration needed, or provide the diversity required of naval special operations personnel. This EA will supersede the same Naval Special Warfare activities (“Personnel Insertion/Extraction-Submersible” and “NSW Training”) identified in the NWTT EIS/OEIS and NWTRC EIS/OEIS, respectively.

Naval special operations personnel need the flexibility to conduct training that incorporates both land-based and cold-water-based training activities. This EA addresses cold water and land-based naval special operations training, which have associated real estate agreements or right-of-entry permit

access requirements. Real estate, or right of entry requirements, would not typically be required for activities conducted exclusively within coastal or federal waters, such as insertion/extraction and diver/swimmer activities.

Current naval special operations training activities have occurred within public, private, and federal property in western Washington State and have been limited to individual events at a select number of sites. Prior to these training activities occurring, these sites were reviewed under NEPA and found to qualify for a categorical exclusion under Navy regulation. No training occurs without prior permission from the landowner and completion of the NEPA process. NSWC has determined that the current selection of sites is not sufficiently varied and diverse to support long-term training requirements.

Naval special operations training needs to be conducted in various environments for trainees to experience, grow, and master their skill sets before progressing to advanced training environments, and then deploying on missions. When trainees repeatedly use the same site for training, site familiarity negates the quality and value of the training being conducted. NSWC recognizes the need for relevant training and experience to adequately prepare personnel for world-wide deployments. This includes training in realistic environments. Military construction on bases looks and is different than construction found in the outside world (Figure 1-1). Because the nature of naval special operations requires them to operate world-wide, often times off military installations, it is imperative that their training provides this diversity and replicates real world environments.



Photo by Joe Mabel

Photo courtesy of Washington State Parks

Photo by PSNS & IMF

Figure 1-1: Examples of Different Construction Environments

1.3 Proposed Training Locations

To facilitate naval special operations training in a variety of environments, proposed training areas have been identified in western Washington State for cold-water and land-based training. The training study area is located in the Puget Sound, including Hood Canal, and the southwestern Washington coast. Three general regions are contained within the training study area: Region 1, an area within one hour of Keyport; Region 2, an area around Whidbey Island, Port of Anacortes, Discovery Bay, and Sequim; and Region 3, an area along the southwestern Washington Coast (Figure 1-2). Training activities would occur on Navy installations, state parks (Table 1-1), public properties, and private properties if appropriate approvals are granted. Training locations would vary due to seasonal weather conditions, public presence at sites, protected species considerations, training qualifications to be satisfied, and training requirements. If selecting a particular non-federal site for a potential training event, communication with individual public property managers or private property owners would be conducted as appropriate to establish or confirm real estate agreements to allow for training activities to be conducted.

Having a varied selection of sites in an expansive area provides trainers with flexibility to select increasingly complex and challenging locations in order to meet training requirements. Additionally, a

wider selection of training sites minimizes the potential for overuse of the areas. This also limits impacts to any one location and allows for maintaining the natural habitat. Training value can be degraded when the same activities are routinely conducted using the same sites. Figure 1-2 shows the training study area and associated regions.

Table 1-1: Proposed State Parks for Training

Blake Island	Fort Townsend State Park	Scenic Beach
Cama Beach State Park	Fort Worden State Park	Sequim Bay State Park
Camano Island State Park	Grayland Beach State Park ¹	Shine Tidelands State Park
Cape Disappointment State Park	Hope Island State Park	Skagit Island
Deception Pass State Park	Illahee State Park	South Whidbey State Park
Dosewallips State Park	Joseph Whidbey State Park	Triton Cove Ramp
Fort Casey State Park	Leadbetter Point State Park ¹	Twin Harbors State Park
Fort Columbia State Park	Manchester State Park	Westhaven State Park
Fort Ebey State Park	Mystery Bay State Park	Westport Light State Park
Fort Flagler	Pacific Pines State Park	

¹ Leadbetter Point and Grayland Beach State Parks will be avoided during the time frame of March 15–September 15 due to nesting seasons for snowy plovers and streaked horned larks.

1.4 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to support intermediate and advanced small-unit activities of naval special operations training, with the progression of training in increasingly complex maritime and land environments, focusing on the training progression in a cold-water environment that is appropriate for training in any season. The training would involve activities of personnel to further develop and sustain a set of skills in the maritime and land aspects of Navy special operations in a cold-water environment. The Proposed Action is needed to support meeting the requirements of 10 United States Code (U.S.C.) section 167 for the Commander, U.S. Special Operations Command to provide combat-ready, forward deployed forces.

The skills needed to achieve peak military readiness for special operations are challenging to master and difficult to maintain without constant practice. Therefore, training must be diverse, and as realistic as possible in order to prepare U.S. service members to successfully accomplish future missions

Title 10, U.S.C., section 167 assigns U.S. Special Operations Command, a unified combatant command, responsibility to prepare combat ready, forward-deployed special operations forces to carry out assigned missions. Per USSOCOM Directive 10-1cc, U.S. Special Operations Command has designated Commander, NSWC, the Navy component command of U.S. Special Operations Command, as the Lead Component for maritime training. Per Chief of Naval Operations Instruction 5450.221D, the mission of NSWC is to “organize, train, man, equip, educate, sustain, maintain combat readiness, and deploy” special operations forces. The Proposed Action meets the requirements of 10 U.S.C. 167 and NSWC’s mission of providing combat-ready special operations forces.

and ensure their success and survival. Current cold-water naval special operations training being conducted in western Washington State does not provide sufficiently varied and diverse training locations or physical environmental features, and lacks elements of unpredictability and unfamiliarity, both of which are essential to prepare personnel for more advanced training environments and real-world combat operations in support of U.S. interests.

Having a varied selection of federal, public, and private property sites in an extensive area would provide trainers with diversity and flexibility in selecting increasingly complex and challenging sites in order to meet unique individual and group training requirements. This additional diversity and flexibility in training locations would ensure that training requirements could be satisfied, even if a selected training site is not available at a scheduled time (e.g., due to weather conditions, large number of public in the area, or protected species considerations). The ability to select from a diverse set of non-military sites would also introduce the critical elements of unpredictability and unfamiliarity, helping to further prepare naval special operations trainees for real-world combat scenarios.

1.5 Scope of Environmental Analysis

This EA includes an analysis of potential environmental impacts associated with the action alternatives and the No Action Alternative. The environmental resource areas analyzed in this EA include socioeconomics (including recreation and tourism), cultural resources, biological resources, public health and safety, and noise. The training study area for each resource analyzed may differ due to how the Proposed Action potentially interacts with or impacts the resource.

1.6 Key Documents

Key documents are sources of information incorporated into this EA. Documents are considered to be key because of similar actions, analyses, or impacts that may apply to this Proposed Action. CEQ guidance encourages incorporating documents by reference. Documents incorporated by reference in part or in whole include:

- NWTRC EIS/OEIS, October 2010. The NWTRC EIS/OEIS detailed actions to support current, emerging, and future training, as well as research, development, test, and evaluation activities within the NWTRC, including implementation of range enhancements. These actions included increasing the number of training activities, operating air and surface target services for locally based units, developing additional electronic threat signal simulators, and developing a small-scale training minefield off the coast of Washington. The naval special operations training that was analyzed in the EIS/OEIS is similar to what is proposed in this EA and included “NSW (Naval Special Warfare) Training” from Port Townsend marina to Naval Magazine Indian Island. This training was twice a year for up to three weeks. It included land-based activities (over the beach and special reconnaissance) and limited water-based activities (launch and recovery from Port Townsend, Insertion and Extraction and Diver/Swimmer).
- NWTT EIS/OEIS, October 2015. The Navy’s Proposed Action was to conduct training and testing activities primarily within the existing NWTRC and Naval Undersea Warfare Center range complex operating areas and testing ranges located in the Pacific Northwest of the United States, to include portions of the Strait of Juan de Fuca, Puget Sound, and the Western Behm Canal in southeastern Alaska. The naval special operations training analyzed in the EIS/OEIS similar to what is proposed in this EA as “Personnel Insertion/Extraction-Submersible.” It covered the use of small submersibles in five areas (Dabob Range Complex, Keyport Range Site, Naval Magazine Indian Island, Crescent Harbor, and Navy 7 operating area), as well as the routes

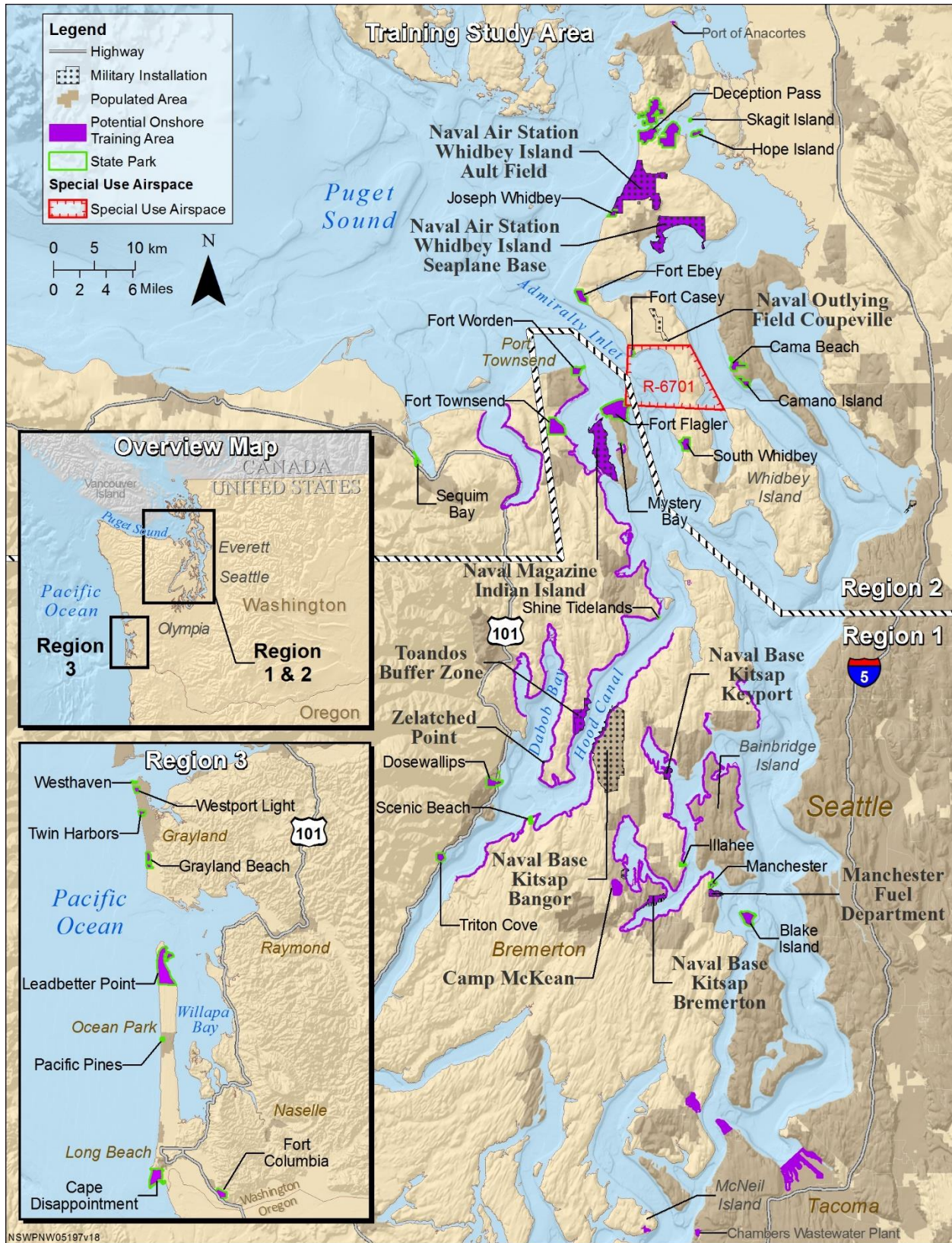


Figure 1-2: Training Study Area

between these locations. The activity analysis was limited to in-water activities and did not involve a land component. The submersible proposed for use in this current EA would operate in the same five locations addressed in the NWTT EIS/OEIS, plus additional locations. The notice of intent for a supplement to the NWTT EIS/OEIS was published August 22, 2017. However, the naval special warfare activities proposed in this EA are not included in the NWTT EIS/OEIS Supplement.

Relevant Laws and Regulations

The Navy has prepared this EA based upon federal and state laws, statutes, regulations, and policies that are pertinent to the implementation of the Proposed Action, including the following:

- NEPA (42 U.S.C. sections 4321–4370h), which requires an environmental analysis for major federal actions that have the potential to significantly impact the quality of the human environment
- CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] parts 1500–1508)
- Navy regulations for implementing NEPA (32 CFR part 775), which provides Navy policy for implementing CEQ regulations and NEPA
- Antiquities Act (16 U.S.C. sections 431–433)
- Bald and Golden Eagle Protection Act (16 U.S.C. section 668 et seq.)
- Clean Air Act (42 U.S.C. section 7401 et seq.)
- Clean Water Act (33 U.S.C. section 1251 et seq.)
- Rivers and Harbors Act (33 U.S.C. section 407)
- Coastal Zone Management Act (16 U.S.C. section 1451 et seq.)
- National Historic Preservation Act (54 U.S.C. section 306108 et seq.)
- Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 et seq.)
- State of Washington Cultural Resource Laws
 - Indian Graves and Records (Revised Code of Washington [RCW] 27.44)
 - Archaeological Sites and Resources (RCW 27.53)
 - Abandoned and Historic Cemeteries and Historic Graves (RCW 68.60)
 - Archaeological Site Public Disclosure Exemption (RCW 42.56.300)
 - Discovery of Human Remains (RCW 68.50)
- Endangered Species Act (16 U.S.C. section 1531 et seq.)
- Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (16 U.S.C. section 1801 et seq.)
- Marine Mammal Protection Act (16 U.S.C. section 1361 et seq.)
- Migratory Bird Treaty Act (16 U.S.C. section 703–712)
- Comprehensive Environmental Response and Liability Act (CERCLA) (42 U.S.C. section 9601 et seq.)
- Resource Conservation and Recovery Act (42 U.S.C. section 6901 et seq.)
- Farmland Protection Policy Act (7 U.S.C. sections 4201-4209)

- Submerged Lands Act of 1953(43 U.S.C. sections 1301–1315)
- Sunken Military Craft Act (Public Law 108–375, 10 U.S.C. section 113 Note and 118 Stat. 2094–2098)
- Executive Order (EO) 12088, Federal Compliance with Pollution Control Standards
- EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations
- EO 13045, Protection of Children from Environmental Health Risks and Safety Risks
- EO 13175, Consultation and Coordination with Indian Tribal Governments
- EO 13783, On Promoting Energy Independence and Economic Growth

A description of the Proposed Action’s consistency with these laws, policies, and regulations, as well as the names of regulatory agencies responsible for their implementation, is presented in Chapter 5 (Table 5-1).

1.7 Public and Agency Participation and Intergovernmental Coordination

Public Participation

The CEQ regulations implementing NEPA (40 CFR part 1506.6) direct agencies to involve the public in preparing and implementing their NEPA procedures. NSWC welcomed public and agency comments during an early outreach period from April 18, 2017, through May 18, 2017. Early outreach meetings were held on May 2, 3, and 4, 2017, in Poulsbo, Port Townsend and Oak Harbor, Washington. Information received during the early outreach period was considered in preparing the EA.

NSWC published a Notice of Availability of the Draft EA for three consecutive publications in the Anacortes American, Chinook Observer, Kitsap Sun, Peninsula Daily News, and Whidbey News-Times, and for two publications in the Port Townsend and Jefferson County Leader and the Tacoma Weekly, from January 22 through February 7, 2018. The notice described the Proposed Action, solicited public comments on the Draft EA, provided dates of the public comment period, announced the public meeting locations and dates, and announced that a copy of the EA would be available for review at the following public libraries: Anacortes Public Library, Bainbridge Public Library, Gig Harbor Library, Kitsap Regional Library – Poulsbo, Oak Harbor Public Library, Port Townsend Public Library, Sequim Branch Library, Tacoma Public Library – Main Branch, Timberland Regional Library – Ilwaco, and Timberland Regional Library – Westport. In addition, a digital copy of the EA was made available at <https://navfac.navy.mil/NSOEA>.

NSWC circulated the Draft EA for public review and comment from January 22, 2018 to February 21, 2018. However, due to public requests, as well as requests from the Governor’s office and congressional delegates for an extension on the comment period, the Navy extended the comment period an additional 30 days to March 23, 2018. Prior to the release of the Draft EA, NSWC prepared materials to notify the public of its release, as well as to provide information about the Proposed Action, the public meetings, and the opportunity for the public to submit comments on the Draft EA. Additional notifications were disseminated to inform the public of an extension of the comment period.

Newspaper Advertisements

Display advertisements were published in local and regional newspapers for a total of three times (except for the Port Townsend and Jefferson County Leader and Tacoma Weekly, which ran twice), beginning on January 22, 2018, and through February 7, 2018. Publication dates were dependent on the

newspaper’s publication frequency (e.g., daily, semi-weekly, weekly). Advertisements were published in the following newspapers on the corresponding publication dates identified in Table 1-2.

Table 1-2: Newspapers and Publication Dates

Newspaper	Public Meeting Location and Date	Newspaper Coverage	Publication Dates
Anacortes American	Oak Harbor, WA Thursday, February 8, 2018	Anacortes, WA Fidalgo Island, WA Skagit County, WA	Wednesday, January 24, 2018 Wednesday, January 31, 2018 Wednesday, February 7, 2018
Chinook Observer	Not applicable. Newspaper covers areas near where proposed training may occur in Pacific County, WA. All meetings are north of the newspaper’s circulation area.	Bay Center, WA Chinook, WA Ilwaco, WA Long Beach, WA Nahcotta, WA Naselle, WA Ocean Park, WA Oysterville, WA Seaview, WA Surfside, WA	Wednesday, January 24, 2018 Wednesday, January 31, 2018 Wednesday, February 7, 2018
The Kitsap Sun	Poulsbo, WA Tuesday, February 6, 2018	Kitsap County, WA	Monday, January 22, 2018 Tuesday, January 23, 2018 Wednesday, January 24, 2018
Peninsula Daily News	Port Townsend, WA Wednesday, February 7, 2018	Clallam County, WA Jefferson County, WA	Monday, January 22, 2018 Tuesday, January 23, 2018 Wednesday, January 24, 2018
Port Townsend and Jefferson County Leader	Port Townsend, WA Wednesday, February 7, 2018	Jefferson County, WA	Wednesday, January 24, 2018 Wednesday, January 31, 2018
Tacoma Weekly	Poulsbo, WA Tuesday, February 6, 2018	Pierce County, WA	Friday, January 26, 2018 Friday, February 2, 2018
Whidbey News- Times	Oak Harbor, WA Thursday, February 8, 2018	Island County, WA	Wednesday, January 24, 2018 Saturday, January 27, 2018 Wednesday, January 31, 2018

Postcard Mailers

A postcard was mailed first-class to 241 individuals; federal, state, and local legislative staffers; state and local agencies; federally recognized tribes and tribal groups and organizations; nongovernmental organizations; community and business groups; media; fishing and recreational groups or marinas; research/universities; and libraries on January 19, 2018. Five postcards were returned to sender, and the mailing list was updated accordingly.

Tribal and Stakeholder Notification Letters

Stakeholder letters were mailed on January 19, 2018, to 143 federal, state, and local elected officials and government agencies. A hard copy of the Draft EA was sent to eight stakeholder letter recipients. Tribal letters were emailed to select tribes on January 22, 2018. Hard copy letters, which included a copy of the Draft EA on CD-ROM, were mailed on January 24, 2018, to 16 tribal chairpersons of federally recognized tribes who have usual and accustomed hunting and fishing grounds in the Study Area.

Postcard mailers were sent to all the other tribal points of contact, which included tribal chairpersons and staff of federally recognized tribes in Oregon and Washington and also tribal groups and organizations. Please see Section 5.1.3 and Appendix B for further information.

News Releases and Media Outlets

Deputy Public Affairs Officer, Commander, Navy Region Northwest distributed a news release to local and regional media outlets on January 23, 2018. A corrected news release, containing corrected information repository names and addresses, was distributed to the Port Townsend and Jefferson County Leader on January 29, 2018, and to remaining media outlets on February 2, 2018. An additional news release was distributed on February 21, 2018 announcing the comment period extension.

PUBLIC INFORMATION

Navy Public Website

A project-specific website was not developed for this EA; however, information was hosted on the Navy's existing Naval Facilities Engineering Command Northwest public website, and became available to the public on January 19, 2018. The website provided the public with project information and public meeting and commenting information. The Draft EA, fact sheet handout, posters, and other public involvement information were posted on the website. The website was periodically updated with project announcements. The website address is <https://navfac.navy.mil/NSOEA>.

Public Meetings

NSWC held three public meetings from February 6, 2018, through February 8, 2018, at (1) North Kitsap High School, Poulsbo, WA; (2) Blue Heron School, Port Townsend, WA; and (3) Oak Harbor School District, ASC Board Boom, Oak Harbor, WA. Each public meeting included informational poster stations and a video station staffed by NSWC and Navy representatives. Members of the public could arrive at any time during the event and each meeting was three hours in duration. Staff at the welcome station greeted guests and encouraged meeting attendees to sign in and be added to the project mailing list. A fact sheet handout and comment form were provided to attendees, along with verbal direction on the general flow of the poster stations and commenting methods.

Stations were set up around the room offering visual poster displays, a project video, fact sheet handouts, and comment forms. Subject matter experts staffed each station to answer questions and provide project information.

A comment station with tables, chairs, pens, and comment forms were provided to facilitate the public completing and submitting written comments at the meeting. A certified court reporter also was available to record one-on-one oral comments. Individuals could submit completed comment forms at the meetings, by mail, or via email.

Posters

Eight posters were developed and included the following topics:

- Welcome
- Proposed Training Activities
- Proposed Training Locations
- Importance of Training in the Pacific Northwest
- Alternatives
- National Historic Preservation Act Section 106 Consultation Process
- NEPA Process and Timeline

- Draft EA Analysis

The posters were on display during the public meetings and posted on the Navy public website.

Fact Sheet Handout

A four-page fact sheet handout was developed to provide project information to the public and included the following topics:

- Introduction to the Draft EA
- Proposed Action
- Intent of the Proposed Training
- Proposed Training Locations
- Summary of Alternatives
- Summary of Draft EA Analysis
- NEPA Process and Public Involvement
- National Historic Preservation Act Section 106 Consultation
- How to Submit Comments

The fact sheet booklet was distributed at briefings and public meetings, and posted on the Navy public website.

Handouts

A comment form was distributed to public meeting attendees. The comment form allowed attendees to submit written comments at the meeting or return it via postal mail or email any time during the comment period. A sign-in sheet was available at the welcome table for meeting attendees to sign-in and request to be added to the project mailing list.

Media Kits

Media kits were prepared to provide the media with project information in one convenient packet and included the fact sheet handout, copy of a stakeholder letter, news release, and display advertisement. Persons identifying themselves as media at the public meetings received a media kit.

Project Video

An approximately 4-minute video, produced by NSWC, was shown at the public meetings and emphasized the importance of naval special operations training. The video was shown on a laptop and was available with headphones.

Meeting Summary

Over 185 people attended the three public meetings held from February 6, 2018, through February 8, 2018, throughout western Washington.

Agency Participation

The Navy, on behalf of NSWC, consulted with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Environmental Protection Agency, Washington State Department of Ecology for Coastal Zone Management Act compliance, and the State Historic Preservation Office regarding the Preferred Alternative.

In accordance with Endangered Species Act Section 7, the Navy prepared a Biological Assessment (see Appendix A). On May 11, 2018, the Navy initiated informal consultation with National Marine Fisheries Service regarding potential effects of the Preferred Alternative and they concurred with a may affect,

not likely to adversely affect determination on October 2, 2018 (Appendix B). On May 11, 2018, the Navy also initiated informal consultation with U.S. Fish and Wildlife Service and they concurred with a may affect, not likely to adversely affect determination on November 28, 2018 (Appendix B).

The Navy sent letters as a courtesy to U.S. Environmental Protection Agency for the early outreach meetings and the draft EA. No response was received from the agency.

On August 13, 2018, the Navy submitted a consistency determination to the Washington State Department of Ecology in compliance with the Coastal Zone Management Act. On September 28, 2018, Washington State Department of Ecology concurred with the Navy's consistency determination.

The Navy initiated the National Historic Preservation Act Section 106 consultation process with the Advisory Council on Historic Preservation, Washington State Historic Preservation Officer, tribes, and key stakeholders in April 2017 (Appendix B). Consultation concluded on July 23, 2019. See Section 5.1.3 for more detailed information.

Tribal Coordination

On April 12, 2017, the Navy provided early notification and solicited input from 16 tribes that have usual and accustomed fishing grounds and stations in the training study area (Appendix B). On January 22, 2018, the Navy provided the Draft EA to these same tribes. Three tribes requested additional information through the government-to-government process: Jamestown S'Klallam Tribe, Port Gamble S'Klallam Tribe, and the Suquamish Tribe. One government-to-government consultation was held with the Suquamish Tribe. Staff level meetings were held with each of the three tribes. Consultations are concluded. See Section 5.1.2 and Appendix B for more information.

Twenty-five tribes were also consulted as part of the National Historic Preservation Act Section 106 process. Twenty-two are federally recognized tribes and three are not. See Section 5.1.3 and Appendix B for more information.

2 Description of Proposed Action and Alternatives

2.1 Proposed Action

The Naval Special Warfare Command (NSWC) proposes to conduct small-unit intermediate and advanced cold-water maritime and land training activities for naval special operations personnel in the coastal and inland waters, and adjoining shore environments of western Washington State. The proposed training would consist of:

- Diving and swimming
- Inserting and extracting trainees and/or equipment using watercraft (including submersible craft)
- Launching and recovering watercraft (including submersible craft)
- Using unmanned underwater vehicles
- Moving on foot over the beach
- Hiking to an observation point and using observation techniques on military role players while remaining hidden
- Simulated building clearance training involves clearing areas/structures using paint pellets as simulated munitions (pellets emit a splash of paint the circumference of a dime and are used only in limited locations). Simulated building clearance training would only be conducted on military property or sites that the public does not visit; as such, simulated building clearance would not be conducted in state parks.
- Conducting high-angle climbing (negotiating cliffs, rock faces, and other vertical challenges)
- Using small unmanned aircraft systems

Systems used during training may include unmanned aircraft systems (UAS), and submersible craft such as manned or unmanned underwater vehicles (UUV) and other personal underwater propulsion devices. Trainees may also utilize equipment such as a remote operated vehicle (ROV) which can operate on or below the surface of the water and provides the operator with real-time feedback of underwater conditions. Vessels such as small ships, jet skis, or small boats may be used in conjunction with training systems during certain training scenarios, as well as for safety and training support.

Training in western Washington State would be conducted in training blocks. A training block is defined as the 2–8-week period of time where up to 84 naval special operations trainees and support personnel (safety observers, medical support, boat drivers, vehicle drivers, evaluators, and equipment repair/maintenance support) arrive in western Washington State to participate in cold-water maritime and land-based training and ends when they leave. A training block consists of single or multiple simultaneous training events (described below) on land and in the water. During a training block, trainees and support personnel would disperse throughout the training study area (Figure 1-2); not all 84 personnel would be at one site for a training event.

A training event (a component of a training block) may consist of one or multiple training activities (e.g., launch and recovery, diver/swimmer, over the beach). During a typical training event, there would be up to eight trainees and up to 26 support personnel (or up to 34 people in total) at a training site within the training study area. In a few instances, there could be up to 14 trainees; however, total personnel would not exceed 34. Support personnel would be divided up to assist the in-water training activity and the

on-land training activity. It is assumed for purposes of analysis that not all 34 personnel would be in the water or on land at any given time because they would be dispersed between the two areas. Training events are progressive in nature and would range between 2 and 72 hours depending on the activity.

The intent of the proposed training is to build trainees' skills, experience, and confidence by challenging them in a location with dynamic weather and land/cold-water conditions. As part of the rigorous training, the trainees learn skills needed to avoid detection along with the goal of leaving no trace of their presence during or after training activities. To support the intent of the training, there is no use of live-fire ammunition, explosives, manned air operations, off-road driving, vegetation removal or cutting, digging, tree climbing, construction, or the building of camp fires or infrastructure. There is no requirement to assemble training devices or structures at any site. The training in and around existing military facilities or other facilities designated for simulated building clearance training activities would include the use of simulated weapons that use water-soluble paint pellets. The proposed training would occur on selected nearshore lands and in the inland waters of Puget Sound, including Hood Canal, as well as the southwestern Washington coast.

As specific training activities are scheduled, compatible sites within the training study area would be selected to support each training event. To sustain the highest level of training value and avoid trainee familiarity with specific sites, site selections are made to create the most challenges for the trainees and be responsive to training needs. Not all sites within the training study area would be utilized over a one-year period. Depending on the selected alternative, a site would be used no more than three to 36 times a year (see Table 2-2). Site selection would also consider cultural and biological resource site conditions (i.e., scheduled public events or protected species considerations).

Once in western Washington State, there is minimal travel of personnel and equipment from the staging area at Naval Base Kitsap Keyport to the individual training sites. This travel is incorporated into the overall training scenario. Personnel would utilize government and public waterways and roads, and travel may include military support vehicles towing small boats as well as the movement of safety and maintenance equipment. It could also include transportation of military personnel involved in the safety and training phases of the event. Waterborne transportation would similarly include the movement of training vessels (such as small surface support vessels or small boats from Naval Base Kitsap Keyport/Bangor/Bremerton), safety equipment, and military personnel from the staging base to the event location. Typically, submersibles are launched from boat ramps near the site where training activities are scheduled.

2.1.1 Training Activities

The training activities associated with the Proposed Action are described in detail below and broadly fit into two categories: water-based training and land-based training. Training activities can occur in the water or on the land and would occur at designated sites and facilities within a particular region (i.e., Region 1) in order to support the objectives and requirements associated with the training activity. To meet training objectives, training activities may be single, distinct events or they may be combined together sequentially. A generic example would be the submersible or small boat would launch from a boat ramp (launch and recovery), the vessels would travel to the training locations (the insertion part of insertion/extraction); trainees would exit the vessel and swim to the objective area (diver/swimmer); trainees observing the surrounding area; and, when conditions are met, proceeding ashore (over-the-beach). Once onshore, trainees would focus on observing a specific site or a specific individual who is a part of the support personnel (special reconnaissance), and upon completion of the on-land training

objectives, trainees would reenter the water, swim to the extraction point (diver/swimmer), be extracted from the water (the extraction part of insertion/extraction). The vessel would then return to the boat ramp and be placed on a trailer to go back to NAVBASE Kitsap Keyport (recovery portion of launch and recovery). Trainees may utilize UAS within an authorized training area as prescribed by the Department of Defense and the Federal Aviation Administration (FAA) to provide local surveillance over the training objective prior to and during the training action. The UAS would be retrieved as part of the activity. All events are conducted in a safe and controlled manner, are the result of extensive planning, and include specific training standards and success criteria. Per Department of Defense policy, NSWC does not collect, retain, or disseminate information associated with its domestic UAS use.

2.1.1.1 Water-Based Training

Water-based training activities are identified as diver/swimmer, insertion/extraction, UUV training, and launch/recovery. In general, water-based training activities would include trainees, a training supervisor, and safety support personnel for the submersible craft or watercraft operation phases of the event. Support personnel are assigned to supervise water-based training (typically from a boat) and provide medical support if required. Supervisor and safety personnel would focus on maintaining a safety buffer around the small submersible or watercraft consistent with United States (U.S.) Coast Guard regulations, namely the USCG Navigation Rules and Regulations Handbook, and as site conditions and the surrounding environmental dictate. For example, navigation lights on a dive boat (i.e., red over white over red) or a diver down flag indicate that a dive is in progress and oncoming vessel traffic needs to keep well clear at slow speed. Dive site locations would avoid locations that experience heavy traffic patterns, such as the Washington State Ferry System routes or fishing activities. In the event maritime vessels approach an active dive site, safety personnel would utilize Channel 16 (intended for international distress, safety, and calling) to contact vessels. If an oncoming vessel does not respond, a safety boat would approach the vessel and, depending on the situation, ask it to (1) hold its position, (2) go around the dive site, (3) if necessary, be escorted by the safety boat around the dive site, or (4) divers would be recalled out of the water with the use of the recall device.

Safety buffers ensures the safety for the trainees, training vessels, and any commercial or civilian craft transiting near the event location. Other responsibilities for safety support personnel include looking out for hazards to navigation that could affect the safety of the trainees, and recalling swimmers and divers, or the small submersible, to the surface if required. If the public enters the training area, the safety support personnel will assess the situation and, based upon safety considerations of all, they will either continue the training, temporarily suspend the training, completely stop the training, or relocate the training to another approved training site.

Water-based training activities would use existing boat ramps near the selected training location to launch the training platform (small submersible vehicle, surface support craft, or small inflatable boat) into the waterway. However, some training scenarios require an ocean launch using a ship (occasionally in Region 1, typically in Regions 2 and 3). A ship launch may also occur during training activities in locations that are not served by an existing boat ramp or if weather or tidal conditions result in a safety concern regarding a boat ramp launch.

2.1.1.1.1 Diver/Swimmer Training Activities

During diver/swimmer training events, trainees swim or dive to an objective area (e.g., harbor, beach, and or moored vessel) for up to six hours. Diver/swimmer training would be confined to the ocean (Region 3), inland water areas (Region 1 and 2), and Kitsap Lake (Region 1). During night training, the

trainees would use buoys marked with a glow stick (Chemlight) to identify their location to the support staff. Rubber replica weapons could be carried by trainees to reproduce the bulk and weight of the gear the trainee would carry during an actual mission.

2.1.1.1.2 Insertion and Extraction Training Activities

During insertion/extraction training events, trainees may approach or depart an objective area using submersible craft, to include UUVs and ROVs, or water crafts (jet skis or small boats). This activity trains personnel to effectively insert and extract people and equipment during the day or night. Submersible and surface crafts would have lighting for night training. Insertion/extraction training events utilizing submersible craft would operate along the shoreline to conduct water-based training.

2.1.1.1.3 Launch and Recovery Training Activities

During launch and recovery training events, training would be conducted in water areas and consist of launching and recovering submersibles or surface craft, or a combination of both, from a boat ramp, water platform, or via a crane located on a ship, barge, Navy pier or a wharf.

2.1.1.1.4 Unmanned Underwater Vehicle Activities

A subset of water-based training would involve the use of a UUV and on occasion an ROV (herein both described as UUVs). A UUV is a battery-powered, unmanned submersible that is hand-launched from a host vessel and would be used to assist with swimmer navigation. The UUVs operate within the water column and would not be set on the floor of the ocean or Puget Sound. UUVs operate under the same navigational rules as any water vessel and would be operated to avoid other vessels. UUVs would be used during approximately 10 percent of the time that other water-based training activities would be taking place. The launching and recovery of the UUV would be conducted in water areas only and would utilize a fish finder type of device for navigation. UUVs can be autonomous or tethered and are controlled from the water surface or by a diver for real-time feedback to the operator. Diving personnel may be in the water in the near vicinity of the host vessel for the launch or retrieval portions of the activity. UUVs are tracked by personnel on the host vessel to ensure they remain on course and, if needed, can be recalled any point along the pre-programmed track.

2.1.1.2 Land-Based Training Activities

Land-based training events are identified as Over-the-Beach, Special Reconnaissance, Simulated Building Clearance, and High-Angle Climbing. All land-based training events would include support personnel. Support personnel are responsible for the safety and oversight of trainees participating in the event. The support personnel would continually evaluate the training scenario and employ standard operating procedures (see Section 2.3.5) to ensure that training activities are isolated and conducted safely. Trainees receive safety briefings, have constant oversight by instructors, and NSWC Public Affairs Officers, or their representatives, would be available to interact with the public should anyone happen upon an active training scenario. Additionally, as part of the training intent that the activities be undetected, the support personnel teach trainees that no expended equipment, human waste, or transported liquids remain on site after the training activity is completed. Vehicles would be utilized by the support personnel, with one unmarked NSWC vehicle designated as an emergency response vehicle. The vehicles used by support personnel would stay on designated roads and be parked in designated parking areas that afford optimal availability if required during the training event.

2.1.1.2.1 Over-The-Beach Training Activities

During an Over-The-Beach training activity, trainees would exit water, cross the beach, and quietly transition to land-based activities. Upon arrival at a pre-designated area, trainees would remain out of sight for several hours before exiting the site or continue moving towards a pre-determined objective. Typically, when trainees conduct Over-The-Beach at a site, they cross the beach twice (arrival and departure). However, when conducting Over-The-Beach training at Naval Base Kitsap Keyport, trainees could move over the beach multiple times. This is a core training competency, as such, trainees are required to conduct this activity until they perform it correctly.

2.1.1.2.2 Special Reconnaissance Training Activities

Upon arrival at a designated area, trainees would hike to a designated observation point. Trainees are taught the techniques for conducting reconnaissance without alerting anyone to their presence or location. Trainees would remain undetected for a period of time with the goal of leaving no trace of their presence behind. This includes no vegetation being trampled, no branches broken, no footprints visible, or any other indicators that they were there. Trainees would use observation techniques, follow procedures, and report back on a scenario involving role play with military instructors or support staff. Special reconnaissance would be performed on activities that are staged and pre-arranged for training purposes.

2.1.1.2.3 High-Angle Climbing Training Activities

High-Angle Climbing events are training evolutions where trainees negotiate cliffs, rock faces, and other vertical challenges to develop infiltration and retrieval of climbing equipment techniques. Trainees are instructed in the use of ropes and other climbing gear to traverse obstacles while carrying gear. The only location for High-Angle Climbing activity is at Deception Pass State Park.

2.1.1.2.4 Simulated Building Clearance Training Activities

The activity would consist of trainees conducting simulated actions against a site, or a military individual designated as part of the exercise who is simulating a threat or enemy, within a confined area or building. Simulated Building Clearance training develops the trainees' ability to operate within a small unit, move into a structure, conduct clearance from room to room, and engage in role play (military instructors or support staff) simulated combat scenarios. The training scenarios involve the use of simulated weapons and simulated munitions from both trainees and support staff acting as enemy opponents. The intent is for trainees to remain concealed and silent, and then departing the area with minimal disturbance and avoiding detection. The training includes the use of weapons configured to only fire plastic or paint pellets. No live-fire weapons or ammunition would be used. The simulated munitions would be marking rounds, which are specialized plastic/paint capsules that are environmentally friendly and water soluble. The temporary marks these simulated munitions make are about the circumference of a dime. Sounds associated with the firing of the simulated munitions sound similar to an air rifle. No property damage would occur, and cleanup (picking up simulated marking rounds/washing away paint marks if present) would be handled by the instructors and support staff immediately at the conclusion of the training scenario. Support staff would be on site at all times in order to ensure the overall safety in the training environment. Simulated Building Clearance sites would be on military property or sites where the public would not be present. No Simulated Building Clearance training would occur at state parks. Simulated Building Clearance training would comprise approximately 10 percent of each training block.

2.1.1.3 Unmanned Aircraft Systems Training Activities

UAS would be utilized 10 percent of the time concurrent with other water-based or land-based training activities. The UAS consists of a hand-launched or catapult system, a control system, and a remotely piloted or self-piloted (i.e., preprogrammed flight pattern) air vehicle that may be fixed-wing or rotary-wing. They would carry only non-hazardous payloads such as cameras, sensors, and communications equipment.

For the smaller UASs, the propulsion is through electrical motor-driven propellers powered by rechargeable batteries. For the larger UASs, propulsion is provided through a gas-powered motor. UASs would be used in FAA designated restricted airspace (R6701) (Figure 1-2) and at Navy properties (Naval Base Kitsap Keyport, Toandos Buffer Zone, and Naval Magazine Indian Island). For training outside of R6701, the UAS would be flown at military installations in accordance with a valid FAA Certificate of Authorization and a Notice to Airmen would be issued. UAS training may be a standalone activity or used in conjunction with other training activities. UAS utilized for the proposed training would:

- be categorized as FAA Group 1 or Group 2 systems, weighing up to 55 pounds,
- vary in size up to approximately two meters in length, with a wingspan of three meters,
- normally operate below 2,000 feet above ground level,
- would utilize on the ground observers (no manned aircraft observers), and
- fly in accordance with FAA authorizations.
- not be operated within 330 feet of known eagles' nests

2.1.2 Training Sites

Under the Proposed Action, the proposed training activities would occur at pre-approved sites throughout the training study area in western Washington State (Figure 1-2). Three geographic areas within western Washington State (Regions 1, 2, and 3) are identified as areas supporting the proposed training activities (Section 2.1, Proposed Action). The training study area offers a varied topography, hydrography, and bathymetry (to include strong and shifting currents and varying salinity) to units conducting extended, recurring, and sustainment training.

The variety of sites allows for a training progression to occur based on the operator skill set demonstrated as they accomplish each training skill objective. Multiple sites are needed to allow training to accommodate seasonal changes, evolving skill sets, and site-specific restrictions that may occur at certain times of the year. The varied training study area facilitates minimal interaction with the public and limits impacts to any one location to maintain the natural environments at each potential training site through planned infrequent and sporadic use. Additionally, infrequent use of sites helps to keep the training challenging for trainees and preventing them from becoming too familiar with what to expect when they repeatedly conduct the same training at the same sites.

2.1.3 Training Equipment

Table 2-1 lists the current and proposed equipment that may be used during training activities across the training study area in western Washington State. Each activity would require a specific mix of personnel, equipment, and supporting systems. Further, the particular goal of a single training evolution may require a specific set of equipment. As stated before, several types of training aids may be used during training. They consist of inert shapes that could be made of any combination of foam, metal, fiberglass, and wood. Training aids are placed alongside a pier, boat, or tree. They are silent and would not touch the ocean floor when used in a maritime environment. Sizes range from 1' x 3" x 2" through

2 1/2' x 8" x 8" and could weigh up to 30 pounds. All training aids would be recovered upon completion of the training activity.

Table 2-1: Current and Proposed Equipment for Naval Special Operations Training

Equipment Type	Description	Area of Utilization
Signaling Devices and Simulated Weapons		
Signaling Devices are only used for emergency use in accordance with naval special operations standard operating procedures established by the Navy that are incorporated into training.		
Audible Recall Device	Audible signal similar to a small firecracker that is used to communicate with divers and submersible drivers per prearranged instructions.	Training Study Area Waters
Simulated Weapon	Trainees carry simulated weapons throughout each training event to accurately represent the weight and balance of the mock weapon and to experience the considerations needed to maintain and keep functioning in undersea and cold-weather maritime conditions. No real bullets are carried at any time throughout any training evolution (paint pellets are used). Live fire is not part of any training event.	Training Study Area
Simunitions Cartridge	A small cartridge (plastic/paint capsules) that emits a plastic projectile that leaves a mark the size of dime and is utilized only during simulated building clearance exercises. All traces of the marks are removed by rubbing with water and a cloth, and all expended shell casings are picked up by the instructors, support staff, and trainees.	Only where Simulated Building Clearance would occur
Boats		
Surface Support Craft	Surface support craft includes commercial or military boats (generally in the 20–30 foot range) for open water utility operations and jet skis (NSWC-owned <i>Wave Runners</i> are used for swimmer safety in certain events during training).	Training Study Area Waters
Submersibles	Submersible craft are manned and include other underwater propulsion devices. The manned submersible craft is the primary transit and delivery vehicle for all naval special operations undersea maritime training events.	Training Study Area Waters
Small Inflatable Boats	Small rubber inflatable boats, typically no greater than 9 meters in length.	Training Study Area Waters
UUV	UUVs and small remote operated vehicles controlled by a trainee with real-time feedback. UUVs can be tethered, untethered or autonomous when operated and can operate on or below the surface.	Training Study Area Waters
Ground Support Vehicles		
Passenger Van	Personnel transport in support of training.	Training Study Area
Emergency Response Vehicle	Navy medical command and NSWC control vehicle in support of training.	Training Study Area
Pick-up Truck	Transport of essential equipment, including surface support craft and personnel in support of training.	Training Study Area
Unmanned Aircraft Systems		
UASs	UASs consists of a hand-launched or catapult system, a control system, and a remotely piloted or self-piloted (i.e., preprogrammed flight pattern) air vehicle that may be fixed wing or rotary wing. They would carry only non-hazardous payloads such as cameras, sensors, and communications equipment.	R-6701 and Navy properties* in accordance with FAA rules and regulations

Notes: *NAVBASE Kitsap Keyport, Toandos Buffer Zone, and NAVMAG Indian Island

2.2 Training Area Screening Factors

NSWC considered three factors (training, safety, and logistics) when identifying broad geographic areas that could support cold-water naval special operations training and satisfy the training requirements. These factors were applied to the State of Washington, State of Alaska, northern California, and Newport, Rhode Island to identify geographic areas that were suited to support the proposed training. These geographic areas were evaluated by NSWC to identify ones that were suited to support cold-water training requirements. Included in that evaluation were logistical and safety concerns, and the desire to have little to no impact on the public and environmental resources.

Training: Land and maritime special operations training activities prepare naval special operations personnel for global operations in a spectrum of environments, including cold-water environments. The Proposed Action would support training for the diverse global challenges facing naval special operations personnel. The training study area would have to have the unique specific characteristics needed to develop skillsets and objectives of the naval special operator training program. The coastline environment with extended timeframes of cold-water exposure and inclement weather conditions that support training conditions include:

- Rain, fog, or low ceilings and restricted visibility.
- Tides and currents that replicate extreme and diverse maritime environments throughout the world.
- Complex navigation, specifically a challenging environment for submersible piloting, which includes bottom contours, diverse shorelines, commercial and recreational shipping, and tides and currents.
- A variety of geography over shorelines and waterways that allows for a rapid progression of training that transitions trainees from intermediate levels to advanced scenarios that replicate real-world situations.
- Access to both open-ocean and inland waters.
- Protection from heavy surf afforded by the selected training areas, which allows for specific training to be accomplished while affording high levels of safety for military personnel involved in the training events.
- A complex bathymetry, which both offers challenges in operating and replicates real-world operational environments.
- A complex hydrography of the waters that offers unique and challenging training conditions, including a partially mixed, two-layer system, with relatively fresh water flowing seaward at the surface and saline oceanic water returning landward at depth. The seaward surface flux is balanced by the landward flux at depth. The seaward flux is augmented by the freshwater inflow from several large rivers and many smaller streams. As a result of the small freshwater

Bathymetry – National Oceanic Atmospheric Administration defines bathymetry as “the study of the ‘beds’ or ‘floors’ of water bodies, including the ocean, rivers, streams, and lakes.” The term ‘bathymetry’ originally referred to the ocean’s depth relative to sea level, although it has come to mean ‘submarine topography,’ or the depths and shapes of underwater terrain.

Hydrography – National Oceanic Atmospheric Administration defines Hydrography as “the science that measures and describes the physical features of the navigable portion of the earth’s surface and adjoining coastal areas.”

inflow into the sound and the large amount of tidal energy, the water is not strongly stratified most of the year. Because of the large amount of tidal energy, turbulent mixing takes place.

- The varied operating environments, coupled with the extensive proximity of naval facilities and associated units, allows for the training of several diverse ways of launching the submersibles. Additionally, this collection of varied associated units and platforms allows for a maximization of training by supporting other training evolutions during the same scheduled training period. The breadth of training sites across the three geographic areas in western Washington ensures that new locations and the varied amount of training locations within the training block would prevent familiarity with a common training environment and continually challenge the naval special operations units conducting the training.

Safety: Specific safety considerations that must be met include proximity and ready access to an active recompression dive chamber that is located within a one-hour transit time from the training site, and multiple military facilities with on-call response medical capabilities, as well as the capacity to minimize impacts on commercial and personal activities and infrastructure in the training areas.

Logistics: Due to the unique training and operational requirements for naval special operations, the combination of meeting training objectives and proximity of secured Navy facilities/installations is critical. Specifically, the required level of security for storing and repairing the equipment used in naval special operations training activities can only be met onboard a military facility. Staging for all aspects of the training is optimally served by local Navy installations. This includes lodging, proximity to transportation, maintenance support, classified material storage, and recompression chamber and medical support.

2.3 Alternatives Development and Alternatives Carried Forward for Analysis

NSWC must consider alternatives to the Proposed Action in accordance with the National Environmental Policy Act (NEPA) and Council on Environmental Quality regulations for implementing NEPA (Parts 1500–1509 of Title 40 of the Code of Federal Regulations). After review of the screening factors, it was determined that the training study area in western Washington State fulfills all of the intermediate and advanced-level, cold-water maritime naval special operations training requirements. In addition to meeting the training requirements, the safety and logistical training area screening factors presented in Section 2.2 are also satisfied by western Washington State. Thus, western Washington State fully satisfies all three training area screening factors and is considered the only feasible cold-water location for training naval special operations personnel prior to their final pre-deployment activities and follow-on real-world missions (Section 2.4 discusses alternatives considered but not carried forward for detailed analysis). Western Washington State also affords superb contiguous water training space, with associated commercial boat traffic, and relatively isolated locales, facilitating minimal interaction with civil and commercial activities during training activities. Conducting the training in western Washington State enables the highest degree of safety for naval special operations personnel due to close proximity of Puget Sound military facilities, to include a broad availability of on-call medical facilities offering the flexibility to rapidly respond to any emerging safety issue. The Puget Sound also affords naval special operations personnel with superior logistics to support and secure the necessary equipment employed during training activities.

Accordingly, NSWC focused its alternatives analysis on variances to the tempo and variable use of training sites within the western Washington State training study area to satisfy the purpose of and need for the Proposed Action which is to enhance naval special operations and other U.S. special

operations (Section 1.4, Scope of Environmental Analysis). Thus, three regions and tempo-related action alternatives have been identified in addition to the No Action Alternative. The alternatives analyzed in this EA are discussed in detail below. Table 2-2 lists the specific training activities and under which alternative they would occur.

Table 2-2: Proposed Training Activities by Alternative

		Water-Based Training Activities				Land-Based Training Activities				
		D/S	I & E	L & R	UUV	OTB	SR	HA	SBC	UAS
No Action Alternative¹	Region 1	✓	✓	✓	✓	✓	✓			
Alternative 1¹	Region 1	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓		✓	✓
Alternative 2¹	Region 1	✓	✓	✓	✓	✓	✓		✓	✓
	Region 2	✓	✓	✓	✓	✓	✓	✓		
	Region 3	✓	✓	✓	✓	✓	✓			
Alternative 3²	Region 1	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓		✓✓	✓✓
	Region 2	✓	✓	✓	✓	✓	✓	✓		✓
	Region 3	✓	✓	✓	✓	✓	✓			

Notes: D/S = Diver/Swimmer Training, I&E = Insertion and Extraction Training, L&R = Launch and Recovery Training, UUV = Unmanned Underwater Vehicle Activities, OTB = Other-The-Beach Training, SR = Special Reconnaissance Training, HA = High-Angle Climbing Training, SBC = Simulated Building Clearance Training.
✓✓ = Increased Training Frequency, see Alternative descriptions for amount of increase

¹Includes up to 70 Trainees and Support personnel

²Includes up to 84 Trainees and Support personnel

2.3.1 No Action Alternative

Training activities conducted in western Washington State have typically occurred in a subset of Region 1. The training included nearshore waters and land-based areas with two training blocks per year. A training block is defined as a 2–8-week period of time where up to 70 naval special operations trainees and support personnel (safety observers, medical support, boat drivers, vehicle drivers, evaluators, and equipment repair/maintenance support) arrive in western Washington State to participate in cold-water maritime and land-based training until the time they leave. Table 2-2 identifies the added training activities and Table 2-3 presents the frequency of potential site use for naval special operations training under all alternatives.

All training areas within Region 1 are within a safety-specified one-hour transit to the recompression chamber at Naval Undersea Warfare Center Keyport and within a nominal one-hour response for equipment repair and recovery.

Under the No Action Alternative, training locations available in cold-water maritime environments would continue to be restricted to a limited number of sites within Region 1. When naval special operations personnel train at a reduced number of training locations, the essential element of unpredictability is removed from the training environment. Familiarity with a training site leads to prior awareness of a training scenario, thus negating the quality of training. Training scenarios at a limited number of known sites would not be sufficiently diverse enough to support the long-term requirements for intermediate and advanced naval special operations training and training progression, and would not adequately support the requirements to achieve combat readiness. The No Action Alternative therefore does not meet the purpose of and need for the Proposed Action, but it is being carried forward for

analysis in this EA as a baseline from which to compare the impacts of the Proposed Action and action alternatives.

Table 2-3: Proposed Number of Training Blocks and Maximum Potential Site Usage by Alternative

Alternatives	Region	# Training Blocks ¹ per year	Duration of Each Training Block	Trainees per Block	Maximum site usage per year	Maximum Trainees per year	Maximum Personnel per year
No Action Alternative	Region 1	2	2–8 weeks	20	10	40	140
Alternative 1	Region 1	4	2–8 weeks	20	20	80	280
Alternative 2²	Region 1	4	2–8 weeks	20	20	80	280
	Region 2	1 every other year	2 weeks		3		
	Region 3	1 every other year	2 weeks		3		
Alternative 3³	Region 1	6	2–8 weeks	24	36	144	504
	Region 2	1 every other year	2 weeks		3		
	Region 3	1 every other year	2 weeks		3		

¹ A training block is defined as the 2–8-week period of time where naval special operations trainees and support personnel (safety observers, medical support, boat drivers, vehicle drivers, evaluators, and equipment repair/maintenance support) arrive in western Washington State to participate in land and cold-water maritime training until they leave. A training block consists of single or multiple simultaneous training events on land and in the water. During a training block, trainees and support personnel would disperse throughout the training study area (Figure 1-2). These are not additive training blocks.

² A portion of one of the four training block could occur every other year in either Region 2 or 3. The total training blocks would remain at four per year.

³ A portion of one of the six training block could occur every other year in either Region 2 or 3. The total training blocks would remain at six per year.

2.3.2 Alternative 1 – Region 1 Training

Under Alternative 1, the proposed training activities would be the same as described above under the No Action Alternative in the Region 1 training study area; however, Alternative 1 would increase the number of potential training sites and training tempo from two to four training blocks per year. Table 2-2 identifies the training activities proposed and Table 2-3 summarizes the potential frequency of site use within Region 1 (pending receipt of real estate agreement/right-of-entry permit). Under Alternative 1, naval special operations would have more flexibility to better accommodate occasional training with USSOCOM units. The occasional integration of other USSOCOM units would occur only with NSWC-led training.

2.3.3 Alternative 2 – Region 1, 2, and 3 Training

Under Alternative 2, the proposed training activities include all training activities and personnel that would occur in Region 1 as identified in Alternative 1. In addition, Regions 2 and 3, which are areas outside of the one-hour distance from Keyport, would be added as training venues and utilized every other year. The number of total training activities would generally increase under Alternative 2 due to the addition of Regions 2 and 3. Table 2-2 identifies the added training activities and Table 2-3 presents

the frequency of potential site use for naval special operations training under Alternative 2. All of the training blocks would occur in Region 1. A portion of one of the four training block could occur every other year in either Region 2 or 3. The total training blocks would remain at four per year. For Regions 2 and Region 3, an individual site would be used no more than three times every other year.

Under this alternative, NSWC would deploy a support platform to facilitate training occurring outside the one-hour distance from Keyport (Regions 2 and 3). The support platform would have a recompression chamber available, as well as the capability to repair and recover training devices.

Under Alternative 2, increasing the variety of training locations available for selection would reduce the reuse of sites, thus increasing the value of the training by placing trainees in new and unfamiliar environments. Exposure to unfamiliar environments and variable conditions (e.g., sea state, water currents, and varying topography and shorelines) creates a challenging training environment and enables the trainees to further develop and sustain skills in the cold-water maritime and land aspects of Navy special operations. Alternative 3 (Preferred Alternative) – Region 1, 2, and 3 with an Increased Training Tempo

Alternative 3 includes all the proposed training activities, and regions as identified in Alternative 2, with an increased personnel and increase in training tempo in Region 1 from four to six training blocks per year. Table 2-2 lists all the training activities that would occur and Table 2-3 presents the frequency of potential site use for naval special operations training under Alternative 3 (pending receipt of real estate agreements/right-of-entry permits).

All of the training blocks would occur in Region 1. A portion of one of the six training blocks could occur every other year in either Region 2 or 3. The total training blocks would remain at six per year. For Region 1, an individual site would be used not more than 36 times per year. For Region 2 and Region 3 an individual site would be used no more than three times every other year.

Alternative 3 would result in the same added value as Alternative 2. However, Alternative 3 best meets the purpose of and need for the Proposed Action to support intermediate and advanced small-unit activities of naval special operations training, with the progression of training in increasingly complex maritime and land environments, and thus combat-ready naval special operations personnel.

For all the alternatives discussed, it should be noted that not every site will be used every year; however, for any particular site within a region and alternative, the maximums as described above would not be exceeded.

2.3.4 Best Management Practices and Standard Operating Procedures

This section presents an overview of the best management practices (BMPs) and standard operating procedures that are incorporated into the proposed naval special operations training activities for naval special operations personnel addressed by this EA. BMPs are existing policies, practices, and measures that the Navy would adopt to reduce the environmental impacts of designated activities, functions, or processes. Although BMPs mitigate potential impacts by avoiding, minimizing, reducing, or eliminating impacts, BMPs are distinguished from potential mitigation measures because BMPs are (1) existing requirements for the Proposed Action; (2) ongoing, regularly occurring practices; or (3) not unique to this Proposed Action. In other words, the BMPs identified in this document are inherently part of the Proposed Action and are not potential mitigation measures proposed as a function of the NEPA environmental review process for the Proposed Action. Table 2-4 includes a list of BMPs. Minimization and avoidance measures are discussed separately in Chapter 3 (Affected Environment and

Environmental Consequences). In addition to the BMPs provided in Table 2-4 below, naval special operations training would follow the current version of the Northwest Training Range Complex (NWTRC) User’s Manual and the Keyport Range Operating Procedures (ROP) Manual. In addition to the BMPs provided, Navy special operations training would follow the Protective Measures Assessment Protocol (PMAP) general training category. The measures used in the PMAP general training category would also follow current versions of the NWTRC’s User’s manual and the Keyport Range Operating Procedures Manual which also reiterate the PMAP general training category measures.

The use of shipboard lookouts is a critical component of all Navy protective measures. Navy shipboard lookouts are highly qualified and experienced observers of the marine environment. Their duties require that they report all objects sighted in the water to the Officer of the Deck (e.g., trash, a periscope, marine mammals, sea turtles) and all disturbances (e.g., surface disturbance, discoloration) that may be indicative of a threat to the vessel and its crew.

Because of the relatively smaller number of support boats that accompany submersibles and swimmers during in-water training activities, and the limited number of personnel that can be on a support vessel, dedicated lookouts would not likely be on board the small support boats; however, boat operators will have completed the Marine Species Awareness Training (MSAT), which provides information on sighting cues, visual observation tools and techniques, and sighting notification procedures.

Table 2-4: Best Management Practices for Naval Special Operations Training

Training Activity	BMP Description	Purpose
Water-Based Training Activities		
Swimmer /Diver	Diving and swimming events would have on-site safety support. For dives there would be a minimum of two boats with support personnel. Boat 1 would have the Safety Supervisor with coxswain, crewperson, and qualified medic. Boat 1 would maintain proximity to the divers or swimmers. Boat 2 would serve as a lookout boat and interdict oncoming vessel traffic. Additionally, depending on the length of the dive or swim, jet skis would be onsite to provide additional safety coverage.	Maintain safety of trainees and the public
All Activities	Vessels would avoid contact with hard surfaces during in-water training activities, vessels and personnel would avoid marine mammals, and vessels would remain within the water column (with the exception of small inflatable boats, which would be carried ashore).	Maintain safety of trainees and avoidance of marine mammals
Land-Based Training Activities		
All Activities	Land-based training would have onsite safety personnel. At a minimum there would be three personnel, a Lead Safety Supervisor, Assistant Safety Supervisor, and a qualified medic. The medic would stage an emergency response vehicle onsite.	Maintain safety of trainees and the public
All Activities	Vehicles would remain on existing established roadways, and sound would be minimized during training to avoid detection.	Maintain safety of trainees and the public

Table 2-4: Best Management Practices for Naval Special Operations Training (continued)

Training Activity	BMP Description	Purpose
All Training Activities		
Unmanned Aircraft System	Support personnel would maintain line of sight at all times with UAS. Personnel would enact immediate recovery in the event of a platform error.	Maintain positive control of the UAS before, during, and after training event
All Activities	Activities are coordinated with local and tribal law enforcement, park rangers and property owners. All training events would be conducted in accordance with military training procedures, approved standard operating procedures, and protective measures, including Chief of Naval Operations Instruction 5100.23G, <i>Navy Safety and Occupational Health Program Manual</i> (2011). Training activities would be consistent with management objectives of individual parks, including prohibiting training in sensitive areas containing important natural and cultural resources. For example, if a site has been revegetated with native plants and the public is prohibited from entering that area, NSWC would also observe this restriction and not enter the area.	Maintain safety of trainees and the public

Relevant requirements as identified in the NWTRC User’s Manual are summarized below, and are Standard Operating Procedures to avoid collisions with marine mammals and sea turtles in all in-water training locations:

- All commanding officers, executive officers, lookouts, officers of the deck, and junior officers of the deck supporting Naval Special Operations training exercises will have completed the MSAT. All bridge lookouts will complete both parts one and two of the MSAT; part two is optional for other personnel. This training addresses the lookout’s role in environmental protection, laws governing the protection of marine species, Navy stewardship commitments, and general observation information to aid in avoiding interactions with marine species.
- Naval special operations personnel piloting the small boats will complete Coxswain training and operate the boats in accordance with all U.S. Coast Guard rules and regulations.
- While in transit, naval vessels will be alert at all times, use extreme caution, and proceed at a safe speed so that the vessel can take proper and effective action to avoid a collision with any marine animal and can be stopped within a distance appropriate to the prevailing circumstances and conditions.
- When marine mammals have been sighted in the area, Navy vessels will increase vigilance and take reasonable and practicable actions to avoid collisions and activities that might result in close interaction of naval assets and marine mammals. Actions may include changing speed and/or direction and are dictated by environmental and other conditions (e.g., safety, weather).
- Naval vessels will maneuver to keep at least 1,500 feet away from any observed whale and avoid approaching whales head-on. This requirement does not apply if a vessel’s safety is threatened, such as when change of course will create an imminent and serious threat to a person, vessel, or aircraft, and to the extent vessels are restricted in their ability to maneuver. Restricted maneuverability includes, but is not limited to, situations when vessels are engaged in dredging, submerged training activities, launching and recovering aircraft or landing craft, minesweeping training activities, replenishment while underway and towing training activities

that severely restrict a vessel’s ability to deviate course. Vessels will take reasonable steps to alert other vessels in the vicinity of the whale.

- Where feasible and consistent with mission and safety, vessels will avoid closing to within 200 yards of sea turtles and marine mammals other than whales (whales addressed above).
- Floating weeds and kelp, algal mats, clusters of seabirds, and jellyfish are good indicators of sea turtles and marine mammals. Therefore, where these circumstances are present, the Navy will exercise increased vigilance in watching for sea turtles and marine mammals.
- All vessels will maintain logs and records documenting training activities should they be required for event reconstruction purposes.

Table 2-5 lists relevant Range Operations Procedures for the NAVSEA NUWC Keyport Range Complex.

Table 2-5: Relevant Range Operations Procedures for NAVSEA NUWC Keyport Range Complex

ROP	ROP Implementation
ROP 10-1	Establishes policies and procedures to be followed in the event of an OTTO Fuel II spill within the NAVSEA NUWC Keyport Range Complex or aboard a NUWC Keyport craft during the loading/offloading, retrieval/recovery, or stowage of test units containing OTTO Fuel II; and the handling of OTTO Fuel II waste material or reclaimable liquids by range or craft personnel.
ROP 10-4 Safety/Environmental and Operational Restrictions for Test Units	Establishes safety/environmental requirements and operational restrictions for all test units (this includes, but is not limited to, torpedoes, mobile ASW targets, inert mines, UUVs, and research and developmental vehicles) to be tested within the NAVSEA NUWC Keyport Range Complex or used in support of range activities.
ROP 6-4 Range Operations and Marine Mammals	Ensures that NAVSEA NUWC Keyport Range Complex personnel from NUWC Keyport are in compliance with OPNAVINST 5090.1C, <i>Navy Environmental and Natural Resources Program Manual</i> (or latest version of this document); MMPA; and Endangered Species Act (ESA). In particular, the following marine mammal protection measures are implemented per ROP 6-4: <ol style="list-style-type: none"> 1. Range activities shall be conducted in such a way as to ensure marine mammals are not harassed or harmed by human-caused events. 2. Marine mammal observers are on board ship during range activities. All range personnel shall be trained in marine mammal recognition. Marine mammal observer training is normally conducted by qualified organizations such as NOAA/National Marine Mammal Lab (NMML) on an as needed basis. 3. Vessels on a range use safety lookouts during all hours of range activities. Lookout duties include looking for any and all objects in the water, including marine mammals. These lookouts are not necessarily looking only for marine mammals. They have other duties while aboard. All sightings are reported to the Range Officer in charge of overseeing the activity. 4. Visual surveillance shall be accomplished just prior to all in-water exercises. This surveillance shall ensure that no marine mammals are visible within the boundaries of the area within which the test unit is expected to be operating. Surveillance shall include, as a minimum, monitoring from all participating surface craft and, where available, adjacent shore sites. 5. The Navy shall postpone activities until cetaceans (whales, dolphins, and porpoises) leave the project area. When cetaceans have been sighted in an area, all range participants increase vigilance and take reasonable and practicable actions to avoid collisions and activities that may result in close interaction of naval assets and marine mammals. Actions may include changing speed and/or direction and are dictated by environmental and other conditions (e.g., safety, weather).

Table 2-5: Relevant Range Operations Procedures for NAVSEA NUWC Keyport Range Complex (continued)

ROP	ROP Implementation
ROP 6-4 Range Operations and Marine Mammals (continued)	6. In accordance with the MMPA and ESA, which address marine mammal protection, an “exclusion zone” shall be established and surveillance will be conducted to ensure that there are no marine mammals within this exclusion zone prior to the commencement of each in water exercise. For cetaceans (whales, dolphins, and porpoises), the exclusion zone must be at least as large as the entire area within which the test unit may operate, and must extend at least 1,000 yards from the intended track of the test unit. For pinnipeds, the exclusion zone extends out 100 yards (91 m) from the intended track of the test unit. 7. The minimum marine mammal exclusion zones defined above are sufficient to mitigate the effects of the acoustic energy transmitted by the test units, range tracking equipment, and the range target simulators currently in operation on U.S. ranges as of this writing. The exclusion zones specified in ROP 6-4 meet the requirements of Navy and NOAA and thereby ensure that active acoustic emissions from the acoustic sources currently in use do not constitute marine mammal harassment. 8. The NMFS recommendation that vessels not approach within 100 yards (91 m) of marine mammals shall be followed to the extent practicable considering human and vessel safety priorities. All Navy vessels and aircraft, including helicopters, are expected to comply with this directive. This includes marine mammals “hauled-out” on islands, rocks, and other areas such as buoys. 9. In the event of a collision between a Navy vessel and a marine mammal, NUWC Keyport activities will notify the Navy chain of Command, which would result in notification to NMFS. 10. Procedures for reporting marine mammal sightings on the NAVSEA NUWC Keyport Range Complex shall be promulgated, and sightings shall be entered into the Range Operating System and forwarded to NOAA/NMML Platforms of Opportunity Program.

Notes: ROP = Range Operations Procedure, NAVSEA = Naval Sea Systems Command, NUWC = Naval Undersea Warfare Center, OPNAVINST = Chief of Naval Operations Instruction, UUV = Unmanned Underwater Vehicle, ASW = Anti-Submarine Warfare, MMPA = Marine Mammal Protection Act, NOAA = National Oceanic and Atmospheric Administration, NMFS = National Marine Fisheries Service

Source: National Oceanic and Atmospheric Administration (1993); U.S. Department of the Navy (2001, 2002, 2003)

In the event of a collision between a NSWC vessel and a marine mammal, NSWC would immediately notify, up through their chain of Command, NMFS.

2.4 Alternatives Considered but not Carried Forward for Detailed Analysis

The following alternatives were considered, but not carried forward for detailed analysis in this EA as they did not meet the purpose and need for the project and they did not satisfy the training location screening factors presented in Section 2.2 (Training Area Screening Factors). The three other areas considered for cold-water naval special operations training, (United States Coast Guard Base, Kodiak, Alaska; San Francisco Bay Area, California; and Newport, Rhode Island) lack key components that are offered in western Washington State. During early outreach, public comments suggested naval special operations training be conducted in warm-water locations such as Hawaii or Southern California. These locations were not considered because they do not meet the need for cold-water maritime training. Below is a summary of the alternative sites considered but eliminated from further consideration.

2.4.1 United States Coast Guard Base Kodiak Island, Alaska

NSWC considered the United States Coast Guard Base Kodiak as it offers the same diverse training environment (e.g., cold water, currents, high-volume commercial and personal shipping traffic, and varying bathymetric profiles) as western Washington. However, the lack of a recompression chamber at the United States Coast Guard Base Kodiak, the minimal emergency medical facilities across the entire island, limited lodging options, limited weather window to conduct training, the austere environment of the large island outside of the city of Kodiak, a limited buffered water environment, and the absence of any Navy repair facilities on Kodiak Island makes this alternative not desirable from both a safety and logistics support perspective. While cold-weather naval special operations training currently occurs within Kodiak, Alaska, the requirements being satisfied are broader to include a set of cold-weather land and maritime training requirements as opposed to cold-water maritime training requirements under the Proposed Action. Specifically, the Naval Special Warfare Center, Detachment Kodiak provides five to seven cold weather maritime training classes to 300–400 students annually. It also supports tailored equivalent cold weather maritime training for other Naval Special Warfare teams and USSOCOM units, as available. Additionally, due to the nature and specific requirements of the specific training that occurs in Kodiak, it is very seasonal and weather dependent, thus it does not provide the diversity needed nor the year-round ability to train. This alternative was considered but is not being carried forward for detailed analysis in the EA because, although it can offer a similar complexity in a few training areas, as well as a diverse environment similar to western Washington, with the requisite complex hydrography and high-volume commercial and personal shipping traffic, the lack of logistics support for the proposed type of training, along with safety compromises makes it an unacceptable location to conduct the advanced level of training intended to be accomplished in western Washington State.

2.4.2 San Francisco Bay Area, California

NSWC considered the San Francisco Bay Area as it offers a somewhat similar diverse training environment to western Washington State, with a similar climate, and bathymetry. However, the complete lack of any existing Navy facilities in the San Francisco Bay Area and the lack of a dedicated recompression chamber makes this alternative not desirable from both a safety and logistics support perspective. The San Francisco Bay Area also lacks a buffered environment with frequent high winds and dangerous sea conditions; available inlets and waterways that are necessary to develop underwater navigation skills are also lacking, thus the complex hydrography needed is not present. The extremely high-volume of commercial and personal shipping traffic in the San Francisco Bay Area would be hazardous to trainees. This alternative was considered but is not being carried forward for detailed analysis in the EA because, although it can offer a similar diverse environment of western Washington, the lack of logistics support along with safety compromises makes it unacceptable for naval special operations training.

2.4.3 Newport, Rhode Island

NSWC considered Newport, Rhode Island as a possible training site for cold-water maritime naval special operations training as it offers a somewhat similar cold-water training environment to western Washington State. However, Newport is smaller in scale with a limited buffered environment and waterways. Compared to western Washington State, there are few designated military areas with water access and adequate diving facilities are not present. Military lodging is also limited, thus personnel would be required to lodge in towns creating an additional cost burden and operational security concern. Rhode Island also presents logistical challenges as transporting necessary support personnel, trainees and equipment from their home station to Rhode Island would be costly and would decrease

the available time to train. Finally, there is no military recompression chamber on site, with the nearest being in Groton, Connecticut. This alternative was considered but is not being carried forward for detailed analysis in the EA because, although it can offer the cold-water maritime environment of western Washington, it lacks the requisite complex hydrography and available buffered environment and complex waterways for developing underwater navigation skills, and the lack of logistics support makes it unacceptable for naval special operations training.

3 Affected Environment and Environmental Consequences

This chapter presents a description of the environmental resources and baseline conditions that could be affected from implementing any of the alternatives and an analysis of the potential direct and indirect effects of each alternative.

All potentially relevant environmental resource areas were initially considered for analysis in this Environmental Assessment (EA). In compliance with the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ), and 32 Code of Federal Regulations [CFR] part 775 guidelines, the discussion of the affected environment (i.e., existing conditions) focuses only on those resource areas potentially subject to impacts. Additionally, the level of detail used in describing a resource is commensurate with the anticipated level of potential environmental impact.

“Significantly,” as used in NEPA, requires considerations of both context and intensity. Context means that the significance of an action must be analyzed in several contexts such as society as a whole (e.g., human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of a proposed action. For instance, in the case of a site-specific action, significance would usually depend on the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant (40 CFR part 1508.27). Intensity refers to the severity or extent of the potential environmental impact, which can be thought of in terms of the potential amount of the likely change. In general, the more sensitive the context, the less intense a potential impact needs to be in order to be considered significant. Likewise, the less sensitive the context, the more intense a potential impact would be expected to be significant.

This section includes socioeconomics, cultural resources, biological resources, public health and safety, and noise.

The potential impacts to the following resource areas are considered to be negligible or non-existent so they were not analyzed in detail in this EA:

Water Resources: The Proposed Action would not impound, divert, drain, control, or otherwise modify the waters of any stream or other body of water. The proposed training activities do not involve changes to drainage patterns or the introduction of pollutants to training study area surface waters or ground water. Fueling activities would occur in established fueling stations and not in the water. Use of explosives is not proposed, thus no chemicals related to explosives would be released. Military Expended Material (MEM) such as sonobuoys, munition casings, or targets would not be utilized as part of naval special operations training. Additionally, in keeping with the “leave no trace” intent of the training, all assets utilized in training will be retrieved. The Proposed Action does not include construction on undeveloped lands or permanent ground-disturbing activities over an undisturbed area and human waste would not remain at a training site, thus water quality of training study area surface waters is not expected to undergo a measurable impact due to the Proposed Action. Biological Resources which occur in the water are addressed in Section 3.3 (Biological Resources). Therefore, this resource area was not carried forward for detailed analysis.

Air Quality: The Draft EA had an air quality resource section because of particulate matter less than or equal to 10 microns in diameter (PM₁₀) and particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5}) maintenance areas located in Region 1 in Pierce County (the Chambers Creek Regional Wastewater Treatment Plant and in waterways within the Port of Tacoma). However, after the publication of the Draft EA, further analysis and research found that the maintenance areas were

removed. PM₁₀ was re-affirmed to attainment when EPA approved the second 10-year maintenance plan on August 20, 2014 (79 FR 49239 49244). PM_{2.5} was redesignated to attainment on February 10, 2015 (80 FR 7347 7351) when the EPA approved the maintenance plan submitted by Ecology and re-designated the entire area to attainment. It became effective March 12, 2015. The attainment status designation for Washington State also shows attainment for these areas as of October 10, 2019 (40 CFR 81.348). The impacts to air quality are considered negligible due to the proposed emission sources would be primarily from mobile equipment (i.e., small boats, motor vehicles, etc.) and would have a negligible contribution to current air pollutants. Therefore, the air quality resource section has been removed from further analysis in the EA.

Geological Resources: 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.

Land Use: The Proposed Action would not change the manner of use or quality of land, or land forms and soil. Training is consistent with the existing land use of the area for federal, state, and private lands, with trainees swimming in the water, moving across the beach, and walking on and off trails. The Proposed Action does not include construction on undeveloped lands or permanent ground-disturbing activities over an undisturbed area. Therefore, this resource area was not carried forward for detailed analysis.

Visual Resources: The Proposed Action does not include construction or permanent ground-disturbing activities over an undisturbed area and would not alter the visual landscape within the training study area. This is also in keeping with the intent of the training, to avoid detection and leave no trace of their presence during or after training activities. Therefore, this resource area was not carried forward for detailed analysis.

Airspace: The Proposed Action would not result in a permanent change of airspace designation or restriction in the existing airspace within the training study area or surrounding area. Restricted Area (R)6701 has a current authorization for unmanned aircraft system (UAS) training from the Federal Aviation Administration (FAA). To support UAS training activities outside of R6701, a Certificate of Authorization (COA) would be obtained from the FAA. The Certificate of Authorization would specify conditions or limitations, if necessary, as part of the approval to ensure the UAS can operate safely with other airspace users. Therefore, this resource area was not carried forward for detailed analysis.

Infrastructure: The Proposed Action does not include changes to infrastructure within the training study area. There are no construction or permanent ground-disturbing activities included as part of the Proposed Action. Therefore, this resource area was not carried forward for detailed analysis.

Transportation: The Proposed Action would not involve large troop movements or convoys, thus transportation facilities or circulation of traffic patterns would not be changed or altered within the training study area or surrounding area. Additionally, aircraft transport of equipment is considered transient use and is covered by existing airfield documentation. Therefore, this resource area was not carried forward for detailed analysis.

Hazardous Materials and Wastes: The proposed training activities involve use of machinery, equipment, or vehicles which are currently located in western Washington State; as such, no changes in the type of hazardous waste produced would be expected. The Proposed Action would comply with Naval Base Kitsap Keyport/Bangor/Bremerton Spill Prevention and Control and Countermeasure plans. MEM such as flares and pyrotechnics, propellants, and explosives would not be utilized as part of naval

special operations training. Hazardous materials (HAZMAT) used and waste generated during the proposed training activities would be limited to cleaning materials for re-breathers for diving (i.e., SODASORB), oily rags, aerosol cans, and, in rare occasions, unused fuels. These materials are stored in appropriated HAZMAT lockers and transported to and from the training sites in accordance with state and Federal regulations. All unused materials are secured and returned to Keyport for storage in the HAZMAT lockers to be used during the next training event. Upon completion of a complete training cycle, all unused materials are turned into the Keyport HAZMAT center. Associated wastes (e.g., oily rags, SODASORB, expended batteries) are handled in compliance with state and Federal regulations and are turned in to Naval Facilities Engineering Command (NAVFAC) for final disposal. Therefore, this resource area was not carried forward for detailed analysis.

American Indian Traditional Resources: The proposed training activities would not restrict access to treaty-reserved off-reservation usual and accustomed (U&A) fishing grounds and stations in co-use navigable waters, nor impede access to treaty-reserved off-reservation hunting areas. The intent of the proposed training is to build trainees skills, experience, and confidence by challenging them in a location with dynamic weather and land/cold-water conditions. As part of the rigorous training, the trainees learn skills needed to avoid detection along with the goal of leaving no trace of their presence during or after training activities. Proposed training activities would not change the availability of protected marine or terrestrial resources or habitat as the proposed training activities would be localized, infrequent in nature, and brief in duration. The Navy, on behalf of Naval Special Warfare Command (NSWC), provided information to federally recognized tribes that have off-reservation treaty-reserved fishing and hunting rights in the training study area. The Navy's preliminary assessment indicated that the Proposed Action would not have the potential to significantly affect protected tribal resources, tribal rights, or Indian lands. Therefore, the American Indian Traditional Resources area was not carried forward for detailed analysis. See Chapter 5 (Other Considerations Required by NEPA) for additional information.

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3.1 Socioeconomics

This section provides an overview of the characteristics of socioeconomic resources in the training study area. This section discusses transportation and shipping, commercial and recreational fishing, fishing communities, recreation, and tourism information to provide insights into socioeconomic conditions (e.g., population and employment) that might be affected by the Proposed Action.

3.1.1 Regulatory Setting

Socioeconomic data shown in this section are presented at the United States (U.S.) Census Bureau Tract, Metropolitan Statistical Area, state, and national levels to characterize baseline socioeconomic conditions in the context of regional, state, and national trends. A Metropolitan Statistical Area is a geographic entity defined for use by federal statistical agencies based on the concept of a core urban area with a high degree of economic and social integration with surrounding communities. Data have been collected from previously published documents issued by federal, state, and local agencies and from state and national databases (e.g., U.S. Bureau of Economic Analysis' Regional Economic Information System).

NSWC identified broad socioeconomic topics based on their association with human activities and livelihoods in the training study area. Each of these socioeconomic resources is an aspect of the human environment that involves economics and social conditions associated with the marine environment of the training study area. Therefore, this evaluation considered potential impacts on transportation and shipping, commercial and recreational fishing, to include usual and accustomed fishing by Pacific Northwest American Indian Tribes, and recreation and tourism.

3.1.2 Affected Environment

3.1.2.1 Transportation and Shipping

The training study area is used by the military and civilians for a broad spectrum of activities. The Navy conducts training and testing activities in areas where transportation and shipping occur. Notifications of potentially hazardous operations are communicated to all vessels and operators by use of Notices to Mariners, issued by the U.S. Coast Guard, and Notices to Airmen (NOTAM), issued by the FAA. The FAA also issues COA for government use of UAS. The Department of Defense (DoD) also publishes separate NOTAMs about runway closures, missile launches, special traffic management procedures, and malfunction of navigational aids.

Special use airspace in Puget Sound, Restricted Area (R)6701 is used for air-based training activities. This airspace is used by Naval Air Station (NAS) Whidbey Island. In this airspace, UAS are allowed by right. UAS weigh less than 55 pounds, operate below 2,000 feet, and fly at speeds less than 250 knots. The UAS do not interfere with commercial air traffic, transportation, or private air traffic in R6701. For training outside restricted airspace or warning areas, the UAS are flown in accordance with a valid FAA COA and a NOTAM would be published.

Shipping is a significant component of the regional economy and frequently occurs within Regions 1 and 2 of the training study area. The marine freight waterways in Washington State consist of the Pacific Ocean, the Puget Sound, and the Columbia-Snake River System. The largest ports in Washington State are the ports of Seattle and Tacoma, which together rank third among North American ports in total container traffic (Washington State Department of Transportation, 2017). Other key ports in the training study area include:

- Kingston, Indianola, Keyport, Poulsbo, Brownsville, Tracyton, Waterman, Bremerton, Silverdale, and Manchester (Kitsap County, Washington State; Region 1);
- Port Townsend (Jefferson County, Washington State; Region 2);
- Coupeville and South Whidbey Island (Island County, Washington State; Region 2);
- Port of Anacortes (Skagit County, Washington State; Region 2); and
- Grays Harbor (Grays Harbor County, Washington State; Region 3).

Bassett et al. (2012) recorded vessel traffic over a period of just under a year as large vessels passed within 12.4 miles (20 kilometers) of a hydrophone site located at Admiralty Inlet in Puget Sound. During this period, there were 1,363 unique Automatic Identification System transmitting vessels recorded. In 2014, there were over 5,300 cargo, cruise, or fishing vessels docking at one of the major ports in Puget Sound. In addition to these port calls resulting in approximately 10,600 annual vessel transits, there is routine ferry, recreational, and other vessel traffic from commercial activities such as whale watching in the Inland Waters portion of the training study area.

Ocean traffic—transit of commercial, private or military vessels—occurs within Region 3 off the Pacific Coast. Most vessels entering or leaving the Washington State ports travel northwest, southwest, or south through the training study area without incident or delay. Shipping to and from the south typically follows the coastline of Washington State, Oregon, and California. Traffic flow controls are implemented to ensure that harbors and ports of entry remain as uncongested as possible.

In addition to maritime traffic, there is vehicle traffic within Regions 1, 2, and 3 of the training study area. State Route 104 is located on the west side of Puget Sound in northern Jefferson and Kitsap Counties. The route extends across the Hood Canal Floating Bridge, a drawbridge with two 300-foot span that can open to allow marine traffic to pass. During openings, vehicular traffic on State Route 104 queues and back-ups occur. During 2010, there were 335 bridge openings, and 17,000 vehicles are estimated to cross the bridge daily.

3.1.2.2 Commercial and Recreational Fishing

The Puget Sound supports several industry sectors that are integrally linked to the marine environment, including commercial fishing in Regions 1 and 2 of the training study area. Washington State's commercial fishing industry is the second-largest seafood producer in the United States following Alaska; Washington State fishermen catch more than 60 percent of the edible seafood harvested in the United States (Washington State Department of Commerce, 2012). The state is the largest producer of farmed shellfish in the nation and is a leading producer of naturally growing shellfish, most of which come from Puget Sound. Salmon also support a variety of fisheries in the Puget Sound region. These include sport, commercial, and tribal usual and accustomed fisheries (Pacific Fishery Management Council, 2017). Commercial and tribal usual and accustomed fisheries are conducted with purse seine or gill nets, primarily in the open waterways of Puget Sound and Hood Canal (Washington Department of Fish and Wildlife, 2012). In addition to Regions 1 and 2, commercial and tribal fishing takes place throughout Region 3 in coastal waters. Tribal fishing in the training study area is discussed in Chapter 5, Other Considerations Required by NEPA.

Recreational fishing typically occurs throughout Regions 1 and 2 of the training study area, including inlets of Puget Sound and Hood Canal. Recreational sportfishing in Puget Sound has been conservatively estimated to contribute \$117 million per year to the regional economy (Washington Department of Ecology, 2012). In 2004, an estimated 438,000 marine angler trips were taken (Kraig & Smith, 2011) and over 175,000 pounds of fish (not counting shellfish) were caught by sportfishermen (Kraig & Smith,

2011). In Region 3, recreational fishing is limited off the Pacific Coast near Grays Harbor and the Columbia River due to dangerous marine conditions. Grays Harbor and the Columbia River are dangerous for inexperienced recreational fishers, and fishermen are warned to watch conditions carefully as these areas can be difficult to navigate (Washington Department of Fish and Wildlife, 2017).

3.1.2.3 Fishing Communities

National Marine Fisheries Service (NMFS) social scientists have identified 40 fishing communities in Washington State. Historically, fishing communities on the Pacific Coast were relatively small and isolated. However, over the years, ecological, demographic, technological, and commercial-industrial trends have caused fishing activities to consolidate into larger centers of commercial and recreational fishing (National Marine Fisheries Service, 2009).

The Pacific Fishery Management Council is one of eight regional fishery management councils established by the Magnuson-Stevens Fishery Conservation and Management Act of 1976 to manage fisheries of the U.S. coastline, including Washington State. In 2006, the NMFS completed an assessment for the Pacific Fishery Management Council of West Coast fishing communities examining their engagement in commercial or recreational fishing, their dependence on fisheries income, and their resilience and vulnerability to changes in income from those fisheries. This assessment found that communities that access fishery resources in Region 3 tend to have small populations, are geographically isolated, and are heavily dependent on tourism and natural resource extraction industries, like fishing.

3.1.2.4 Recreation

The Puget Sound and coastal areas of Washington State, including areas within the training study area, accommodate many diverse outdoor activities on public land, including local parks and Washington State Parks. An estimated 390,000 people participate in recreational activities in the waters and on the beaches of Puget Sound at least once a year (Washington Department of Ecology, 2012). Within the training study area, recreation sites are diverse in their designated use (day or night) and types of recreational opportunities available (water-based or land-based). Washington State Parks manages sites through a pass and permit system (Washington Tourism Alliance, 2017).

3.1.2.4.1 Water-Based Recreation Activities

Water-based activities within the training study area include boating, canoeing, water skiing, fishing, kayaking, swimming, scuba diving, tubing, windsurfing, shellfish and seaweed harvesting. Within Region 1, Naval Base Kitsap manages a small portion of shoreline along Kitsap Lake (Camp McKean), which is used for water-based recreation activities, including recreational fishing year-round. The training study area, Regions 1, 2, and 3, encompass several Water Trails: the Cascadia Marine Trail, Willapa Bay Trail, the Kitsap Peninsula Water Trail and the Lower Columbia River Water Trail. These trails are utilized by individuals with small boats such as kayaks, canoes, day sailers or rowboats to visit land facilities (landing sites, campsites, rest areas and points of interest) via small boat (Washington Water Trail Association, 2017). The only item that has potential to affect water recreation would be the use of audible recall devices.

The audible recall device is an MK-137 that is intended for underwater use only. It contains a small pyrotechnic of 1.75 grams of double-based propellant composition, an ignition charge of black powder, a primer, and a blasting fuse to produce a 6.6-second delay. The device is used to communicate with divers and submersible drivers per prearranged instructions. It is dropped adjacent to the diver/swimmers to alert them that a potential situation is occurring and that they should return to the

surface. Due to the “avoid detection” intent of the training, it is highly unlikely that recreational swimmer/divers would be near the naval special operations swimmer/divers during a training evolution and, because it would only occur on an as-needed basis, which is unpredictable, the audible recall device is not carried forward for further analysis.

3.1.2.4.2 Land-Based Recreation Activities

Land-based recreation activities within the training study area include backpacking, bird watching, golf, geocaching, camping, hunting, off-roading, mountain biking, hiking trails and nature walks, metal detecting, wildlife viewing, remote controlled aircraft, photography, rock climbing and winter recreation (U.S. Department of the Navy, 2010; Washington State Parks, 2017; Washington Tourism Alliance, 2017).

3.1.2.5 Tourism

The Washington Tourism Alliance was established in 2011 following the closure of the State Tourism office. Their mission is to advocate, promote, develop and sustain the economic wellbeing of the Washington State tourism industry (Washington Tourism Alliance, 2017). Tourism within the training study area occurs mostly within the Puget Sound Region, Regions 1 and 2 of the training study area, and some occurs in State Parks along the coast, Region 3 of the training study area. The economy of Whidbey Island south of Oak Harbor relies heavily on tourism-related commerce. Tourism is also important for the towns of Coupeville and Langley (U.S. Department of the Navy, 2015). Puget Sound and the Straits of Juan De Fuca are home to an active whale watching tourism industry. Other areas within the Puget Sound have recreational fishing, boating, sailing, diving, and other tourist activities that are centered on boat basins, marinas, and the ports of the areas. Communities with a reputation for good fishing also tend to be linked to the tourism industry in general with more tourism infrastructure such as lodging, restaurants, and other amenities. Recreational boating and ocean-related tourism activities contribute to the regional economy of Puget Sound. Puget Sound has 244 marinas with 39,400 moorage slips and another 331 launch sites for smaller boats. Statewide, approximately 180,000 boats are registered, not counting thousands more small boats and watercraft that do not require registration. An estimated 390,000 people participate in recreational activities in the waters and on the beaches of Puget Sound at least once a year (Washington Department of Ecology, 2012). Recreational boating and other ocean-related tourism activities contribute millions of dollars to the regional economy each year (U.S. Department of the Navy, 2015).

Coastal tourism within Region 3 of the training study area includes the full range of tourism, leisure, and recreation activities that take place in the coastal zone and offshore coastal waters (e.g., ecotourism, boating, swimming, fishing, surfing).

3.1.3 Environmental Consequences

Analysis of impacts to socioeconomics is focused on the issues of the effects of the alternatives on population, employment, transportation and shipping, recreation and tourism. The alternatives were evaluated based on the potential for and the degree to which the training activities could impact socioeconomic resources. The potential for impacts depends on the likelihood that the training activities would interact with public activities or infrastructure.

3.1.3.1 No Action Alternative

Under the No Action Alternative, training activities conducted in western Washington State over the past 30 years would continue in Region 1 training study area with two training blocks per year (as approved under the 2015 Northwest Training and Testing Final Environmental Impact Statement

[EIS]/Overseas EIS [OEIS], 2010 Northwest Training Range Complex EIS/OEIS, and event-based Categorical Exclusions, as applicable). Under the No Action Alternative, an individual site would be used no more than 10 times a year. Training activities would include launch and recovery of the submersible or small boats, insertion and extraction of these vessels, diver/swimmer training, over-the-beach, special reconnaissance, and the use of unmanned underwater vehicles. Small audible recall devices could be used to communicate with diver/swimmers and submersible drivers as per prearranged instructions.

Under the No Action Alternative, up to 70 naval special operations personnel would travel to western Washington State to conduct cold-water maritime and land-based training. Personnel typically stay on military installations. However, if lodging on military installations is not available, personnel stay in hotels in Kitsap County. While in the area, personnel contribute to the local economy by frequenting restaurants for meals and shops to purchase incidentals. Personnel also participate in leisure activities when off duty, which also contributes to the general economy. Under the No Action Alternative, there is no substantial shift in socioeconomic conditions within the Region 1 training study area as a result of naval special operations training. Regional population demographics do not increase or decrease because personnel are only in western Washington State for a limited duration of time associated with the training. There are potential beneficial impacts to the local economy occur (albeit slight) because of trainees and support personnel frequenting local businesses while deployed in the area for training.

Training activities do not restrict transportation and shipping patterns, commercial and recreational fishing activities, or the ability of individuals to use or access recreational activities within the Region 1 training study area. Training does not include large troop movements; therefore, vehicular traffic on the roadways within the training study area is not restricted. Training within Region 1 is localized, infrequent, and brief in duration. In addition, training is consistent with the existing land use of the area for federal, state, and private lands, with trainees swimming in the water, moving across the beach, walking on trails and only off trails when necessary.

The airborne noise produced from surface vessels supporting training activities is consistent with noise from non-Navy vessels (such as recreational fishing boats) common in the area and would not disrupt other recreational activities in the training study area. Naval special operations personnel have been training in the area for the past 30 years and no negative effects on tourism or recreation have been reported. Tourism and recreational activity in the state of Washington continue to increase, exhibiting positive trends (Dean Runyan Associates, 2015). Minimization measures employed during training activities limit encounters with the public during training events. Minimization may include temporarily ceasing training if the public enters the immediate training area or delaying the start of training until the public is done using or transiting the area. In some instances, training may continue if the public enters the training area. Under the No Action Alternative, public parks and waterways remain open to the public during training and access is not restricted. The Navy, on behalf of NSWC, obtains a right-of-entry permit prior to conducting training where consent is needed from Washington State Parks, private property owners, or other public owners. Within the training study area, an individual site would be used for no more than 10 times per year.

As presented above, under the No Action Alternative, there are no significant socioeconomic impacts, in Region 1; therefore, no significant impacts to socioeconomic resources would occur as a result of the continuation of training under the No Action Alternative.

3.1.3.2 Alternative 1

Under Alternative 1, proposed training activities would be conducted in western Washington State in Region 1 and would include an increased tempo above the No Action Alternative from two to four training blocks per year. Within Region 1, an individual site would be used for no more than 20 times per year. The same training activities in the No Action Alternative would occur. The following training activities would be added: simulated building clearance and the training with UASs. The use of remote operated vehicles would be included with unmanned underwater vehicles (UUV).

Under Alternative 1, the increase in training blocks and potential training locations, when compared to the No Action Alternative, would result in a small beneficial change in the local economy due to the increased number of trainees and personnel visiting the area. Even with the increase in training, socioeconomic resources would not be observably different from current conditions described under the No Action Alternative. Under Alternative 1, increased training activities would not restrict transportation and shipping patterns, commercial and recreational fishing activities, or the ability of individuals to use or access water-based or land-based recreational activities within the training study area. In addition, increases would continue to be consistent with common noise from non-Navy vessels.

UASs would introduce airborne noise. Proposed UAS training activities would not disrupt other recreational activities, especially considering their propulsion system, the altitudes at which they would fly, the short duration of the flights, and the fact that they would be used in austere environments, typically away from the general public. In Alternative 1, UASs would be used at the following Navy installations: Naval Magazine Indian Island, Naval Base Kitsap Keyport, and the Toandos Buffer Zone.

Minimization measures for interaction with the public would be the same as described under the No Action Alternative, plus what is described here for UASs and simulate building clearance. Right-of-entry permits would continue to be obtained prior to conducting training in areas where consent is needed. Therefore, no significant impacts on socioeconomic resources would occur with implementation of Alternative 1.

3.1.3.3 Alternative 2

Under Alternative 2, the locations identified for training activities, number of training blocks per year, and site usage per year are the exact same as those identified in Alternative 1 for Region 1. However, Alternative 2 adds two new training locations, Regions 2 and 3. Regions 2 and 3 would have one training block every other year with an individual site being used no more than three times every other year in each region. The same training activities as identified in Alternative 1 would occur under Alternative 2, with the exception that UAS and Simulated Building Clearance training activities would not occur in Region 3. Additional UAS training would occur in Region 2 at R6701. Also, one new proposed training activity, High-Angle Climbing, would occur at Deception Pass State Park in Region 3.

Under Alternative 2, the increase in total training blocks and potential training locations, when compared to Alternative 1, would result in a small beneficial change in the local economy due to the increased number of trainees and personnel visiting the area. Even with the increase in training, socioeconomic resources would not be observably different from current conditions described above under Alternative 1. The addition of proposed High-Angle Climbing training in Region 2 at a known recreation area would be non-invasive, consistent with recreational uses, and infrequent. Thus, training in this location would not impact the public's recreational use of the area. Increased training activities and locations under Alternative 2 would not restrict transportation and shipping patterns, commercial and recreational fishing activities, or the ability of individuals to use or access water-based or land-based

recreational activities within the training study area. In addition, increases would continue to be consistent with common noise from non-Navy vessels. Minimization measures for interaction with the public would be the same as described under the No Action Alternative, plus UAS from Alternative 1 and high-angle climbing described in this Alternative. Right-of-entry permits would continue to be obtained prior to conducting training in areas where consent is needed. Therefore, no significant impacts on socioeconomic resources would occur with implementation of Alternative 2.

3.1.3.4 Alternative 3 (Preferred Alternative)

Under Alternative 3, proposed training activities would be conducted in Regions 1, 2, and 3 as identified in Alternative 2; in addition, there would be an increase in training tempo in Region 1 from four to six training blocks per year and an individual site would be used no more than 36 times per year. The number of trainees would increase by four and additional support personnel would be added for a total of up to 84 personnel.

Under Alternative 3, the increase in total training blocks and personnel when compared to Alternative 2 would result in a small beneficial change in the local economy due to the increased number of trainees and personnel visiting the area. Even with the increase in training, socioeconomic resources would not be observably different from current conditions described above under Alternative 2. The addition of two training blocks in Region 1 would not restrict transportation and shipping patterns, commercial and recreational fishing activities, or the ability of individuals to use or access water-based or land-based recreational activities within the training study area. In addition, increases would continue to be consistent with common noise from non-Navy vessels. Minimization measures for interaction with the public would be the same as described under Alternative 2 and right-of-entry permits would continue to be obtained prior to conducting training in areas where consent is needed. Within Region 1, a site would be used no more than 36 times in a year. Within Regions 2 and 3, a site would be used no more than three times every other year for each region. Therefore, no significant impacts on socioeconomic resources would occur with implementation of Alternative 3.

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3.2 Cultural Resources

This discussion of cultural resources includes prehistoric and historic archaeological sites; historic buildings, structures, and districts; and physical entities and human-made or natural features important to a culture, a subculture, or a community for traditional, religious, or other reasons. Cultural resources can be divided into three major categories:

- Archaeological resources (prehistoric and historic) are locations or material remains of past human life or activities.
- Architectural resources include standing buildings, structures, landscapes, and other built-environment resources of historic significance.
- Traditional cultural properties (TCPs) may include archaeological resources, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

3.2.1 Regulatory Setting

Cultural resources are governed by federal laws and regulations. These include the National Historic Preservation Act (NHPA), Archeological and Historic Preservation Act, American Indian Religious Freedom Act, Archaeological Resources Protection Act of 1979, and the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990. Federal agencies' responsibility for protecting historic properties is defined primarily by sections 106 and 110 of the NHPA. Section 106 requires federal agencies to take into account the effects of their undertakings on historic properties. Section 110 of the NHPA requires federal agencies to establish, in conjunction with the Secretary of the Interior, historic preservation programs for the identification, evaluation, and protection of historic properties.

3.2.2 Affected Environment

Cultural resources that are listed in the National Register of Historic Places (NRHP) or determined eligible for listing in the NRHP are "historic properties" as defined by the NHPA. The list was established under the NHPA and it is administered by the National Park Service on behalf of the Secretary of the Interior. The NRHP includes properties on public and private land. Properties can be determined eligible for listing in the NRHP by the Secretary of the Interior or by a federal agency official with concurrence from the applicable SHPO. An NRHP-eligible property has the same protections as a property listed in the NRHP. The historical properties may include archaeological and architectural resources and TCPs.

The area of potential effects (APE) for cultural resources is the geographic area or areas within which an undertaking (project, activity, program or practice) may cause changes in the character or use of any historic properties present. The APE is influenced by the scale and nature of the undertaking and may be different for various kinds of effects caused by the undertaking. For this Proposed Action, the Navy determined that the APE includes the training study area as shown in Figure 1-2, including the specific sites identified in Region 1, Region 2, and Region 3.

The coastal region of the northwestern United States was largely shaped by a series of glacial events and changes in sea level, with subsequent emergence of land masses and deposition of glacial till and outwash. During the last glacial maximum (19,000 years ago), the Pacific Ocean was about 120 meters lower than the modern sea level and the Washington coastline expanded 39 kilometers west of the modern coast (ICF International et al., 2013). Early populations may have migrated into the area using different routes at different times. At least three possible migration routes have been proposed and

include the full maritime migration, the partially amphibious migration, and the ice-free corridor migration (ICF International et al., 2013). Regardless of their migration route or initial adaptation, the first human inhabitants were probably big game hunters and are known as Paleoindians (8,000–14,000 years Before Present [BP]). Although they probably supplemented their diet by gathering various plant species, such organic items are not often well preserved by the archaeological record. Instead, they are best known through the artifacts they left behind, principally projectile points. Additionally, technological distinctions among the projectile points (Clovis, Folsom) may be indicative of cultural divisions and possibly the specialization toward hunting, particularly of game animals (Matson & Coupland, 1995; U.S. Department of the Navy, 2015).

Continuing human occupation and use of the northern Puget Sound region dates to over 14,000 years ago. Prehistoric Northwest Coast peoples lived in an area with a relatively mild climate, temperate rain forest, and rich marine life. The chronological sequence for the northern Puget Sound is composed of four periods. The Generalized Resource Development (ca. 13,000–6,000 years BP) period, the succeeding Specialized Resource Development (ca. 6,000–2,500 years BP) period, the period of Specialized Resource Management (ca. 2,500–250 years BP), and finally, the period of Culture Conflict (ca. 250–100 years BP) which represents the early historic times (Dames & Moore, 1994).

As the climate became warmer and drier after 8,000 years BP, native groups along the coastline of the Pacific Northwest adapted to a maritime subsistence, focusing on the harvest of marine fish and mammals. Subsistence activities among the Northwest Coast peoples, including those living in the regions of Puget Sound, included a reliance on fishing, hunting, and gathering with an emphasis on aquatic resources, and the utilization of preservation and storage technologies.

The basic food sources included salmon, shellfish, freshwater fish, land mammals, berries, freshwater fish, and wild plants. Vegetable foods included camas roots and lily bulbs supplemented by berries and nuts. Net traps or spears were used to capture waterfowl, and bows and arrows were used for game. Among the northwest tribes, riverine fishing, especially the taking of salmon and steelhead, was universally important as an element of diet and, in cultural traditions, in religious practices and trade. The northwest groups developed a wide variety of fishing methods such as nets, traps, weirs, spears, and hook and line, which they used to catch fish at numerous locations throughout the areas they lived and traveled. Species taken included coho, Chinook, pink, sockeye, and chum salmon; rockfish; perch; ling cod; halibut; herring; smelt; and trout. They gathered numerous shellfish species on beaches and mudflats, including cockles, clams, saltwater snails, oysters, barnacles, crab, chitons, and mussels (U.S. Department of the Navy, 1997). Hunting expeditions pursued elk, deer, bear, otters, seals, and ducks (Watson, 1999). With a few exceptions, Northwest Coast peoples occupied permanent villages in winter, and many had permanent structures for other seasons. Their cedar-plank dwellings typically housed several related families. They often settled along the estuaries of small rivers and along the open coastline where intertidal, estuarine, and marine resources were available for subsistence uses. Northwest Coast material culture is distinctive for its highly developed woodworking technology that produced plank houses, dugout canoes, and beautifully crafted utensils. Renowned art work included carving, painting, and textiles.

Spanish, English, and Russian explorers and fur traders visited the area that would become the Northwest Coast of the United States during the late 1700s. In 1774, Juan Pérez explored the Northwest coastline. A year later, an expedition led by Bruno Heceta made the first recorded landing in what would become Washington State near the mouth of the Hoh River. Between 1770 and 1853, diseases such as smallpox, measles, influenza, malaria, and tuberculosis reduced the Puget Sound Native population from

approximately 20,000 to 7,000 (Crowley et al., 2001). In 1792, Captain George Vancouver set out to map and explore coastal areas in what is now northern Washington. In May 1792, Joseph Whidbey, accompanied by Peter Puget, mapped and explored areas of what is now Puget Sound. America's formal incursion into this area was marked by the entry of the United States Exploring Expedition, commanded by Lieutenant Charles Wilkes, into Puget Sound in 1841.

The Puget Sound area became U.S. territory when the 1846 Oregon Treaty was signed. In 1850, Colonel Isaac Ebey claimed a square mile of prairie on Admiralty Inlet to become the first permanent settler on Whidbey Island. Immigrants continued to arrive in the Pacific Northwest and, during the 1850s, communities such as Port Townsend, Jefferson County, Island County (Oak Harbor), Coupeville, and Clallam County began taking shape. In 1853, Isaac Stevens became the first Washington Territory governor. Bainbridge Island, Bremerton, and other communities took shape in the later 1800s from the 1870s to the 1890s. These communities were largely founded by immigrants and grew based on resources that were available to them such as fishing, fur, farming, and trade location. Port Townsend was the Puget Sound's Customs Port of Entry in 1851; however, it did not remain the Port of Entry due to the absence of a railroad connection to the major markets that developed on the Puget Sound to the South (Caldbrick, 2010, 2014; Crowley et al., 2001; McClary, 2005a, 2005b; Oldham, 2005; Ott, 2007; Riddle, 2010; Wilma, 2007).

During the late 1850s and early 1860s, traders, travelers, missionaries, and settlers entered the area and began to move into land cleared by logging operations. These newcomers interacted with local tribes in numerous ways, including bringing in new diseases and alcohol. Maritime activity in the Puget Sound was associated with procurement of marine resources (fishing by the Puget Sound tribes and nations); general exploration and transit (initial exploration and trade, military activity and shipbuilding); and transport of raw materials, manufactured goods, and people (e.g., furs, timber, fish, gold, and miners).

Because of the treacherous nature of the Pacific coastline in Washington, light stations or lighthouses were initially constructed from 1852 to 1858 to assist in the rescue of mariners. These Life Saving Service locations joined with the Revenue Cutter Service in 1915 and became the U.S. Coast Guard. During World War II (WWII), these light stations were used as spotting stations for military land and sea operations as well as radio stations (ICF International et al., 2013).

3.2.2.1 Archaeological Resources

Archaeological sites within the Puget Sound region have largely been recognized in two settings: shell middens in littoral areas and sites located in riverine areas. In general, shell middens occur just above the mean high tide line. The oldest dated coastal shell midden site in Washington is approximately 4,000 years old, but the majority are less than 3,000 years old as that is around the time when the current sea level stabilized. Shell middens can be villages, camp sites, or shellfish processing areas that contain organically rich dark soil with shell fragments or shells, artifacts, and fire-cracked rocks near saltwater shorelines (Stilson et al., 2003). A 10,000-year-old stone tool site was discovered in 2015 in urban Seattle and is the oldest artifact assemblage from western Washington found to date (De Pastino, 2015).

Societies along the Washington coast ranged from camps to large complex villages along major rivers with monumental architecture and elaborate art. These societies functioned around harvesting and storing salmon that came in predictable runs. The families would move with the seasons, living in a village during the winter and seasonally moving from camp to camp to collect resources during seasons as appropriate (Stilson et al., 2003).

3.2.2.1.1 Region 1

Archaeological sites in Region 1 include shell middens, historic debris, and pig bone sites from data compiled from Washington State Department of Archaeology and Historic Preservation (DAHP) Washington Information System for Architectural and Archaeological Records Data (WISAARD). Shipwrecks also occur in Region 1. Obstructions and wrecks are listed in the National Oceanic and Atmospheric Administration Automated Wreck and Obstruction Information System database. In this area, most shipwrecks are of unknown origin, date of sinking, or type (National Oceanic and Atmospheric Administration, 2008). On October 18, 2018, the Navy submitted a comprehensive list for consultation (Appendix D, Table 1). The immediate area around the old federal prison buildings on McNeil Island was not included in the table, but it was included in the letter. McNeil Island is an archaeological district.

3.2.2.1.2 Region 2

Archaeological sites in Region 2 include shell middens, lithic sites, and historic era and prehistoric archaeological sites nearby in the northern portion of Whidbey Island (Washington State Parks and Recreation Commission, 2016). These eligible properties are listed in Table 3.2-1. There are no known shipwrecks in Region 2.

Table 3.2-1: NRHP Listed/Eligible Archaeological Sites in the Region 2 Training Area

#	PROPERTY NAME	LOCATION	DATE LISTED NRHP/ DETERMINED ELIGIBLE	DAHP RESOURCE ID
1	SK00021: Shell Midden	HISP	Potentially Eligible (PE) 8/9/1974	648646
2	SK00007: Shell Midden	DPSP	PE 4/9/2009	648632
3	SK00008: Shell Midden	DPSP	PE 4/9/2009	648633
4	SK00536: Bowman Bay Marine Biological Station	DPSP	PE 6/17/2014	661484
5	SK00144: Lithic Midden	DPSP	-	648762
6	SK00209: Lithic Scatter	DPSP	PE 7/07/2000	639530
7	IS00090: Shell Midden	DPSP	PE 3/1988	639490
8	IS00107: Midden	DPSP	PE 7/1988	639502
9	IS00031: Midden	DPSP	PE 2001	639431
10	IS00323: Historic Debris	AF*	PE 3/2013	659549
11	IS00283: Historic Debris	AF*	PE 3/2009	652905
12	IS00041: Lithic Debris	SB*	PE 9/13/2013	639441
13	IS00240: Shell Midden	SB*	PE 9/15/2007	639548
14	IS00241: Historic Debris	SB*	PE 9/27/2007	639549
15	IS00082: Midden	SB*	DE 8/3.2010	639482
16	IS00204: Midden	SB*	PE 10/1/2007	639526
17	IS00081: Lithic/Midden	SB*	PE 10/19/2007	639481
18	IS000237: Shell Midden	SB*	PE 9/15/2007	639546
19	IS00002: xwi?əx pəqwəb	CB	Listed 10/23/2008	639402
20	IS00210	SB	PE	639531
21	IS00285	SB	PE	653367
22	IS00323	SB	PE	659549
23	IS00324	AF	PE	649550

**Table 3.2-1: NRHP Listed/Eligible Archaeological Sites in the Region 2 Training Area
(continued)**

#	PROPERTY NAME	LOCATION	DATE LISTED NRHP/ DETERMINED ELIGIBLE	DAHP RESOURCE ID
24	IS00336	SB	PE	660728
25	SK00509	DPSP	PE	659084

Notes: AF = Ault Field, CB = Cama Beach, DAHP = Department of Archaeology and Historic Preservation, DE = Determined Eligible, DPSP = Deception Pass State Park, HISP = Hope Island State Park, NAS = Naval Air Station, NRHP = National Register of Historic Places, SB = Seaplane Base, * = NAS Whidbey Island

3.2.2.1.3 Region 3

Archaeological sites in Region 3 include historic era sites and shipwrecks found in WISAARD. These are listed in Table 3.2-2.

**Table 3.2-2: NRHP Listed/Eligible Archaeological Sites/Shipwrecks in the Region 3
Training Area**

#	PROPERTY NAME	LOCATION	DATE LISTED NRHP/ DETERMINED ELGIBLE	DAHP RESOURCE ID
1	PC00118: Historic Refuse Dump	CDSP	Potentially Eligible (PE) 11/12/2002	646757
2	PC00220: Historic Wagon Road	CDSP	PE 11/12/2002	659089
3	PC00113 & 00114: Old Coast Guard Road	CDSP	PE 11/12/2002	646752
4	PC00120: Park Hub WWII Foundations	CDSP	PE 11/12/2003	646759
7	<i>Rosecrans</i> (Shipwreck)	CD	Unevaluated	-
8	<i>Unknown</i> (Shipwreck)	CD	Unevaluated	-
9	<i>Unknown</i> (Shipwreck)	CD	Unevaluated	-
10	<i>Admiral Benson</i> (Shipwreck)	CD	Unevaluated	-
11	<i>Bette M</i> (Shipwreck)	CD	Unevaluated	-
12	PC00112	CD	PE	646751
13	PC00131	Grayland	PE	646770

Notes: CD = Cape Disappointment, CDSP = Cape Disappointment State Park, DAHP = Department of Archaeology and Historic Preservation, NRHP = National Register of Historic Places, WWII = World War II

3.2.2.2 Architectural Resources

3.2.2.2.1 Region 1

Region 1 contains historical areas such as Fort Flagler, Fort Townsend, Fort Worden, NAVMAG Indian Island, NAVBASE Kitsap Keyport, NAVBASE Kitsap Bangor, NAVBASE Kitsap Bremerton, Manchester Fuel Department Black Island, and McNeil Island. The U.S. government established military outposts on the Olympic Peninsula during the early twentieth century, including Fort Flagler and Fort Worden in 1902 near Port Townsend. The timber, and shipbuilding industries were the largest in this region followed by iron-smelting operation and paper mill. The Olympic National Park was established in 1938 by President Franklin D. Roosevelt covering 922,653 acres. During World War I a railroad was planned for the peninsula but was not finished in time and was disassembled. Ferries operated until a bridge was

constructed in 1952 across Hood Canal. Indian Island was a sparsely populated and rural, and was supported mostly by nearby towns such as Port Hadlock. The need for more ammunition storage facilities and an aircraft arming station for Naval Air Station, Seattle was identified by the Navy in 1936. The NAVMAG Indian Island facility was established in 1941 as a Naval ammunition depot and a Naval net depot during WWII and was involved in storing ordnance and loading ordnance to and from ships, as well as manufacturing nets for harbor and fleet defense.

NAVMAG Indian Island is largely composed of groupings of WWII-era magazines situated in wooded areas. Activity decreased at Indian Island after WWII until the 1970s when the Trident missile base was established in Bangor and upgrades were made at Indian Island to make it a fully functioning ordnance depot. Two buildings have been classified as eligible for the NRHP at NAVMAG Indian Island.

NAVBASE Kitsap Keyport contains the Keyport Industrial Historic District and the Keyport Residential Historic District, both of which are eligible for listing on the NRHP. NAVBASE Kitsap Keyport on Keyport Peninsula is named Keyport because it was considered the key to Liberty Bay. In the late nineteenth century, the peninsula was used for agricultural activity and limited development of U.S. Navy facilities. The Puget Sound Naval Yard at Bremerton was established in 1891 on the Kitsap Peninsula to serve as a U.S. Navy Pacific Fleet repair facility. The Pacific Coast Torpedo Station was established in 1914 on the Kitsap Peninsula, and the Manchester Refueling Station was established in 1938. Keyport and the Puget Sound Naval Yard underwent rapid expansion in 1939 when Hitler invaded Poland, and the per-war and WWII years changed the Kitsap Peninsula from a rural farming and milling community to a large Naval facility (Hampton & Burkett, 2011).

At NAVBASE Kitsap Bangor five facilities, Building 2000, 7400, 7420m 7501, and 7700 are eligible for listing on the NRHP. Additionally, three buildings contribute to the NRHP-eligible Magnetic Silencing Facility Historic District (Buildings 7800, 7801, and 7044). NAVBASE Kitsap Bangor was created after the Navy annexed the town of Bangor and relocated 1,100 people in 1944. The Navy established a NAVMAG at Bangor and the installation connected the marginal wharfs, magazines, and warehouses in the region. During WWII the NAVMAG Bangor accommodated over 1,600 uniformed military service personnel and the primary focus of the base was the trans-shipment of ordnance. In the 1960s, Bangor was transformed to a base for handling ballistic nuclear missiles called Polaris missiles. In 1973 Bangor became the home port for nuclear missile-armed Trident submarines, which it still accommodates today (Hampton et al., 2010a).

Naval Base NAVBASE Kitsap Bremerton contains four historic districts that are listed on the NRHP, Puget Sound Radio Station Historic District, Naval Hospital Reservation Historic District, Officers' Row Historic District, and Marine Reservation Historic District. There is one National Historic Land mark at Puget Sound Naval Shipyard, and an NRHP-eligible Historic District called the Puget Sound Naval Shipyard Historic District. NAVBASE Kitsap Bremerton contains mostly dormitories, officer housing, personnel support facilities, warehouses, administrative facilities, supporting utilities buildings and an inactive ship storage facility. The base supports ships and submarines that home port in Bremerton and Bangor. Bremerton supported the Navy Yard Puget Sound as the first dry dock, administration building, and officers' housing were completed in 1896. United States involvement in World War I and WWII contributed to the overall need for facilities and personnel in the Pacific Northwest and the development at Naval Base Kitsap Bremerton (Hampton et al., 2011).

There are two buildings at Naval Supply Station Manchester that are eligible for listing on the NRHP. Manchester was originally known as Brooklyn, but it was changed to Manchester in 1892 in hopes that it

would be a successful port city like Manchester in England. Manchester grew slowly throughout the 1900s until the 1940s and the WWII military effort. It grew rapidly during this decade with the development of the Naval fuel depot and added new housing and businesses until 1949 when ferry service was discontinued to the city. In 1970 the Manchester Division of Naval Supply Center Puget Sound was reassigned as the Naval Supply Center Puget Sound, Manchester Fuel Depot, and 150 acres of the property were deemed excess and decommissioned. This area became the Manchester State Park. The Naval Supply Station Manchester's primary mission is to provide bulk fuel and lubricant support to area Navy afloat and shore activities (Hampton et al., 2010b).

A full list of potentially eligible or determined eligible architectural sites on the NRHP in Region 1 is in Appendix D, Table 2.

3.2.2.2.2 Region 2

Listed or eligible buildings and structures in Region 2 are in Table 3.2-3. Whidbey Island is located within a littoral setting. Prior to 1942, the lands on Whidbey Island were rural. Farms and their accompanying structures dominated the landscape. Roughly 85 rural or farm lots were located at Seaplane Base. Condemnation of these rural lots for use by the Navy was accepted on June 22, 1942 (Hardlines Design Company, 2010).

NAS Whidbey Island was intended to provide the barest operational buildings and utilities for re-arming seaplanes. The outbreak of WWII brought more activity to Whidbey Island, leading to the air station becoming an important training center. Patrol planes based on NAS Whidbey Island flew long-range navigation training missions over the north Pacific. Buildings continued to be added to the original complement throughout WWII (Hardlines Design Company, 2010). In 1949, NAS Whidbey Island became a major fleet support station, and the only major station north of San Francisco and west of Chicago. This decision and the rising tensions of the Cold War, in connection with the outbreak of the Korean War, resulted in the development of additional facilities and rehabilitation of existing structures in the early 1950s (Dames & Moore, 1994). This development centered on Ault Field with the Seaplane Base taking a supporting role. The Seaplane Base Historic District (SPBHD) is eligible for listing in the NRHP (Houser, 2010). The Navy determined that 37 buildings, structures, and landscape features are NRHP-eligible, either individually or as contributing resources of the NRHP-eligible SPBHD. The SPBHD was redefined in January 2010 with the help of the SHPO extending its limits from the Fuel Farm to the Victory Homes at the top of the hill on Coral Sea Drive.

The Central Whidbey Island Historic District was listed on the NRHP in 1973 and has a local level of significance (National Park Service, 1973). Fort Casey is a contributing factor to the Central Whidbey Island Historic District (Washington State Parks and Recreation Commission, 2008).

Ebey's Landing National Historical Reserve is made up of a partnership between the federal, state, county and town, and offers support to the community in preservation of their cultural and natural legacy. Approximately 85 percent of the Reserve is privately owned and preserves connections to the Coast Salish peoples, English explorers and traders, American farmers and sea captains, and Chinese farmers. The Reserve consists of over 17,000 acres and encompasses the entire central Whidbey Island area including Penn Cove and the town of Coupeville (National Park Service, 2016). These listed or eligible sites are shown in Table 3.2-3.

Table 3.2-3: NRHP Listed/Eligible Buildings and Structures in the Region 2 Training Area

#	PROPERTY NAME	LOCATION	DATE LISTED NRHP/ DETERMINED ELIGIBLE	DAHP RESOURCE ID
1	Deception Pass Bridge	DP	Listed in NRHP	8329
2	Deception Pass State Park Historic District (DPSPHD)	DPSP	Determined Eligible (DE) 12/12/2012	674889
2a	Latrine (Cranberry Lake Bathing)	DPSP	Contributes to DPSPHD	-
2b	Combination Building (Cranberry Lake Bathing)	DPSP	Contributes to DPSPHD	-
2c	Shelter Kitchen (Cranberry Lake Bathing)	DPSP	Contributes to DPSPHD	-
2d	Campstove Shelter Bldg (Cranberry Lake Bathing)	DPSP	Contributes to DPSPHD	-
2e	Pump House (Cranberry Lake Bathing)	DPSP	Contributes to DPSPHD	-
2f	Comfort Station (Cranberry Lake Bathing)	DPSP	Contributes to DPSPHD	-
2g	Caretaker's Residence (Cranberry Lake Caretaker's)	DPSP	Contributes to DPSPHD	-
2h	Caretaker's Shop & Garage (Cranberry Lake Caretaker's)	DPSP	Contributes to DPSPHD	-
2i	Maintenance Shop (Cranberry Lake Caretaker's)	DPSP	Contributes to DPSPHD	-
2j	Fire Circle (Cornet Bay Picnic Area)	DPSP	Contributes to DPSPHD	-
2k	Incinerator (Cornet Bay Picnic Area)	DPSP	Contributes to DPSPHD	-
2l	Drinking Fountain (Cornet Bay Picnic Area)	DPSP	Contributes to DPSPHD	-
2m	Community Kitchen (North Beach Picnic Area)	DPSP	Contributes to DPSPHD	-
2n	Shelter Kitchen (North Beach Picnic Area)	DPSP	Contributes to DPSPHD	-
2o	Campstove Shelter (North Beach Picnic Area)	DPSP	Contributes to DPSPHD	-
2p	Latrine (North Beach Picnic Area)	DPSP	Contributes to DPSPHD	-
2q	Caretaker's Residence (Bowman Bay Bathing)	DPSP	Contributes to DPSPHD	-
2r	Caretaker's Shop & Garage (Bowman Bay Bathing)	DPSP	Contributes to DPSPHD	-
2s	Barn (Bowman Bay Bathing)	DPSP	Contributes to DPSPHD	-
2t	Bath House (Bowman Bay Bathing)	DPSP	Contributes to DPSPHD	-
2u	Community Kitchen (Bowman Bay Bathing)	DPSP	Contributes to DPSPHD	-
2v	Combination Building (Bowman Bay Bathing)	DPSP	Contributes to DPSPHD	-
2w	Latrine (Bowman Bay Bathing)	DPSP	Contributes to DPSPHD	-
2x	Campstove Shelter (Bowman Bay Bathing)	DPSP	Contributes to DPSPHD	-
2y	Drinking Fountain (Bowman Bay Bathing)	DPSP	Contributes to DPSPHD	-
2z	Pump House (Bowman Bay Bathing)	DPSP	Contributes to DPSPHD	-
2aa	Bath House (Bowman Bay Bathing)	DPSP	Contributes to DPSPHD	-
2ab	Entrance Piers	DPSP	Contributes to DPSPHD	-
2ac	Pedestrian Underpass (Highway 20)	DPSP	Contributes to DPSPHD	-
2ad	Log and Stone Guardrails (Highway 20)	DPSP	Contributes to DPSPHD	-
2ae	Deception Pass Bridge	DPSP	Contributes to DPSPHD	676025
2af	Canoe Pass Bridge	DPSP	Contributes to DPSPHD	44335
3	Facility 118	AF*	DE 1/26/2010	57764
4	Facility 386	AF*	DE 1/26/2010	41581
5	Facility 410	AF*	DE 4/4/2014	15-00041

**Table 3.2-3: NRHP Listed/Eligible Buildings and Structures in the Region 2 Training Area
(continued)**

#	PROPERTY NAME	LOCATION	DATE LISTED NRHP/ DETERMINED ELIGIBLE	DAHP RESOURCE ID
6	Facility 960	AF*	DE (no date)	57724
7	Facility 2700	AF*	DE 4/4/2014	67797
8	Seaplane Base Historic District (SBHD)	SB*	DE 1/26/2010	-
8a	Facility 12	SB*	Contributes to SBHD	57765
8b	Facility 13	SB*	Contributes to SBHD	57794
8c	Facility 14	SB*	Contributes to SBHD	57766
8d	Facility 16	SB*	Contributes to SBHD	57795
8e	Facility 17	SB*	Contributes to SBHD	57796
8f	Facility 18	SB*	Contributes to SBHD	57797
8g	Facility 20	SB*	Contributes to SBHD	57767
8h	Facility 22	SB*	Contributes to SBHD	57800
8i	Facility 26	SB*	Contributes to SBHD	57768
8j	Facility 27	SB*	Contributes to SBHD	57769
8k	Facility 33	SB*	Contributes to SBHD	57801
8l	Facility 34	SB*	Contributes to SBHD	57802
8m	Facility 49	SB*	Contributes to SBHD	57770
8n	Facility 60	SB*	Contributes to SBHD	57804
8o	Facility 62	SB*	Contributes to SBHD	57805
8p	Facility 81	SB*	Contributes to SBHD	57807
8q	Facility 87	SB*	Contributes to SBHD	57772
8r	Facility 94	SB*	Contributes to SBHD	57811
8s	Facility 98/215	SB*	Contributes to SBHD	57812
8t	Facility 613	SB*	Contributes to SBHD	57777
8u	Facility 800	SB*	Contributes to SBHD	26
8v	Facility 802	SB*	Contributes to SBHD	73
8w	Facility 2588-2599	SB*	Contributes to SBHD	67863
9	Victory Homes Historic District (VHHD)	SB*	DE 1/26/2010	-
9a	Facility 613 & 614	SB*	Contributes to VHHD	57821
10	Fort Casey Military site	FCSP	Contributes to CWIHD	639500
10a	Admiralty Head Lighthouse	FCSP	Contributes to CWIHD	-
10b	Officers' Housing	FCSP	Contributes to CWIHD	-
10c	Warehouses	FCSP	Contributes to CWIHD	-
10d	Firehall	FCSP	Contributes to CWIHD	-
10e	Gas Station	FCSP	Contributes to CWIHD	-
10f	Quartermaster Office	FCSP	Contributes to CWIHD	-
10g	Barracks	FCSP	Contributes to CWIHD	-
10h	Gymnasium	FCSP	Contributes to CWIHD	-
10i	Rubin Turman Battery	FCSP	Contributes to CWIHD	-

**Table 3.2-3: NRHP Listed/Eligible Buildings and Structures in the Region 2 Training Area
(continued)**

#	PROPERTY NAME	LOCATION	DATE LISTED NRHP/ DETERMINED ELIGIBLE	DAHP RESOURCE ID
10j	Quartermaster Wharf	FCSP	Contributes to CWIHD	-
10k	Pump House	FCSP	Contributes to CWIHD	-

Notes: AF = Ault Field, CWI = Central Whidbey Island, CWIHD = Central Whidbey Island Historic District, DAHP = Department of Archaeology and Historic Preservation, DP = Deception Pass, DPSP = Deception Pass State Park, DPSPHD = Deception Pass State Park Historic District, FCSP = Fort Casey State Park, NAS = Naval Air Station, NRHP = National Register of Historic Places, SB = Seaplane Base, * = NAS Whidbey Island

3.2.2.2.3 Region 3

Region 3 contains Westhaven, Twin Harbors, Grayland Beach, Leadbetter Point, Pacific Pines, and Cape Disappointment, along the West coast of Washington and Fort Columbia on the Columbia River. The Westport Light State Park and Westhaven state park were combined into one park in 2016. The historic Westport Lighthouse, also known as the Grays Harbor Lighthouse, was built in 1898 and is adjacent to the park on Coast Guard property. The lighthouses along the west coast of Washington were built to aid in navigation. The Westport Lighthouse was used to at the south entrance of Grays Harbor for Point Chehalis (Washington State Parks, 2017a). Twin Harbors State Park allows for camping in cabins, tents, and Recreational Vehicles along the beach. It is a 222-acre camping park that is 4 miles south of Westport. During the 1930s, the park was a military training ground. In 1977, the last remaining barracks were removed from Twin Harbors State Park (Washington State Parks, 2017b).

Grayland Beach State Park contains a beach loop campground, on 412 acres with 7,449 feet of ocean frontage. The camping includes full hook up campsites, yurts, and standard and primitive tent sites. Settlement of the lands that comprise the park began in the 1870s by Euro-Americans, but the land was traditional territory of multiple Native American groups prior to that, which included the Shoalwater Bay and Chehalis tribes (Washington State Parks, 2017c). Leadbetter Point state park is a day use area that is known for birdwatching. It is next to the Willapa National Wildlife Refuge where visitors can kayak, canoe, and paddleboard. The park contains snowy plovers and breeding areas that are blocked off from visitor access for the bird's protection. Other activities at the park include clamming, hiking, and saltwater fishing (Washington State Parks, 2017d). Pacific Pines is a 10-acre day use beach park on the Long Beach Peninsula. It offers beach walking, birding, fishing, shellfish harvest, crabbing, and other wildlife viewing (Washington State Parks, 2017e).

Cape Disappointment was originally part of the Chinook tribal territory and was used for maritime fur trade. It was first mapped by Burno de Hezeta in 1775, and named by Captain John Meares in 1788 when he could not locate the river entrance. In 1792, Captain Robert Gray found the river entrance and named the river the Columbia River after his ship. Lewis and Clark arrived at Cape Disappointment in 1805 from St. Louis, Missouri after a 3,700-mile, 18-month trek. In 1856, the Cape Disappointment Lighthouse was constructed as a warning to mariners of the river bar where the Columbia River meets the Pacific. The river bar is known as "the graveyard of the Pacific" due to its treacherous conditions. The Cape Disappointment Lighthouse is the oldest operating lighthouse in the Pacific Northwest. The North Head Lighthouse was completed in 1898 to warn southbound ships of the river bar. During the Civil War, smoothbore cannons were installed at Cape Disappointment to protect the mouth of the Columbia River. In 1875, the installation was expanded and became Fort Canby. The fort was used until

the end of WWII. In 1912, the U.S. Army Corps of Engineers constructed the North Jetty to provide safer navigation of the Columbia River Bar and to complement the South Jetty on the Oregon side of the river. The Civilian Conservation Corps camp restored the fort and improved roads and trails at Cape Disappointment from 1935 to 1938. Washington State Parks purchased “Bell’s View” in 1938 and began Cape Disappointment State Park which now covers 1,882 acres. The park offers camping in yurts, cabins, historic vacation homes, and tents. Other park activities include hiking, boating, clamming, crabbing, fishing, bird watching, beach exploration, concerts, museum attendance (Washington State Parks, 2017f).

The Fort Columbia Historical State Park is one of the most intact coastal defense sites in the United States. It was built between 1896 and 1903, renovated in WWII, and decommissioned in 1947. It is a day-use park on Chinook Point with historic buildings including officers’ homes, artillery batteries, and 6-inch rapid-fire WWII-era disappearing guns. The park offers vacation housing, bird watching, hiking, and secluded beaches over its 617 acres within the Lewis and Clark National Historical Park (Washington State Parks, 2017g).

The NRHP listed or eligible buildings and structures in the Region 3 are shown in Table 3.2-4. The Grays Harbor light station was listed on the NRHP in 1977. It is an octagonal masonry tower that is 26 feet (ft.) 6 in. in diameter and rises to a height of 108 ft. and 1 in. (diminishing in diameter as it rises) (National Park Service, 1977). The Cape Disappointment Historic District was listed on the NRHP in 1975. A large headland that forms the northern portion of the mouth of the Columbia River, Cape Disappointment Historic District includes the southernmost extension of the land into the Columbia River, North Head, and McKenzie Head. The district includes lighthouses, batteries, Fort Canby, and supporting facilities (National Park Service, 1975).

Table 3.2-4: NRHP Listed/Eligible Buildings and Structures in the Region 3 Training Area

#	PROPERTY NAME	LOCATION	DATE LISTED NRHP/ DETERMINED ELGIBLE	DAH RESOURCE ID
1	Grays Harbor Light Station	WLSP	Listed 7/15/2009	674813
2	Cape Disappointment Historic District (CDHD)	CDSP	Listed 8/15/1975	674637
2a	Fort Canby Searchlight 5	CDSP	Contributes to CDHD	53975
2b	Fort Canby Searchlight 6	CDSP	Contributes to CDHD	53976
2c	North Head Base End Station Complex	CDSP	Contributes to CDHD	53977
2d	North Head Base End Station Powerhouse	CDSP	Contributes to CDHD	53978
2e	North Head Lighthouse Keeper’s House	CDSP	Contributes to CDHD	57982
2f	North Head Lighthouse	CDSP	Contributes to CDHD	626856
3	Chinook Point (CP)	FCSP	Listed NHL 6/28/1978	675678
3a	Building 7	FCSP	Contributes to CP	4357909
3b	Building 6: NCO Duplex	FCSP	Contributes to CP	435789
3c	Building 5: Scarborough House	FCSP	Contributes to CP	435787
3d	Building 11: NCO Duplex	FCSP	Contributes to CP	618813
3e	Building 10: Steward’s House	FCSP	Contributes to CP	618814
3f	Building 1: Interpretive Center	FCSP	Contributes to CP	613381
3g	Building 2: Admin Building	FCSP	Contributes to CP	613382

**Table 3.2-4: NRHP Listed/Eligible Buildings and Structures in the Region 3 Training Area
(continued)**

#	PROPERTY NAME	LOCATION	DATE LISTED NRHP/ DETERMINED ELGIBLE	DAHP RESOURCE ID
3h	Commanding Officer's Quarters	FCSP	Contributes to CP	50191

Notes: CDSP = Cape Disappointment State Park, DAHP = Department of Archaeology and Historic Preservation, FCSP = Fort Columbia State Park, NCO = Noncommissioned Officers, NHL = National Historic Landmark, NRHP = National Register of Historic Places, WLSP = Westport Light State Park

3.2.2.3 Traditional Cultural Properties

No TCPs have been identified in the APEs (Regions 1–3) and there are no TCPs listed in the DAHP Database for the APEs. The Navy consulted with tribes whose traditional lands fall in the training study area and they did not identify TCPs.

In 2017 on behalf of the Navy, Josh Wisniewski completed an Evaluation of S’Klallam and Chemakum Places of Historical and Cultural Significance at Naval Magazine Indian Island, Jefferson County, Washington for Naval Facilities Northwest at Silverdale, Washington. No TCPS have been submitted as eligible to NRHP based on this study. Based on this information, TCPs will not be carried forward for further analysis.

3.2.3 Environmental Consequences

The analysis of potential effects to cultural resources considers both direct and indirect effects. Direct effects may be the result of physically altering, damaging, or destroying all or part of a resource, altering characteristics of the surrounding environment that contribute to the importance of the resource, introducing visual, atmospheric, or audible elements that are out of character for the period the resource represents (thereby altering the setting), or neglecting the resource to the extent that it deteriorates or is destroyed. Indirect effects may be the result of direct effects such as a physical damage to an architectural resource and the indirect effect that people are no longer able to see or access that resource. Fifty-eight organizations were contacted by the Navy for consultation to minimize effects to cultural resources as a result of implementing Alternative 1, 2, and 3 and are listed in Appendix B (Correspondence for Naval Special Operations Training in Western Washington State).

The Navy initiated the NHPA Section 106 process in April 2017. Letters were sent to ACHP, Washington SHPO, 25 tribes, and 33 interested parties consisting of historic societies, museums, Certified Local Governments, and governments within or directly adjacent to the proposed APE. The following 22 federally recognized tribes in alphabetical order are: Confederated Tribes and Bands of the Yakama Nation, Confederated Tribes of the Chehalis Reservation, Cowlitz Indian Tribe, Hoh Indian Tribe, Jamestown S’Klallam Tribe, Lower Elwha Tribal Community, Muckleshoot Indian Tribe, Nisqually Indian Tribe, Nooksack Indian Tribe, Port Gamble S’Klallam Tribe, Puyallup Tribe of the Puyallup Reservation, Quinault Indian Nation, Samish Indian Nation, Shoalwater Bay Indian Tribe of the Shoalwater Bay Indian Reservation (Shoalwater Bay Tribe), Skokomish Indian Tribe, Snoqualmie Indian Tribe, Squaxin Island Tribe of the Squaxin Indian Reservation (Squaxin Island Tribe), Stillaguamish Tribe of Indians of Washington, Suquamish Indian Tribe of the Port Madison Reservation (Suquamish Tribe), Swinomish Indian Tribal Community, Tulalip Tribes of Washington, and the Upper Skagit Indian Tribe. Three non-federally recognized tribes were also included: Chinook Indian Nation, Clatsop-Nehalem Confederated Tribes, and the Confederated Tribes of Grand Ronde Community of Oregon. Of these tribes that were

contacted, the following 11 tribes participated in the NHPA Section 106 process: Confederated Tribes of the Chehalis Reservation, Jamestown S’Klallam Tribe, Lower Elwha Tribal Community, Muckleshoot Indian Tribe, Nisqually Indian Tribe, Port Gamble S’Klallam Tribe, Shoalwater Bay Indian Tribe, Skokomish Indian Tribe, Snoqualmie Indian Tribe, Squaxin Island Tribe, and the Upper Skagit Indian Tribe. The NHPA Section 106 process concluded on July 23, 2019 with a finding of no adverse effect to historic properties with five measures. The Navy agreed to the following five measures in order to ensure no historic properties are adversely affected:

1. reopen consultation per 36 CFR 800.5(d) if necessitated by a change in the undertaking;
2. ensure a Secretary of Interior (Sol) qualified archaeologist reviews new and renewed real estate agreements for new information such as the presence of eroding archaeological deposits or features;
3. implement the Inadvertent Discovery Plan;
4. ensure a Sol qualified archaeologist provides sensitivity training prior to the start of each training block; and
5. Navy’s Sol qualified archaeologist would periodically confirm to SHPO staff that adverse effects are being avoided.

See Chapter 5 and Appendix B for detailed information about the NHPA Section 106 process.

3.2.3.1 No Action Alternative

Under the No Action Alternative, the APE is where training activities would occur in the Region 1 training study area with two training blocks per year and an individual site would be used no more than 10 times a year. Training activities under the No Action Alternative include launch and recovery of submersible or small boats; driving these vessels (including unmanned underwater vehicles) to training locations (insertion and extraction); swimming and diving; walking in the nearshore, on the beach (over-the-beach), and on land (special reconnaissance); and staying overnight (special reconnaissance). Under the No Action Alternative, small audible recall devices could be used to communicate with the diver/swimmers and submersible drivers per prearranged instructions.

The audible recall device is an MK-137 that is intended for underwater use only. It contains a small pyrotechnic of 1.75 grams of double-based propellant composition, an ignition charge of black powder, a primer, and a blasting fuse to produce a 6.6-second delay. It is dropped adjacent to the diver/swimmers to alert them that a potential situation is occurring and that they should return to the surface. Due to the small force of the 1.75 grams of double-based propellant, it is not expected that any potential underwater cultural resource would be affected. Additionally, because the device would only be used on an as needed basis, which is unpredictable, and it is a *de minimis* source, the audible recall device was not carried forward for further analysis.

3.2.3.1.1 Archaeological Resources

By the nature of the training with the goal of leaving no trace, burials and eroding shell middens would not be adversely impacted. In the event archaeological materials not previously identified are discovered, all training activities in the immediate area would be stopped and the appropriate Navy Cultural Resources Manager contacted to initiate Section 106 procedures.

Water-based training avoids known shipwrecks or sunken resources that may be present within the APE. In addition, proposed training activities avoid contact with hard surfaces that may be present within the training study area in the interest of trainee safety and avoidance of potential adverse effects.

As presented under the No Action Alternative, no adverse effects with regard to archaeological resources would occur with the continuation of training under the No Action Alternative. There would be no significant impact to archaeological resources.

3.2.3.1.2 Architectural Resources

Under the No Action Alternative, buildings are not used as part of the training activities in Region 1. Therefore, no adverse effects with regard to historic structures would occur with the continuation of training under the No Action Alternative. There would be no significant impact to architectural resources.

3.2.3.2 Alternative 1

Under Alternative 1, the proposed training would occur in Region 1 with an increased tempo above the No Action Alternative from two to four training blocks per year. Within Region 1, an individual site would be used for no more than 20 times per year. The same training activities in the No Action Alternative would occur. The following training activities would be added: simulated building clearance and the training with UASs. The use of remote operated vehicles would be included with unmanned underwater vehicles.

3.2.3.2.1 Archaeological Resources

While there is an increase in site usage and potential training locations under Alternative 1 when compared to the No Action Alternative, there would be no change in potential effects under Alternative 1 from those presented under the No Action Alternative. Training activities would not disturb burials and eroding shell midden sites and would avoid known shipwrecks or sunken resources that may be present within the APE. Therefore, a finding of no historic properties adversely affected with regard to archaeological resources would occur with implementation of Alternative 1. There would be no significant impact to archaeological resources.

3.2.3.2.2 Architectural Resources

Under Alternative 1, simulated building clearance training activities in Region 1 would be localized, infrequent, and brief in duration. Trainees operate with the intent to leave no trace during or after a training event. No doors or windows would be broken when entering or leaving a building used for training. Paint pellets used during training would bounce off of hard surfaces, and paint markings would be water soluble and cleaned off with water once training is completed. Brass from the paint pellets would also be picked up once training is completed.

Thus, the non-invasive nature of the training under the No Action Alternative avoids potential adverse effects to architectural resources in the Region 1 training study area. Therefore, no adverse effects with regard to historic structures would occur with the continuation of training under the No Action Alternative. There would be no significant impact to architectural resources.

3.2.3.3 Alternative 2

Under Alternative 2, locations, training activities, number of training blocks per year, and site usage per year would be exactly the same as those identified in Alternative 1 for Region 1. However, Alternative 2 adds two new training locations, Regions 2 and 3. Regions 2 and 3 would have one training block every other year with an individual site being used no more than three times every other year in each region. The same training activities as identified in Alternative 1 would occur under Alternative 2, with the exception that UAS and Simulated Building Clearance training activities would not occur in Region 3.

Additional UAS training would occur in Region 2 at R6701. Also, one new proposed training activity, High-Angle Climbing, would occur at Deception Pass State Park in Region 3.

3.2.3.3.1 Archaeological Resources

While there is an increase in site usage and potential training locations under Alternative 2 when compared to Alternative 1, there would be no change in anticipated effects, as activities would be non-invasive in nature as described under Alternative 1. Training activities would not disturb burials and eroding shell midden sites and would avoid known shipwrecks or sunken resources that may be present within the APE. Therefore, a finding of no historic properties adversely affected with regard to archaeological resources would occur with implementation of Alternative 2. There would be no significant impact to archaeological resources.

3.2.3.3.2 Architectural Resources

The addition of training in Regions 2 and 3 under Alternative 2 would remain consistent with the non-invasive nature of the training as described under Alternative 1. The additional regions would result in a broader use of the training study area; however, training events would remain localized, infrequent, and brief in duration. Trainees would operate with the goal to leave no trace during or after a training event. The non-invasive nature of the training associated with the implementation of Alternative 2 would avoid potential adverse effects to architectural resources in the training study area. Therefore, a finding of no historic properties adversely affected on historic structures would occur with implementation of Alternative 2. There would be no significant impact to architectural resources.

3.2.3.4 Alternative 3 (Preferred Alternative)

Under Alternative 3, proposed training activities would be conducted in Regions 1, 2, and 3 as identified in Alternative 2. In addition, there would be an increase in training tempo in Region 1 from four to six training blocks per year and an individual site would be used no more than 36 times per year.

3.2.3.4.1 Archaeological Resources

Under Alternative 3, the proposed training activities would occur as identified in Alternative 2, with an increase in tempo in Region 1 from four to six training blocks. While there is an increase in training blocks and site usage under Alternative 3 when compared to Alternative 2 in Region 1, there would be no change in anticipated effects, as activities would remain non-invasive in nature. Training activities would not disturb burials sites and eroding shell middens and would avoid known shipwrecks or sunken resources that may be present within the APE. Therefore, a finding of no historic properties adversely affected with regard to archaeological resources would occur with implementation of Alternative 3. There would be no significant impact to archaeological resources.

3.2.3.4.2 Architectural Resources

The increase in tempo in Region 1 under Alternative 3 would remain consistent with the non-invasive nature of the training as described under Alternative 2. The additional training in Region 1 would result in a broader use of the training study area; however, training events would remain localized, infrequent, and brief in duration. Trainees would operate with the goal to leave no trace during or after a training event. The non-invasive nature of the training associated with the implementation of Alternative 3 would avoid potential adverse effects to architectural resources in the training study area. Therefore, a finding of no historic properties adversely affected with regard to historic structures would occur with implementation of Alternative 3. There would be no significant impact to architectural resources.

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3.3 Biological Resources

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

Within this EA, biological resources are divided into four major categories: (1) terrestrial vegetation, (2) terrestrial wildlife, (3) aquatic vegetation, and (4) aquatic wildlife. Threatened, endangered, and other special-status species are discussed in their respective categories.

3.3.1 Regulatory Setting

Special-status species, for the purposes of this EA, are those species listed as threatened or endangered under the federal Endangered Species Act (ESA), species afforded federal protection under the Marine Mammal Protection Act (MMPA), species protected under the Migratory Bird Treaty Act (MBTA), eagle species protected under the Bald and Golden Eagle Protection Act (BGEPA), and species considered by the State of Washington as threatened or endangered under state law. The federal regulatory frameworks relevant to biological resources analyzed in this EA are summarized below:

3.3.1.1 Endangered Species Act

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

3.3.1.2 Marine Mammal Protection Act

All marine mammals are protected under the provisions of the MMPA. Under the MMPA for military readiness activities such as training, “harassment” means:

1. any act that injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild; or
2. any act that disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering, to a point where such behavioral patterns are abandoned or significantly altered.” (Section 315(f) of Public Law 107-314; 16 U.S.C. 703 note).

3.3.1.3 Migratory Bird Treaty Act

Birds, both migratory and most native-resident bird species, are protected under the MBTA, and their conservation by federal agencies is mandated by Executive Order (EO) 13186 (Migratory Bird Conservation). Under the MBTA it is unlawful by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, [or] possess migratory birds or their nests or eggs at any time, unless permitted by regulation. The 2003 National Defense Authorization Act gave the Secretary of

the Interior authority to prescribe regulations to exempt the Armed Forces from the incidental taking of migratory birds during authorized military readiness activities. The final rule authorizing the incidental taking of migratory birds in such cases includes a requirement that the Armed Forces must confer with the USFWS to develop and implement appropriate conservation measures to minimize or mitigate adverse effects of the Proposed Action if the action will have a significant negative effect on the sustainability of a population of a migratory bird species. Subsequently, the DoD and USFWS entered into a memorandum of understanding to promote the conservation of migratory birds on September 5, 2014 (U.S. Department of Defense & U.S. Fish and Wildlife Service, 2014).

3.3.1.4 Bald and Golden Eagle Protection Act

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

3.3.1.5 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act provides for the conservation and management of the fisheries. Under the Magnuson-Stevens Fishery Conservation and Management Act, essential fish habitat (EFH) consists of the waters and substrate needed by fish to spawn, breed, feed, or grow to maturity.

3.3.2 Affected Environment

The following discussions provide a description of the existing conditions for each of the categories under biological resources at training locations described in Section 2.1 (Proposed Action). Because of the disparate conditions at different land-based and in-water training locations within the training study area, terrestrial and marine species and habitats are analyzed based on location. Special status species managed under the regulatory frameworks summarized in Section 3.3.1 (Regulatory Setting) are described in Section 3.3.2.3 (Special Status Species).

3.3.2.1 Terrestrial Biological Resources

3.3.2.1.1 Terrestrial Vegetation

Terrestrial vegetation includes terrestrial plants and constituent plant species. Most training activities would occur in developed areas (e.g., existing military facilities and private and public marinas) or managed parklands (e.g., within state parks) and avoid sensitive native habitats. Vegetation within terrestrial environments of the training study area is best characterized as transitional riparian vegetation that links marine environments and inland ecosystems (Brennan, 2007). Coastal trees and other vegetation on backshore areas, banks, and bluffs help stabilize the soil, control pollution entering marine waters, provide fish and wildlife habitat, and modify stressful physical conditions along shorelines. The historical climax communities in marine riparian areas were likely forests of western hemlock (*Tsuga heterophylla*) and Douglas fir (*Pseudotsuga menziesii*), intermixed with western red cedar (*Juniperus virginiana*) and a variety of associated understory species. In areas of frequent disturbance, early successional trees, such as red alder and maple, dominated coastal forests. Douglas fir is currently the most common conifer in relatively undisturbed sites. Maple (*Acer* spp.), alder (*Alnus* spp.), and non-native species typically dominate shorelines. These species colonize rapidly after various types of disturbance, including soil erosion, fire, logging, and other anthropogenic impacts. Pacific madrone (*Arbutus menziesii*) forests are found on more xeric (dry) sites. Other, more specialized riparian communities include prairies, dune-grass associations, salt marshes, and tidal or surge-plain

communities; losses of most of these habitats have been extensive in Puget Sound (Dunwiddie et al., 2014). Because most of the bluffs around Puget Sound experience soil movement at intervals shorter than those needed for the development of a climax forest, these “fringe” forests often have a higher composition of disturbance-adapted vegetation. In addition to soil movement, disturbances such as wind, salt spray, timber harvest, development, and other anthropogenic activities have resulted in the conversion of conifer forests to vegetation communities dominated by alder, maple, and non-native species, making these forest communities much more common and widespread today than they were historically (Brennan, 2007).

3.3.2.1.2 Terrestrial Wildlife

Wildlife includes all animal species (i.e., insects and other invertebrates, reptiles, birds, and mammals) that primarily occur on land, focusing on the species and habitat features of greatest importance or interest. Aquatic species (marine and freshwater vegetation, invertebrates, fishes, reptiles, and marine mammals) are discussed under Section 3.3.2.2 (Aquatic Biological Resources).

Terrestrial Invertebrates

Terrestrial invertebrates within the training study area are generally associated with low-elevation, moist coastal habitats. Representative species may include ants (family Formicidae), sweat bees (family Halictidae), jumping spiders (family Salticidae), hobo spiders (*Tegenaria agrestis*), and multiple species of butterflies (order Lepidoptera).

Birds

Within the training study area, major taxonomic groups of birds include songbirds (neotropical and resident passerines), seabirds, shorebirds and waders, and birds of prey (Gelfenbaum et al., 2006). The shorelines of the training study area along the Straits of Juan de Fuca, Puget Sound, and Pacific coast are generally rocky, with small beaches at the mouths of streams and rivers. Extensive mudflats associated with river deltas support large populations of shorebirds and waterfowl in the winter (Nysewander et al., 2005). The numerous bays and inlets provide sheltered waters for wintering waterfowl, shorebirds, and seabirds. The beaches and mudflats within Puget Sound and along the coastal areas of the training study area provide important stopover and wintering habitats for numerous migratory birds.

Neotropical migratory birds pass through the training study area on their annual migrations. The majority of neotropical migratory birds are songbirds, but there are also many shorebirds, some raptors, and a few types of waterfowl that migrate. Species of migratory birds that can be found in the training study area include Townsend’s warbler (*Dendroica townsendi*), varied thrush (*Ixoreus naevius*), green-winged teal (*Anas carolinensis*), Hutton’s vireo (*Vireo huttoni*), robin (*Turdus migratorius*), and the spotted sandpiper (*Actitis macularia*) (U.S. Department of the Navy, 2017).

Shorebirds and wading birds include species such as herons, phalaropes, sandpipers, oystercatchers, and plovers. They do not swim but rather wade or probe at the water’s edge, feeding on organisms in shallow water or in the intertidal mud or sand. While most shorebirds tend to feed on sandy beaches or mudflats, several species prefer to forage on rock substrate (Galbraith et al., 2005). Most shorebird species prefer open, sparsely vegetated nesting cover near shallow water. Areas for nesting include lowland arctic tundra, wide sloping beaches, and along the edges of wetlands (Ericson et al., 2003). Representative species of shorebirds within the training study area include the killdeer (*Charadrius vociferous*), semipalmated plover (*Charadrius semipalmatus*), pigeon guillemot (*Cephus columba*), common snipe (*Gallinago gallinago*), and federally threatened western snowy plover. Shorebirds are

migratory, travelling thousands of miles between Arctic nesting grounds and wintering grounds in Central and South America. About two-thirds of all western hemispheric shorebird species leave Arctic breeding grounds in the fall and move south via the Pacific flyway to wintering grounds (U.S. Fish and Wildlife Service, 2005). Shorebirds depend on critical staging sites along the coast during migrations. Coastal bays and estuaries along the Washington outer coast, including Grays Harbor and Willapa Bay, are important feeding and resting areas for large concentrations of birds during migration and the winter season. At least 12 species of shorebirds stage in the spring, with numbers of more than a million in the Grays Harbor area and 750,000 in Willapa Bay (U.S. Fish and Wildlife Service, 2005).

Approximately 32 species of nocturnal and diurnal birds of prey live within Washington, including owls (e.g., flammulated owl [*Otus flammeolus*], burrowing owl [*Athene cunicularia*]), hawks (northern goshawk [*Accipiter gentilis*]), falcons (e.g., peregrine falcon [*Falco peregrinus*]), and two species of eagles (bald eagle [*Haliaeetus leucocephalus*], golden eagle [*Aquila chrysaetos*]) (Washington Department of Fish and Wildlife, 2017).

Mammals (Terrestrial)

Habitats along undeveloped shorelines of the training study area support a variety of mammal species. Representative species include black-tailed deer (*Odocoileus hemionus*), black bear (*Ursus americanus*), cougar (*Puma concolor*) (one mated pair is known to occur on Naval Magazine Indian Island), beaver (*Castor canadensis*), river otter (*Lutra canadensis*), short-tailed weasel (*Mustela erminea*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), fox (*Vulpes vulpes*), and bobcat (*Lynx rufus*). In developed areas (e.g., residential, commercial, and industrial portions of the training study area), typical mammal species include raccoons, occasional coyotes, rodent species (*Rattus* spp.), domesticated and feral cats, and dogs (U.S. Department of the Navy, 2017).

3.3.2.2 Aquatic Biological Resources

3.3.2.2.1 Aquatic Vegetation

Marine Vegetation

Marine vegetation includes plants occurring in marine or estuarine waters. These may include algae and various grasses (Belleveau et al., 2015). Kelp, which are large brown seaweeds, attach to bedrock or cobbles in shallow waters, especially in areas with moderate to high waves or currents. Twenty-one kelp species inhabit Washington marine waters (Gabrielson et al., 2006). Kelp are found in a variety of intertidal and subtidal habitats, but all require some sort of solid substrate for growth—bedrock or rocks as small as pebbles, as well as a variety of artificial substrates such as boat bottoms, floats, docks, and mooring buoys and chains. Kelp tend to grow in areas of moderate-to-high wave energy or currents, are abundant wherever there is suitable substrate, and include both floating and non-floating species. Because kelp is photosynthetic and unable to root in soft sediments, it requires a fairly well-defined set of physical conditions: high ambient light, hard substrate, minimum sediment in the water that could block the light or smother the tiny gametophyte stages, and fairly low marine water temperatures and moderate to high salinities (Mumford, 2007). Thus, they are completely confined to nearshore habitats. Eelgrass, which is a flowering plant adapted to the marine environment, roots in sand or mud in shallow waters where waves and currents are not too severe (Thayer & Phillips, 1977). Both these organisms need fairly high light levels to grow and reproduce, so they are found only in shallow waters (mostly less than 20 meters for kelp, and 10 meters for eelgrass). Competitors of eelgrass in Puget Sound include the introduced brown seaweed *Sargassum muticum*, the sand dollar (*Dendraster excentricus*), and possibly the newly discovered kelp species in Hood Canal, *Chorda filum* (Short et al., 2014). In situations where

there are excessive nutrients, algal species such as sea lettuce (*Ulva* spp.) will overgrow eelgrass, and excessive nutrient loading can cause other vegetation (epiphytes) to grow on the blades and reduce the eelgrass ability to photosynthesize (Short et al., 2014). Eelgrass conservation is a management priority reflected through a network of local, state, and federal programs. Impacts to eelgrass would require consultation with NMFS for impacts to Essential Fish Habitats under the Magnuson-Stevens Fishery Conservation and Management Act.

Sporophytes of bull kelp are always found attached to bedrock or to large cobbles in the subtidal zone, especially in areas of considerable water movement (either wave exposure or tidal currents). Plants that attach to small cobbles (less than 10 centimeters) tend to lift their substrate off the bottom in any water movement and thus are carried to the shore or into deeper water. The plants attach by holdfasts, which, unlike roots, do not penetrate the substrate or carry nutrients to the rest of the plant. Bull kelp in Puget Sound occurs from the extreme low tide level to a depth of 10–30 meters, depending on water clarity. Their reliance on areas of considerable water movement may stem from the tiny gametophyte phase's intolerance of being covered with silt (Thom et al., 2014). The sporophytes, which can reach 40 meters in length, are annuals, growing from the bottom starting in early spring, reaching the surface by April or May, and being swept away by fall and winter storms. In Washington, bull kelp is found in discrete beds on the outer coast northward from Copalis Rocks (the southernmost extent of suitable substrate) and throughout the Strait of Juan de Fuca (including on offshore shallow banks) and the San Juan archipelago. It is also found in high-current areas in central Puget Sound and to a lesser degree in southern Puget Sound. The southernmost bed is near Squaxin Island (Aston et al., 2017; Mumford, 2007).

The sporophytes of the giant kelp *Macrocystis* are found attached to bedrock and large boulders in the lower intertidal and shallow subtidal zone to a depth of 4 meters. In Washington, this species is found on the outer coast north of Copalis Rocks and in the Strait of Juan de Fuca west of Low Point but never in Puget Sound proper (probably because of seasonally low salinity; see below). Plants tend to inhabit somewhat less energetic environments than bull kelp. Sporophytes are perennial, living two to five years and growing up to 6 meters long, but little is known about the ecology of the gametophyte phase. Interannual variation of canopy cover is up to 30 percent (Mumford, 2007).

Beds of *Zostera marina* are found throughout Puget Sound, except for south of Anderson Island and Carr Inlet in southern Puget Sound. *Zostera marina* grows in lower and shallow intertidal areas in muddy to sandy substrates and low to moderately high-energy environments. In the higher energy areas, such as Salmon Bank, it may grow in the finer substrates trapped between cobbles and boulders. The deepest beds of *Zostera marina* in Puget Sound are found in the Strait of Juan de Fuca and the San Juan Islands (Mumford, 2007; Thom et al., 2014).

In the Pacific Northwest, over 80 percent of estuarine landscapes have been altered and degraded (Belleveau et al., 2015). Restoration of estuaries is a focus of conservation investment in Puget Sound, with fisheries (specifically for salmon recovery) as a primary driver.

Freshwater Vegetation

Freshwater aquatic vegetation can be found in a variety of wetland types within the training study area. These wetland habitats consist of primarily three types—deciduous forested, coniferous forested, and shrub-dominated wetlands. These wetlands that have been traditionally called marshes, swamps, bogs, fens, ponds, and sloughs. They are primarily found in heavily forested areas and are usually dominated by vegetation. Common wetland plants include yellow pond lily (*Nuphar polysepalum*), skunk cabbage

(*Lysichiton americanus*), pickleweed (*Salicornia virginica*), pondweed (*Potamogeton* sp.), water cress (*Nasturtium officinale*), (*Spiraea douglasii*), lady fern (*Athyrium filix-femina*), aspen (*Populus tremuloides*), Northwestern sedge (*Carex concinnoides*), Pacific Coast bulrush (*Scirpus pacificus*), alder, aster (*Aster subspicatus*), Puget Sound gumweed (*Grindela integrifolia*), saltgrass (*Distichlis spicata*), saltweed (*Atriplex patula*), coast willow (*Salix hookeriana*), and the invasive reed canarygrass (*Phalaris arundinacea*) (Cooke & Azous, 1997; U.S. Department of the Navy, 2017).

Deciduous forested wetlands consist of deciduous trees such as red alder or big-leaf maple. The trees provide shade, keeping water temperatures cool, and supplying a rich organic food source as they shed their leaves. As the wetland water levels rise and fall, some trees are killed by having the root zones inundated with water. The trees quickly rot, providing homes for cavity nesters, food for insect foragers, and, after they have fallen into the wetland, additional organic matter from which the other existing wetland plants feed. Coniferous forested wetlands have Douglas fir and lodgepole pine in close proximity to their edge, and the waters are usually somewhat acidic and brackish in color. Acidic tolerant plants, such as hardhack, reed canarygrass, and water lilies, are indicators of the wetland community, but trees are still an important component as they provide a temperature regulation as well as providing necessary large woody debris as they decay and fall to the surrounding area. Shrub-dominated wetlands are peat bogs in origin, containing hardhack, serviceberry, skunk cabbage, and cattails (U.S. Department of the Navy, 2017).

3.3.2.2.2 Aquatic Invertebrates

Marine Invertebrates

Animals that live on the sea floor are called benthos. Most of these animals lack a backbone and are called invertebrates. Typical benthic invertebrates include sea anemones, sponges, sea stars, sea urchins, worms, bivalves, and crabs. Animals that spend most of their lives in the water column are called pelagic. The following section discusses both benthic and pelagic invertebrates that are found in the Study Area.

Benthic Invertebrates

Marine benthic invertebrates in the training study area inhabit a wide variety of habitats, including salt marshes, mudflats, kelp forests, sandy soft sediments, underwater canyons, the nearshore portions of the continental shelf along the Washington Coast, and inland waters of Puget Sound. Salt marsh invertebrates include oysters, crabs, and worms that are important prey for birds and small mammals. Mudflats provide habitat for substantial amounts of crustaceans, bivalves, and worms. The sandy intertidal area is dominated by species that are highly mobile and can burrow. Some of the most common invertebrates found in soft bottom intertidal and subtidal areas include razor clams (*Siliqua patula*), geoduck clams (*Panopea generosa*), Dungeness crabs (*Cancer magiste*), sea pens (*Ptilosarcus gurneyi*), smooth bay shrimp (*Crangon stylirostris*), Lewis's moonsnails (*Euspira lewisii*), and rainbow stars (*Orthasterias koehlen*) (National Oceanic and Atmospheric Administration, 1993, 2017).

Sponges include over 8,000 marine species worldwide and are classified in the Phylum Porifera (Appeltans et al., 2010). Sponges are bottom-dwelling, multi-cellular animals that can be best described as an aggregation of cells that perform different functions. Sponges are largely sessile (not mobile), except for their larval stages, and are common throughout the Study Area at all depths. Multiple sponge communities occur within Puget Sound. There are three sponge reef complexes that all occur in the northern Puget Sound region from 90 to 210 meters of water depth at North McCall Bank, South McCall Bank, and Fraser Ridge. Habitat-forming deep-sea corals occur in the Puget Sound, as well as on the

continental shelf of the Offshore Area. While the mean depth range of deep-sea corals in the Northeast Pacific Ocean is 265–1,262 meters, deep-sea corals of the Study Area occur in water depths ranging from 9 to 3,450 m (Clarke et al., 2015). Stylasteriidae corals are found in Puget Sound and Georgia Strait and on the shelf and shelf slope in waters shallower than approximately 820 meters (Clarke et al., 2015; Etnoyer & Morgan, 2005; Etnoyer et al., 2016). Jellyfish (cnidarians), comb jellyfish (ctenophorans), and hydroids are also found in the inland water area, throughout the water column, and on the water surface.

The characteristic fauna of an Inland Waters portion of the Study Area sand flat includes cockle (*Clinocardium nuttalli*), white-sand clam (*Macoma secta*), and bent-nosed clam (*Macoma nasuta*) (Proctor et al., 1980). In unprotected rocky intertidal zones, mussels (*Mytilis* spp.) and barnacles form a biotic substrate that provides the necessary habitat for many other species. Pacific oysters are widely cultivated in Dabob Bay, which is one of only three bays on the West Coast where successful spawning of Pacific oysters occurs. Geoduck clams are the basis of an important commercial fishery in Puget Sound and are found in lower intertidal to subtidal soft bottom habitats; they can be found in waters as deep as 110 meters but are most abundant from 9 to 18 meters below mean low water level (Greene et al., 2015). In Puget Sound, hard substrate provides a substrate for the Olympia oyster (*Ostreola conchaphila*). The Olympia oyster is the only oyster native to the Pacific Northwest. Historically, Olympia oyster beds existed throughout most of southern Puget Sound and specifically Willapa and Samish Bays. By 1960, overharvesting and pollution had nearly exterminated most of south Puget Sound's once-thriving Olympia oyster populations. In 1998, the Washington Department of Fish and Wildlife developed the Olympia Oyster Stock Rebuilding Plan. Subsequently, Olympia oysters have survived in north and central Puget Sound, and populations in the south Sound and Hood Canal are gradually recovering (Thom et al., 2014).

Pelagic Invertebrates

A wide variety of marine invertebrates live in the water column in the Study Areas. Some of the most common include hydroids, jellyfish, zooplankton, squid, some species of shrimp, and early life stages (larvae) for many marine invertebrate species. For example, at least six species of gelatinous zooplankton (jellyfish) are common in Puget Sound, including water or crystal (*Aequorea* spp.), moon (*Aurelia labiate*), cross (*Mitrocoma cellularia*), lion's mane (*Cyanea capillata*), fried-egg (*Phacellophora camtschatica*), and umbrella (*Clytia gregaria*) jellyfish (Greene et al., 2015). In addition to the cnidarian jellyfish, ctenophore comb jellyfish (*Pleurobrachia* spp.) are also common. The market squid (*Doryteuthis opalescens*) is one of the few federally managed marine invertebrates found in both inshore and offshore locations in the Study Area.

General threats to marine invertebrates include overexploitation and destructive fishing practices (Jackson et al., 2001; Miloslavich et al., 2011; Pandolfi et al., 2005), habitat degradation from pollution and coastal development (Galloway et al., 2009; Greene et al., 2015; Preikshot et al., 2016), disease, and invasive species (Preikshot et al., 2016; Short et al., 2014). These threats are compounded by global threats to marine life, including the increasing temperature and decreasing pH of the ocean from pollution linked to global climate change (Cohen et al., 2009; Miloslavich et al., 2011).

There are no marine invertebrates in the training study area listed as threatened or endangered under the ESA; however, three species are considered species of concern by NMFS, the Pinto abalone (*Haliotis kamtschatkana*), the Olympia oyster (*Ostreola conchaphila*), and the Newcomb's littorine snail (*Algamorda subrotundata*).

Freshwater Invertebrates

Aquatic freshwater invertebrates within the training study area are generally associated riverine, lake and pond, and marsh habitats. Aquatic freshwater species that occur can include species of mosquitoes (family Culicidae), mayflies (family Baetidae), damselflies and dragonflies (order Ordonata), and water beetles (order Coleoptera).

3.3.2.2.3 Fishes

Marine Fishes

Fish are vital components of the marine ecosystem. They have great ecological and economic aspects. To protect this resource, NMFS works with the regional fishery management councils to identify the essential habitat for every life stage of each federally managed species, using the best available scientific information. EFH has been described for approximately 1,000 managed species to date. EFH includes all types of aquatic habitat including wetlands, coral reefs, seagrasses, and rivers; all locations where fish spawn, breed, feed, or grow to maturity. More than 200 species of fish have been identified in Puget Sound (Brennan, 2007). These include resident species of demersal and pelagic fish that use Puget Sound habitats during a portion of their life cycle. Fish are not distributed uniformly throughout the training study area and are closely associated with a variety of habitats. Even within a single fish species, the distribution and specific habitats in which individuals occur may be influenced by its developmental stage, size, sex, reproductive condition, and other factors. Nine fish species listed as either threatened or endangered under the ESA can potentially occur in the training study area and are described below in Section 3.3.2.3 (Special Status Species).

Salmonids found in the Study Area include Chinook salmon (*Oncorhynchus tshawytscha*), Coho salmon (*Oncorhynchus kisutch*), chum salmon (*Oncorhynchus keta*), pink salmon (*Oncorhynchus gorbuscha*), sockeye salmon (*Oncorhynchus nerka*), anadromous steelhead (*Oncorhynchus mykiss*), and cutthroat trout (*Oncorhynchus clarki clarki*). Commercial marine fish species include Pacific hake (*Merluccius productus*), Pacific cod (*Gadus macrocephalus*), walleye pollock (*Theragra chalcogramma*), Pacific herring (*Clupea harengus pallasii*), spiny dogfish (*Squalus acanthias*), lingcod (*Ophiodon elongatus*), English sole (*Pleuronectes vetulus*), and various rockfish species (*Sebastes* spp.) (Greene et al., 2015). In addition to salmonids, forage fish species such as Pacific herring (*Clupea harengus pallasii*), surf smelt (*Hypomesus pretiosus*), and Pacific sand lance (*Ammodytes hexapterus*) are commonly occur within Puget Sound. Forage fish are important as prey for a large variety of other marine organisms, including birds, fish, marine mammals, and Pacific salmonids. Forage fish species occupy every marine and estuarine habitat in Puget Sound. Other marine fish species found in both inshore and offshore locations in the Study Area include a number of flatfishes (Dover sole, English sole, rex sole, and starry flounder), rockfishes (brown, copper, greenstriped, quillback, and yellowtail), sculpi, and gobies.

General threats to fish include overfishing, bycatch, pollution, and other human-caused stressors. Overfishing is the most serious threat to fish (Carretta et al., 2017a; Crain et al., 2009), with habitat loss also contributing to extinction risk (Cheung et al., 2007). Overfishing occurs when fishes are harvested in quantities above a sustainable level. Overfishing impacts targeted species and non-targeted species (or “bycatch” species) that often are prey for other fishes and marine organisms. Bycatch may also include seabirds, turtles, and marine mammals. Additionally, in recent decades the marine fishes being targeted have changed such that when higher-level predators become scarce, different organisms on the food chain are subsequently targeted; this has negative implications for entire marine food webs (Pauly & Palomares, 2005; Richardson et al., 2016).

Pollution primarily impacts coastal fishes that occur near sources of run-off, such as cities and areas dense in agriculture. However, global oceanic circulation patterns result in a considerable amount of marine pollutants and debris being scattered throughout the open ocean (Richardson et al., 2016). Other human-caused stressors on marine fishes are the introduction of non-native species, climate change, aquaculture, energy production, vessel movement, and underwater noise. Underwater noise is a threat to marine fishes. However, the physiological and behavioral responses of marine fishes to underwater noise (Slabbekoorn et al., 2010) have been investigated for only a limited number of species (Popper et al., 2016).

Essential Fish Habitat Species

The Pacific Fisheries Management Council is responsible for designating EFH for all federally managed species occurring in the coastal and marine waters off the coasts of Washington, Oregon, and California, including Puget Sound. The Pacific Fisheries Management Council designated EFH for these species within the Fishery Management Plans (FMPs) for each of the four primary fisheries that they manage: Coastal Pelagic Species (Pacific Fishery Management Council, 2011a), Pacific Coast Salmon (Pacific Fishery Management Council, 2014a), Pacific Coast Groundfish (Pacific Fishery Management Council, 2014b), and West Coast Fisheries for Highly Migratory Species (Pacific Fishery Management Council, 2011b). Of these fisheries, three (Pacific coast groundfish, coastal pelagic species, and Pacific coast salmon) contain species for which EFH has been designated in the water in the training study area.

The Coastal Pelagic Species FMP (Pacific Fishery Management Council, 2011a) includes a management framework for northern anchovy (*Engraulis mordax*), market squid, Pacific sardine (*Sardinops sagax*), Pacific mackerel (*Scomber japonicas*), jack mackerel (*Trachurus symmetricus*), and krill species (*Euphasiid* spp.). EFH for non-krill coastal pelagic species addresses five pelagic species that are treated as a single species complex (Northern anchovy, Pacific sardine, Pacific mackerel, jack mackerel, and market squid) because of similarities in life histories and habitat requirements.

The management unit in the Pacific Coast Groundfish FMP includes over 90 groundfish species (Pacific Fishery Management Council, 2014b). Many of these species occur within or in the vicinity of the training study area, including flatfishes such as Dover sole, English sole, Petrale sole, starry flounder, and numerous rockfish species.

The Pacific coast salmon management unit includes Chinook, coho, and pink (*Oncorhynchus gorbuscha*) salmon. The EFH designation for the Pacific coast salmon fishery in estuarine and marine environments in the state of Washington extends from nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone 200 miles offshore (Pacific Fishery Management Council, 2014a). In addition to marine and estuarine waters, salmon species have a defined freshwater EFH, which includes all lakes, streams, ponds, rivers, wetlands, and other bodies of water that have been historically accessible to salmon (Pacific Fishery Management Council, 2014a). Chinook, coho, and pink salmon all use the marine environment for rearing as juveniles and offshore environment for migration as adults.

In addition to EFH designations, areas called Habitat Areas of Particular Concern (HAPCs) are also designated by the regional Fishery Management Councils. Designated HAPC are discrete subsets of EFH that provide extremely important ecological functions or are especially vulnerable to degradation (50 CFR 600.805–600.815). Regional Fishery Management Councils may designate a specific habitat area as an HAPC based on one or more of the following reasons: (1) importance of the ecological function provided by the habitat; (2) the extent to which the habitat is sensitive to human-induced

environmental degradation; (3) whether, and to what extent, development activities are, or will be, stressing the habitat type; and (4) rarity of the habitat type (67 FR 2343–2383). Categorization as HAPC does not confer additional protection or restriction to the designated area.

Freshwater Fishes

Several freshwater fish species are found in Lake Kitsap at Camp McKean, including chum salmon that utilize the lower reaches of Kitsap Creek, and coho salmon that use the upper reaches of the creek as well as Kitsap Lake, which provides migratory and first-year habitat (U.S. Department of the Navy, 2017). According to the Washington Department of Fish and Wildlife, threespine stickleback, rainbow trout, largemouth bass, bluegill, and brown bullhead are also present in the lake.

3.3.2.2.4 Reptiles and Amphibians

Sea Turtles

The six sea turtle species that are found in U.S. waters or that nest on U.S. beaches are designated as either threatened or endangered under the ESA. Sea turtles are highly migratory and utilize the waters of more than one country in their lifetimes. The USFWS and NMFS share federal jurisdiction for sea turtles, with the USFWS having lead responsibility on the nesting beaches and NMFS, the marine environment.

Sea turtles are long-lived reptiles that are found throughout the world's tropical, subtropical, and temperate seas. Four of the seven living species of sea turtles (leatherback [*Dermochelys coriacea*], loggerhead [*Caretta caretta*], olive ridley [*Lepidochelys olivacea*], and green [*Chelonia mydas*]) have the potential to be found in the Study Area (Benson et al., 2011; Moore et al., 2009). Of the four sea turtle species potentially found in the training study area, two are listed as endangered (the leatherback and North Pacific Ocean distinct population segment (DPS) of the loggerhead sea turtle). The olive ridley and green turtle are listed as threatened under the ESA, with the exceptions of their Pacific coast of Mexico breeding colonies of each species, which are listed as endangered for both species.

The cold waters off Washington are above the typical northern limits for the loggerhead, olive ridley, and green sea turtles, and these species are considered rare in the training study area. However, as water temperatures drop or other oceanographic changes occur, all of the sea turtle species except leatherbacks become cold stressed and strand on the beaches with no way to survive the return to warmer waters. Although sightings of loggerhead, olive ridley, and green sea turtles have been documented the training study area, most of these involve individuals that were either cold stressed, likely to become cold stressed, or already deceased (Hodge & Wing, 2000). Thus, the training study area is considered to be outside the normal range for these sea turtle species (family Cheloniidae), and are not considered further. Leatherback sea turtles are the only species analyzed below for potential impacts.

Amphibians

The training study area supports a wide variety of fresh water, brackish, and saltwater aquatic habitats where amphibians would likely occur. Surveys have found native species such as northwest salamanders (*Ambystoma gracile*), long-toed salamanders (*Ambystoma macrodactylum*), rough-skinned newts (*Taricha granulosa*), red-legged frogs (*Rana aurora*), and Pacific treefrogs (*Hyla regilla*). Invasive bull frog invasions into aquatic habitats were first reported throughout the 1990s (McAllister et al., 1999; U.S. Department of the Navy, 2017; Washington Department of Fish and Wildlife, 2012a).

Seabirds

Seabirds include species such as loons, grebes, albatrosses, shearwaters, storm-petrels, pelicans, jaegers, gulls and terns, and alcids (auklets, murrets, and puffins) (U.S. Fish and Wildlife Service, 2005). The federally listed marbled murrelet and short-tailed albatross are within this group. Seabirds are a diverse group that is adapted to living in marine environments (Lascelles et al., 2016). The group includes those birds that are pelagic (generally foraging far offshore over the continental shelf and in oceanic waters) and those that feed in nearshore zones. Seabirds have many biological, physical, and behavioral adaptations that are different from those of terrestrial birds. Seabirds typically live longer, breed later in life, and produce fewer young than other bird species (Onley & Scofield, 2007). The feeding habits of seabirds are related to their individual physical characteristics, such as body mass, bill shape, and wing area (U.S. Fish and Wildlife Service, 2005). Some seabirds look for food (forage) on the sea surface, whereas others dive to variable depths to obtain prey (Burger et al., 2004).

3.3.2.2.5 Marine Mammals

Jurisdiction over marine mammals is maintained by NMFS and the USFWS. NMFS maintains jurisdiction over whales, dolphins, porpoises, seals, and sea lions. The USFWS maintains jurisdiction for certain other marine mammal species, including walruses, polar bears, dugongs, sea otters, and manatees. All marine mammals in the United States are protected under the MMPA, and some species receive additional protection under the ESA. The MMPA defines a marine mammal “stock” as “a group of marine mammals of the same species or smaller taxon in a common spatial arrangement that interbreed when mature.” For management purposes under the MMPA, a stock is considered an isolated population or group of individuals within a whole species that is found in the same area. However, generally due to a lack of sufficient information, management stocks defined by NMFS may include groups of multiple species, such as with *Mesoplodon* beaked whales (Carretta et al., 2014). In other cases, a single species may include multiple stocks recognized for management purposes (e.g., harbor porpoise in the Pacific Northwest). Although all marine mammals are protected under the MMPA, only a few species that occur in the training Study Area are listed under the ESA. Information on ESA-listed marine mammals is presented below in Section 3.3.2.3 (Special Status Species). Only those ESA-listed species that have the potential to be impacted by training and testing activities are discussed further.

Marine mammals are a diverse group of approximately 130 species. Most live predominantly in the marine habitat, although some species (e.g., seals) spend time in terrestrial habitats, or in some cases, in freshwater environments, such as certain freshwater dolphins (Jefferson, 2009; Rice, 1998). Marine mammal species with the potential to occur in the training study area include whales, dolphins, and porpoises, and pinnipeds such as seals and sea lions. Although numerous whale species can be found in the Study Area, only a few nearshore species would likely be present in the proposed training areas, including humpback whales (*Megaptera novaeangliae*) and gray whales (*Eschrichtius robustus*). Dolphins that may be observed in proposed training areas include transient and southern resident killer whales (*Orcinus orca*), Harbor porpoise (*Phocoena phocoena*), and Dall’s porpoise (*Phocoenoides dalli*). Pinnipeds likely to occur within the training areas include Steller sea lions (*Eumetopias jubatus*), California sea lions (*Zalophus californianus*), and harbor seals (*Phoca vitulina*).

3.3.2.3 Special Status Species

Federal and state-listed species that are potentially present within the training study area are presented in Table 3.3-1. Critical habitat that has been designated or proposed within the training study area that might conceivably be affected by the Proposed Action and the spatial and temporal distribution, life

history, and ecological requirements of these species is also presented below. Critical habitat, the associated Primary Constituent Elements (PCEs), and essential physical and biological features within the training study area, if applicable, are identified and described. Of note, PCEs is a term that is no longer used by the USFWS and NMFS, but it is used in the older critical habitat designations in Federal Register notices, and thus has been retained in this document for consistency and to aid in review.

Table 3.3-1: Threatened and Endangered Species Known to Occur or Potentially Occurring in the Training Study Area and Critical Habitat Present in Training Study Area

Species	Federal Listing Status	State Listing Status	Critical Habitat Designation
Plants			
Golden paintbrush <i>Castilleja levisecta</i>	Threatened	Threatened	Critical habitat has not been designated for this species.
Marsh sandwort <i>Arenaria paludicola</i>	Endangered	–	Critical habitat has not been designated for this species.
Water howellia <i>aquatilis</i>	Threatened	Threatened	Critical habitat has not been designated for this species.
Pink sand-verbena <i>Abronia umbellata</i> var. <i>acutalata</i> **	–	Endangered	n/a
Coyotebush <i>Baccharis pilularis</i> ssp. <i>Consanguinea</i>	–	Threatened	n/a
Roll’s golden log moss <i>Brotherella roellii</i> **	–	Threatened	n/a
Large-awned sedge <i>Carex macrochaeta</i>	–	Threatened	n/a
Pacific lanceleaved springbeauty <i>Claytonia multiscapa</i> ssp. <i>Pacifica</i> **	–	Endangered	n/a
Threeleaf goldthread <i>Coptis trifolia</i>	–	Threatened	n/a
Black lily <i>Fritillaria camschatcensis</i> **	–	Threatened	n/a
Pacific pea <i>Lathyrus vestitus</i> var. <i>ochropetalus</i>	–	Endangered	n/a
White meconella <i>oregana</i>	–	Endangered	n/a
Western yellow oxalis <i>Oxalis suksdorfii</i>	–	Threatened	n/a
Ocean-bluff bluegrass <i>Poa unilateralis</i> ssp. <i>Pachypholis</i>	–	Threatened	n/a
Great polemonium <i>Polemonium carneum</i>	–	Threatened	n/a
Bear’s-foot sanicle <i>Sanicula arctopoides</i> **	–	Endangered	n/a
Hairy-stemmed checker-mallow <i>Sidalcea hirtipes</i>	–	Threatened	n/a
Water bur-weed <i>Sparganium fluctuans</i>	–	Threatened	n/a

Table 3.3-1: Threatened and Endangered Species Known to Occur or Potentially Occurring in the Training Study Area and Critical Habitat Present in Training Study Area (continued)

Species	Federal Listing Status	State Listing Status	Critical Habitat Designation
Plants (continued)			
Rush aster <i>Symphotrichum boreale</i>	–	Threatened	n/a
Hall’s aster <i>Symphotrichum hallii</i>	–	Threatened	n/a
Erioderma lichen <i>Erioderma solediatum</i>	–	Threatened	n/a
Torn shingles lichen <i>Fuscopannaria laceratula</i>	–	Endangered	n/a
Kaernefeltia lichen <i>Kaernefeltia californica</i>	–	Threatened	n/a
Treepelt lichen <i>Leioderma solediatum</i>	–	Endangered	n/a
Cartilage lichen <i>Ramalina thrausta</i>	–	Threatened	n/a
Lamb’s navel lichen <i>Umbilicaria lambii</i>	–	Endangered	n/a
Rigid navel lichen <i>Umbilicaria rigida</i>	–	Threatened	n/a
Beard lichen <i>Usnea lambii **</i>	–	Threatened	n/a
Invertebrates			
Taylor’s checkerspot butterfly <i>Euphydryas editha taylori</i>	Endangered	–	Critical habitat designated at Deception Pass State Park. Critical habitat has been designated outside the training study area near Coupeville (Whidbey Island) and other locations on the Olympic Peninsula.
Oregon silverspot butterfly <i>Speyeria zerene hippolyta</i>	Threatened	Endangered	Critical habitat designated outside of the training study area at Suislaw National Forest (Oregon).
Amphibians and Reptiles			
Northern leopard frog <i>Lithobates pipiens</i>	–	Endangered	n/a
Western pond turtle <i>Actinemys marmorata</i>	–	Endangered	n/a
Birds			
Marbled murrelet <i>Brachyramphus marmoratus</i>	Threatened	Endangered	Critical habitat designated outside of the Training Study Area primarily in old growth forests and forests with suitable nesting trees, within 35 miles of marine foraging areas.

Table 3.3-1: Threatened and Endangered Species Known to Occur or Potentially Occurring in the Training Study Area and Critical Habitat Present in Training Study Area (continued)

Species	Federal Listing Status	State Listing Status	Critical Habitat Designation
Birds (continued)			
Western snowy plover <i>Charadrius lexandrinus nivosus</i>	Threatened	Endangered	Critical Habitat designated at Grayland Beach State Park and Leadbetter Point State Park, and outside the training study area at Copalis Beach and Ocean Shores.
Streaked horned lark <i>Eremophila alpestris strigata</i>	Threatened	–	Critical Habitat designated at Grayland Beach State Park and Leadbetter Point State Park, and outside the training study area on islands within the Columbia River.
American white pelican <i>Pelecanus erythrorhynchos</i>	–	Threatened	n/a
Tufted puffin <i>Fratercula cirrhata</i>	–	Endangered	n/a
Fishes			
Puget Sound Chinook salmon <i>Oncorhynchus tshawytscha</i>	Threatened	Endangered	Designated within the training study area along the shoreline to depth of -30 meters mean lower low water, excluding DoD waterfronts.
Hood Canal summer-run chum salmon <i>Oncorhynchus keta</i>	Threatened	Candidate Species	Designated within the training study area along the shoreline to depth of -30 meters mean lower low water, excluding DoD waterfronts.
Columbia River chum salmon <i>Oncorhynchus keta</i>	Threatened	Candidate Species	Includes the stream channels within the designated stream reaches, and includes a lateral extent as defined by the ordinary high-water line. Designated critical habitat exists near the mouth of the Columbia River in Region 3.
Puget Sound steelhead <i>Oncorhynchus mykiss</i>	Threatened	–	Includes freshwater and estuaries within the training study area excluding DoD waterfronts.
Bull trout <i>Salvelinus confluentus</i>	Threatened	Candidate Species	Designated within the training study area along the shoreline to depth of -33 feet (-10 meters) relative to the mean lower low water, and deltas of the Duckabush River and Hamma Hamma River.
Puget Sound/Georgia Basin DPS bocaccio <i>Sebastes paucispinis</i>	Endangered	Candidate Species	Includes deepwater and nearshore marine habitat in Puget Sound, including the training study area excluding DoD waterfronts and some restricted areas.
Puget Sound/Georgia Basin DPS yelloweye rockfish <i>Sebastes ruberrimus</i>	Threatened	Candidate Species	Includes deepwater marine habitat in Puget Sound, including the training study area excluding DoD waterfronts and some restricted areas.

Table 3.3-1: Threatened and Endangered Species Known to Occur or Potentially Occurring in the Training Study Area and Critical Habitat Present in Training Study Area (continued)

Species	Federal Listing Status	State Listing Status	Designated Critical Habitat Within the Training Study Area
Fishes (continued)			
Pacific Eulachon Southern DPS <i>Thaleichthys pacificus</i>	Threatened	Candidate Species	Critical habitat exists in Region 3 of the training study area at the mouth of the Columbia river.
North American Green sturgeon Southern DPS <i>Acipenser medirostris</i>	Threatened	–	Coastal marine waters within 60 fathoms (110 m) depth within Regions 2 and 3 of the training study area excluding DoD waterfronts.
Marine Reptiles			
Leatherback sea turtle <i>Dermochelys coriacea</i>	Endangered	Endangered	Coastal and pelagic waters off Washington in Region 3 (not within Puget Sound).
Marine Mammals			
Humpback whale <i>Megaptera novaeangliae</i>	Endangered	Endangered	n/a
Southern Resident killer whale <i>Orcinus orca</i>	Endangered	Endangered	Marine waters deeper than 20 ft. (6 m) within Puget Sound and the Strait of Juan de Fuca.

Notes: (1) DoD = Department of Defense, n/a = Not applicable, mi.² = square miles, km² = square kilometers, ft. = feet (2) The U.S. Fish and Wildlife Service and NMFS may designate critical habitat for ESA-listed species. Non-ESA-listed species are noted as “n/a” (not applicable).

3.3.2.3.1 Special Status Plants

Golden paintbrush (*Castilleja levisecta*)

The USFWS listed the Golden paintbrush (*Castilleja levisecta*) as threatened in 1997 (62 FR 31740 31748). No critical habitat has been designated for this species. Golden paintbrush plants are found on flat grasslands, mounded prairies, and steep grassy bluffs in sandy, well-drained soils of glacial origin (U.S. Fish and Wildlife Service, 2010).

Historically, golden paintbrush was reported from more than 30 sites in the Puget Trough of Washington, British Columbia, and as far south as the Willamette Valley of Oregon. Many populations have been extirpated due to agricultural, residential, and commercial development. Currently, nine populations are known to exist in Washington, most of which are found on Whidbey Island and San Juan Island. The two largest populations occur on the Rocky Prairie Natural Reserve Area in Thurston County and on private land in the San Juan Valley, San Juan Island (U.S. Fish and Wildlife Service, 2010). Golden paintbrush generally do not survive longer than five to six years and reproduce exclusively by seed. Plants begin to emerge as early as February and flowers by mid-summer, with fruits maturing in August (Caplow, 2005).

A reintroduction plan for golden paintbrush was completed in 2004. Experimental outplantings and augmentation plantings, as part of the golden paintbrush reintroduction plan (Caplow, 2004, 2005), have been successful in south Puget Sound (at Glacial Heritage Preserve, Scatter Creek Wildlife Area, and Morgan prairies) and north Puget Sound (at Naas Preserve, Smith Prairie at Pacific Rim Institute,

Ebey's Landing, Waldron Island, American Camp, and False Bay on San Juan Island) (U.S. Fish and Wildlife Service, 2010).

Marsh sandwort (*Arenaria paludicola*)

The marsh sandwort (*Arenaria paludicola*) was listed as endangered in 1993. This plant is a coastal species that was historically known to occur in wetlands and in freshwater marshes. Plants have been documented in areas with or without standing water and in acidic, organic bog soils and sandy substrates with high organic content. The marsh sandwort is believed to be extirpated from both Washington and Oregon (Elvin, 2008).

Water howellia (*Howellia aquatilis*)

The USFWS listed the water howellia (*Howellia aquatilis*) as threatened in 1994 (9 FR 35860 35864). No critical habitat has been designated for this species. Water howellia plants are found on flat grasslands, mounded prairies, and steep grassy bluffs in sandy, well-drained soils of glacial origin (Camp et al., 2011r).

In Washington, water howellia occurs in three different landscape settings. Most known occurrences are in small, ephemeral wetlands in the eastern portion of the state. In Pierce County, the sites are all located in the Puget Trough lowlands, bordered by Douglas-fir-dominated forests. These wetlands all have a significant Oregon ash component. In Clark County, this species occurs in a mosaic of wetlands and Oregon ash and Oregon white oak communities in the floodplain of the Columbia River (Camp et al., 2011r). Although these locations overlap with the training study area, this species is believed to be extirpated from the locations in the training study area.

Water howellia usually flowers in May and June, with small trumpet-shaped blooms ranging from white to light purple in color, at or above the water surface. There may also be small axillary flowers beneath the water surface. Water howellia reproduces only by seed that germinates when ponds dry during fall (Schierenbeck & Phipps, 2010).

State-listed Species

A number of vascular plants and lichens are considered endangered or threatened under state statutes. These species' accounts are summarized below:

Pink sand verbena (*Abronia umbellata* var. *acutalata*)

Pink sand verbena is a small coastal groundcover plant associated with sandy areas and beaches containing dunegrass (*Leymus mollis*) and the more common coastal sand verbena. The only known extant population in Washington is within Pacific County (Camp et al., 2011f).

Coyote bush (*Baccharis pilularis* ssp. *consanguinea*)

Coyote bush is an evergreen shrub that inhabits sea cliffs, bluffs, sand dunes, and coastal shrub thickets. Although coyotebush is mostly associated with coastal habitats, this species can range as high as 5,000 feet in eastern Washington. This species tends to be more common towards the south, in Oregon and California (Camp et al., 2011c).

Roll's golden log moss (*Brotherella roellii*)

Roll's golden log moss is a shiny golden to yellowish-green moss forming thin patchy carpets, usually on old logs and other rotten wood. This moss grows at low elevations in cool, moist, open, mixed deciduous and coniferous forests of riparian corridors and valley margins (Camp et al., 2011b).

Large-awned sedge (*Carex macrochaeta*)

Large-awned sedge ranges from the northeast coast of Asia through the Aleutian Islands to Alaska, and south through British Columbia and Washington. This sedge is found in moist open areas, including seeps, mesic prairies, and along riparian corridors near the coast (Camp et al., 2011a).

Pacific lanceleaved springbeauty (*Claytonia multiscapa* ssp. *Pacifica*)

Pacific lanceleaved springbeauty ranges from Vancouver Island and the North Cascade Range of British Columbia to the Olympic Peninsula in Washington. This plant is found in wet subalpine to alpine meadows, often flowering near the edge of melting snowfields (Camp et al., 2011k).

Threeleaf goldenthrum (*Coptis trifolia*)

Threeleaf goldenthrum is a low-growing perennial forb that ranges from Alaska south through Oregon, across North America to Greenland down, and the eastern coast through North Carolina. This plant is found in mesic forests, bogs, muskegs, willow scrub, and tundra, often alongside various species of mosses. The only known occurrence in Washington is in a coastal cedar bog in Clallam County (Camp et al., 2011d).

Black lily (*Fritillaria camschatcensis*)

Black lily is a bulb-bearing perennial herb that ranges from Kodiak Island and coastal Alaska to Vancouver Island and mainland British Columbia, through Washington and Oregon. This plant is found in moist open meadows along the coast up to about 3,000 feet in the mountains. In Washington, black lilies are found near lakes and streams, wet meadows, salt marshes, sphagnum bogs, coniferous forest wetlands, and deciduous lowland valley forests (Camp et al., 2011j).

Pacific pea (*Lathyrus vestitus* var. *ochropetalus*)

Pacific pea is a perennial herb in the pea family, ranging from central and western Washington into northern California. This plant is found in dry, open to wooded areas, along forest edges and roadsides, and within or near historic prairies. It is often found with Douglas firs and black raspberries (Camp et al., 2011m).

White meconella (*Meconella oregana*)

White meconella is a slender annual in the poppy family, ranging from Vancouver Island south into northern California. This poppy is found primarily in grasslands and occasionally along steep slopes (Camp et al., 2011h).

Western yellow oxalis (*Oxalis suksdorfii*)

This perennial is within the wood-sorrel family ranges from British Columbia to northwestern California along the western slopes of the Cascades. Western yellow oxalis is usually found in meadows and mesic forests and sometimes on dry open slopes in shrubby areas. The only known population in Washington is found in Clallam County (Camp et al., 2011g).

Great polemonium (*Polemonium carneum*)

Great polemonium is a perennial woody shrub that ranges from Washington south to San Francisco Bay in California. It is known from woody thickets, moist open forests, meadows, prairie edges, roadsides, and along fence rows. This shrub is usually found in dappled shade, with moist soils (Camp et al., 2011q).

Ocean bluff bluegrass (*Poa unilateralis* ssp. *pachypholis*)

Ocean bluff bluegrass is a coastal plant known to occur on bluffs, sand dunes, and open grassy slopes along the Washington and Oregon coasts. In Washington, the only occurrence is in Pacific County along a 3-mile stretch of cliffs and bluffs. Associated species include broadleaf stonecrop (*Sedum spatrhuilifolium*) and red fescue (*Festuca rubra*), and it flowers between July and August (Camp et al., 2011e).

Hairy-stemmed checkermallow (*Sidalcea hirtipes*)

This perennial herb is within the mallow family and is a regional endemic of Washington and Oregon. This mallow is found in moist remnant prairies, along fencerows, open meadows, and roadside ditches, and is usually associated with creeks and streams. This plant is found mostly in the Puget Trough at low elevations (Camp et al., 2011i).

Bear's-foot sanicle (*Sanicula arctopoides*)

Bear's-foot sanicle is within the carrot family and ranges from southern Vancouver Island to Santa Barbara, California. This plant is found exclusively in maritime environments, often along coastal bluffs or grassy sand dunes. The only known current location in Washington occurs in Pacific County (Camp et al., 2011l).

Water bur-weed (*Sparganium fluctans*)

Water bur-weed is an aquatic plant distributed widely in western North America, from Washington State to Idaho. This plant can be found in ponds, lakeshores, and slow-moving streams in lowland and montane forests. Associated plants include various pondweeds (*Potamogeton* spp.). The only known occurrences in Washington State include Clallam County along the Pacific coast (Camp et al., 2011n).

Rush aster (*Symphyotrichum boreale*)

This perennial herb ranges from Alaska and Canada, south into the Atlantic and Pacific coastlines. Rush aster can be found along lakesides, marshes, bogs, and open peatlands. Rush aster flowers from July through September (Camp et al., 2011p).

Hall's aster (*Symphyotrichum hallii*)

Hall's aster is a perennial herb that is restricted to Oregon and Washington, west of the Cascade Mountains. This plant is found on moist to dry prairies and open places in valleys and plains. Hall's aster flowers from July through October (Camp et al., 2011o).

State-listed Lichen Species

Eight species of state-listed lichens may also occur within the training study area. A lichen is a nonvascular plant that is formed from a symbiotic relationship between algae and fungus. Within the training study area, the seven state-listed species include erioderma lichen (*Erioderma solediatum*) (a very rare lichen primarily associated with forests in the Olympic peninsula), torn shingles lichen (*Fuscopannaria laceratula*), kaernefeltia lichen (*Kaernefeltia californica*), treepelt lichen (*Leioderma solediatum*), Lamb's navel lichen (*Umbilicaria lambii*), rigid navel lichen (*Umbilicaria rigida*), and beard lichen (*Usnea lambii*) (Calabria et al., 2015; Derr & Stein, 2005).

3.3.2.3.2 Special Status Invertebrates

Taylor's checkerspot butterfly (*Euphydryas editha taylori*)

The USFWS listed the Taylor's checkerspot butterfly (*Euphydryas editha taylori*) as endangered in 2013 (62 FR 31740 31748). The USFWS also designated critical habitat in 2013 at Deception Pass State Park and other locations outside of the training study area for this species, and determined that the PCEs of Taylor's checkerspot butterfly included:

- Patches of early seral, short-statured, perennial bunchgrass plant communities composed of native grass and forb species in a diverse topographic landscape ranging in size from less than 1 acre up to 100 acres (0.4 to 40 hectares) with little or no overstory forest vegetation that have areas of bare soil for basking that contain
- In Washington and Oregon, common bunchgrass species found on northwest grasslands include *Festuca roemerii* (Roemer's fescue), *Danthonia californica* (California oat grass), *Koeleria cristata* (prairie Junegrass), *Elymus glaucus* (blue wild rye), *Agrostis scabra* (rough bentgrass), and on cooler, high-elevation sites typical of coastal bluffs and balds, *Festuca rubra* (red fescue).
- On moist grasslands found near the coast and in the Willamette Valley, there may be *Bromus sitchensis* (Sitka brome) and *Deschampsia cespitosa* (tufted hairgrass) in the mix of prairie grasses. Less abundant forbs found on the grasslands include, but are not limited to, *Trifolium* spp. (true clovers), narrow-leaved plantain (*Plantago lanceolata*), harsh paintbrush (*Castilleja hispida*), Puget balsamroot (*Balsamorhiza deltoidea*), woolly sunshine (*Eriophyllum lanatum*), nine-leaved desert parsley (*Lomatium triternatum*), fine-leaved desert parsley (*Lomatium utriculatum*), common camas (*Camassia quamash*), showy fleabane (*Erigeron speciosus*), Canada thistle (*Cirsium arvense*), common yarrow (*Achillea millefolium*), prairie lupine (*Lupinus lepidus*), and sickle-keeled lupine (*Lupinus albicaulis*).
- Primary larval host plants (narrow-leaved plantain and harsh paintbrush) and at least one of the secondary annual larval host plants (blue-eyed Mary [*Collinsia parviflora*], sea blush [*Plectritis congesta*], dwarf owl-clover [*Triphysaria pusilla*] or one of several species of speedwell [*Veronica scutella*, *Veronica beccabunga* var. *Americana*, *Veronica serpyllifolia*]).
- Adult nectar sources for feeding that include several species found as part of the native (and one nonnative) species mix on northwest grasslands, including, but not limited to narrow-leaved plantain; harsh paintbrush; Puget balsam root; woolly sunshine; nine-leaved desert parsley; fine-leaved desert parsley or spring gold; common camas; showy fleabane; Canada thistle; common yarrow; prairie lupine; sickle-keeled lupine, and wild strawberry (*Fragaria virginiana*).
- Aquatic features such as wetlands, springs, seeps, streams, ponds, lakes, and puddles that provide moisture during periods of drought, particularly late in the spring and early summer. These features can be permanent, seasonal, or ephemeral.
- The historical distribution of the Taylor's checkerspot butterfly included grassland habitats from southeastern Vancouver Island southward through the southern portion of Willamette Valley (in Oregon), with 40 known locations in Washington from the San Juan Islands south to the Cowlitz River in Lewis County (Stinson, 2005). Dornfeld (1980) reported that the Willamette Valley meadows were "fairly swarming" with checkerspot butterflies. The subspecies is now restricted to a small scattering of about seven populations in Washington, one population in British Columbia, and two populations in Oregon. In Washington, sites occupied by Taylor's

checkerspot included balds, coastal bluffs, and estuarine grasslands along the Strait of Juan de Fuca in Clallam County as well as prairies and balds in Thurston, Mason, Pierce, and Lewis counties (Stinson, 2005). These locations are all outside of the training study area.

- Females emerge in the spring and lay eggs on host plants of the family Scrophulariaceae, which are often specific to sites. Emerging from diapause in late winter, the caterpillars feed more broadly on the primary hosts and other post-diapause food plants that may be available. The decline of Taylor's checkerspot in Washington has accompanied the loss of prairie and grassland habitats. As with other grassland-dependent species, forest encroachment together with invasion by non-native grass and forb species have degraded checkerspot habitat (Stinson, 2005; Washington Department of Fish and Wildlife, 2012c).

Oregon silverspot butterfly (*Speyeria zerene hippolyta*)

The USFWS listed the Oregon silverspot butterfly (*Speyeria zerene hippolyta*) as threatened in 1980 and designated critical habitat for this species at the time of listing at Siuslaw National Forest, which is outside the training study area in Oregon (45 FR 44935 44939).

The historical range of this subspecies extends from the Long Beach Peninsula, Pacific County, Washington, southward to Del Norte County, California. All of these populations were restricted to the immediate coast, centered around salt-spray meadows, or within a few miles of the coastline in similar meadow-type habitat. At the time of listing, the only viable population known was on the Siuslaw National Forest in Tillamook County, Oregon. Additional populations have since been discovered at Cascade Head, Bray Point, and Clatsop Plains in Oregon, on the Long Beach Peninsula in Washington, and in Del Norte County in California (Washington Department of Fish and Wildlife, 2012b). These known locations are outside of the training study area.

3.3.2.3.3 Special Status Amphibians and Terrestrial Reptiles

State-listed amphibians and reptiles

One amphibian species and one reptile species are considered endangered under state statutes. Species accounts for the northern leopard frog (*Lithobates pipiens*) and western pond turtle (*Actinemys marmorata*) are summarized below.

Northern Leopard Frog (*Lithobates pipiens*)

Northern leopard frogs were once one of the most widely distributed amphibians in North America (Washington Department of Fish and Wildlife, 2012a) but were listed as endangered by the State of Washington in 1999 (McAllister et al., 1999). This leopard frog is associated with a wide variety of habitats; however, leopard frogs require permanent deep water for overwintering, in proximity to seasonal ponds and wetlands for breeding.

Museum records indicate that leopard frogs inhabited at least 18 general areas in eastern Washington, many of these along the Columbia River and its major tributaries (McAllister et al., 1999). Currently, this species is believed to only occur outside the Study Area in ponds at the Potholes Reservoir and Gloyd Seeps units of the Columbia Basin Wildlife Area in Grant County. With the 2012 reported invasion of large bull frogs in these habitats, it is possible that this species has been extirpated in Washington (Washington Department of Fish and Wildlife, 2012a).

Western Pond Turtle (*Actinemys marmorata*). Western Pond Turtles were listed as endangered in Washington in 1993, and ranged historically through central and southern Puget Sound from Snohomish

to Thurston counties, along the Columbia Gorge in Skamania and Klickitat counties, and in Clark County (Hays et al., 1999). The current distribution is known from six locations in Washington (three sites in Skamania County, one site in Klickitat County, one site in Mason County, and one site in Pierce County). The turtles inhabit lakes, ponds and wetlands. They also require the availability of adjoining open upland habitats (Hallock et al., 2017).

Declines are attributed to habitat loss, overharvest, and introduction of non-native plants, fish, and bullfrogs. By 1994, only about 150 turtles persisted at the two remaining Columbia Gorge sites, and the Puget Sound population was effectively extirpated (Hays et al., 1999). Through various recovery actions, including release of captive-bred and wild-bred head-started turtles, the statewide population in 2015 had increased to a total of 800–1,000 turtles at six locations. Two of the sites, Sondino and the Pierce County site, each contain about 250 turtles and together hold half or more of the state’s population (Hallock et al., 2017). None of these locations are within the training study area; however, suitable habitat can be found in freshwater systems within the training study area that exhibit connectivity with uplands. These conditions likely occur in state parks and federal properties that are under some type of conservation management to reduce the impact of invasive species.

3.3.2.3.4 Special Status Birds

Marbled murrelet (*Brachyramphus marmoratus*)

The marbled murrelet is listed as a threatened species in Washington, Oregon, and California under the ESA (U.S. Fish and Wildlife Service, 1992). Marbled murrelet populations have suffered significant declines in the Pacific Northwest, caused primarily by the removal of habitat by logging and coastal development (International Union for Conservation of Nature and Natural Resources, 2010).

Marbled murrelets generally forage in waters within 1 mi. (1.6 km) of the shore (Raphael et al., 2007; U.S. Fish and Wildlife Service, 2005) out to depths of about 1,300 feet (400 meters) and are reported to dive at least as deep as 90 feet (27 meters), based on their capture in gillnets set at this depth. The species’ wintering range is poorly documented but includes most of the marine areas used for foraging during the breeding season (Raphael et al., 2007). Marbled murrelets are unique among alcids in their use of old-growth forest stands (Falxa & Raphael, 2016). Marbled murrelets do not build a nest but use natural features, such as moss, clumps of mistletoe, or piles of needles as a nest site on tree limbs. Nests are in large conifers, such as coastal redwood and western hemlock, in old-growth stands typically within 35 mi. (56 km) of marine waters. Nesting season is asynchronous between April 1 and September 23. During the breeding season, murrelets trend to forage in well-defined areas along the shoreline in relatively shallow marine waters. Important features in nesting habitat are stands of 500 acres (202.3 hectares) or larger, multistoried canopy layers, and less-than-average canopy closures (Barbaree et al., 2014). Marbled murrelets would be expected to fly over terrestrial portions of the training study area to access marine foraging areas; some of these areas may be within the in-water portion of the training study area.

To stem declines of marbled murrelets, critical habitat was designated in 1996 in mature and old-growth forest nesting habitat within 30 mi. (48.3 km) off the coast in Washington, Oregon, and California (Piatt et al., 2007). Critical habitat for the murrelet was revised in 2011. It includes 3,698,100 acres (1,497,000 hectares) in 14 critical habitat units in Washington, Oregon, and California.

There is no critical habitat designated for the marbled murrelet within the training study area. Critical habitat for the marbled murrelet on the Olympic Peninsula is the closest nesting area for murrelets to the training study area, particularly along Dabob Bay and Hood Canal.

Western snowy plover (*Chadrius lexandrines nivosus*)

The Pacific coast population of the western snowy plover was listed as threatened under ESA in 1993 (58 FR 12864). The Pacific coast population is defined as those individuals that nest within 50 mi. (80 km) of the Pacific Ocean on the mainland coast, peninsulas, offshore islands, bays, estuaries, or rivers of the United States and Baja California, Mexico.

The Pacific coast population of the western snowy plover breeds in March and April and winters on coastal beaches, including sand spits, dune-backed beaches, beaches at river and creek mouths, and lagoon/estuarine salt pans (Dinsmore et al., 2017). Individuals also occasionally use bluffbacked beaches, dredged material disposal sites, salt pond levees, dry salt ponds, and river bars. Nest sites are usually found on sandy or saline substrates with little or no vegetation and debris. Although western snowy plovers move up and down the West Coast during the nonbreeding season, they primarily winter on the same beaches used for breeding (U.S. Fish and Wildlife Service, 2007b).

The waterlines of these same beaches constitute their foraging habitat. In the Pacific Northwest, western snowy plovers generally feed in the wet sand or among surf-cast kelp, where they visually forage for flies, beetles, small clams and crabs, amphipods, seed shrimp (ostracods), and polychaetes (U.S. Fish and Wildlife Service, 2007b). During the winter, western snowy plovers often feed in loose flocks and roost in depressions or behind sheltering debris, such as driftwood or kelp.

The historical breeding and winter range for this species extends from Copalis Spit in southern Washington, south along the Pacific coast of Oregon and California to southern Baja California, Mexico. Coastal beaches are the primary habitat used by these birds for breeding, foraging, and wintering (U.S. Fish and Wildlife Service, 2007b). Historically, five areas supported nesting plovers in Washington (Pearson et al., 2014), with Copalis Spit being the northernmost. Within the training study area, western snowy plovers may be found at Grayland State Park.

Critical habitat for this species was designated in 1999 and revised in 2012 (Todd & Elbert, 2014) The PCEs of western snowy plover critical habitat are sandy beaches, dune systems immediately inland of an active beach face, salt flats, mud flats, seasonally exposed gravel bars, artificial salt ponds and adjoining levees, and dredge spoil sites, as well as:

- areas that are below heavily vegetated areas or developed areas and above the daily high tides;
- shoreline habitat areas for feeding, with no or very sparse vegetation, that are between the annual low tide or low-water flow and annual high tide or high-water flow, are subject to inundation but not constantly under water, and support small invertebrates, such as crabs, worms, flies, beetles, spiders, sand hoppers, clams, and ostracods, that are essential food sources;
- surf- or water-deposited organic debris, such as seaweed (including kelp and eelgrass) or driftwood located on open substrates, that supports and attracts small invertebrates in shoreline habitats for food, provides cover or shelter from predators and weather, and assists in avoidance of detection (crypsis) for nests, chicks, and incubating adults; and
- relatively undisturbed areas with minimal disturbance from the presence of humans, pets, vehicles, or human-attracted predators, which provide for individual and population growth and for normal behavior.

Critical habitat for the western snowy plover overlaps with the training study area at Grayland Beach State Park and Leadbetter Point.

Streaked horned lark (*Eremophila alpestris strigata*)

The streaked horned lark is endemic to the Pacific Northwest and is a subspecies of the wide-ranging horned lark. The streaked horned lark was listed as threatened and critical habitat was designated in November 2013 (78 FR 61451).

Streaked horned larks nest on the ground in sparsely vegetated sites dominated by grasses and forbs in habitats such as native prairies, coastal dunes, fallow and active agricultural fields, wetland mudflats, sparsely vegetated edges of grass fields, and disturbed areas such as grazed pastures, gravel roads or gravel shoulders of lightly traveled roads, and airports. Breeding and wintering habitat along the Washington Coast consists of sparsely vegetated expanses of sand adjacent to the ocean that are dominated by grasses and forbs with few or no trees and shrubs. Foraging occurs in the same habitat, as well as in intertidal habitat (Stinson, 2005).

According to (Pearson & Altman, 2005), “the streaked horned lark has been extirpated as a breeding species throughout much of its range, including all of its former range in British Columbia, the San Juan Islands, the northern Puget Trough, the Washington coast north of Grays Harbor, the Oregon coast, and the Rogue and Umpqua Valleys in southwestern Oregon.” Recent site visits suggest that streaked horned larks in Washington currently breed on six sites in the Puget lowlands (one site on McChord Air Force Base, three sites on Ft. Lewis, Olympia Airport, and Shelton Airport), four sites on the coast (Damon Point, Midway Beach, Graveyard Spit, and Leadbetter Point), and two sites on islands in the lower Columbia River (White’s/Brown’s Island and the Washington portion of Rice Island). In addition, three new probable breeding sites were discovered in 2012 outside the training study area, including two along the Columbia River (Kalama and Sand Island Marine Park near St. Helens, Oregon) and on Johns River Island, on the Washington Coast (Washington Department of Fish and Wildlife, 2013).

Critical habitat for the streaked horned lark is within the Action Area at Grayland Beach State Park and Leadbetter Point State Park. The PCEs for this species includes areas with sparse and low stature vegetation in large patches of habitat or in smaller areas with open access to open water or fields. Training activities (Over-the-Beach and Special Reconnaissance) may overlap vertical habitat at Grayland Beach State Park and Leadbetter Point State Park.

Pearson and Altman (2005) found that the majority of streaked horned larks winter in the Willamette Valley (72 percent) and on the islands in the lower Columbia River (20 percent); the rest winter on the Washington coast (8 percent) or in the south Puget Sound (less than 1 percent). Streaked horn larks have been observed nesting and wintering within the Study Area, specifically at Leadbetter Point State Park (78 FR 61451). Potentially suitable habitat breeding and wintering habitat occurs along the Washington coast within the training study area.

Bald Eagles and Golden Eagles

Bald eagle

While no longer listed under ESA, bald eagles are still protected under the MBTA and the BGEPA. On non-federal lands, bald eagles are protected through such measures as Revised Code of Washington 77.12.655 (establishing habitat buffer zones for bald eagles) and Washington Administrative Code 232-12-292 (mandating protections for bald eagle habitat and management plans on state lands).

Bald eagles occur year-round within the training study area. Bald eagles are widely distributed in Washington State, including the San Juan Islands, the greater Puget Sound region, the Strait of Juan de Fuca, the Pacific Coast and associated estuaries, and the lower Columbia River (Kalasz & Buchanan, 2016). Most nest sites are in or near the marine environment. Proximity to water is important, as their primary food source is fish, although they also commonly prey on birds, such as waterfowl, gulls, and seabirds (Kalasz & Buchanan, 2016). Eagles also are found in association with nearly all major waterways, inland lakes, and reservoirs away from the marine zone, including eastern Washington. Bald Eagles are scarce or absent in higher elevations and portions of the Columbia Basin and Palouse region. Within the training study area, eagles nest on private lands, state lands, and federal properties. Bald eagles are known to nest at Camano Beach State Park (Washington State Parks and Recreation Commission, 2013), Fort Ebey State Park (Washington State Parks and Recreation Commission, 2009), and Fort Flagler State Park (at Kinney Point) (Washington State Parks and Recreation Commission, 2008c). Bald eagles may potentially occur or are known to occur at all Naval Base Kitsap properties (Camp McKean, Camp Wesley Harris, Naval Base Kitsap Bangor, Naval Base Kitsap Bremerton, Naval Base Kitsap Keyport, Toandos Buffer Zone, and Zelatched Point) with nesting reported at Naval Base Kitsap Bremerton, Naval Base Kitsap Keyport, Naval Base Kitsap Bangor (U.S. Department of the Navy, 2017). Bald eagles are also known to nest at Naval Magazine Indian Island and Whidbey Island at NAS Whidbey Island.

Golden eagle

Golden eagles are rare, transient visitors to the training study area, and are more abundant east of the Cascades. During migration, golden eagles hunt over wetlands, agricultural areas, and grasslands for small to medium-sized reptiles, mammals, and birds (Kociert & Steenhof, 2002). Within the training study area, suitable migration foraging habitats are plentiful; however, observations are limited. Hansen (2017) studied the distribution and foraging of golden eagles in western Washington and suggested that a golden eagle breeding territory was more likely to be frequently occupied if it occurred at a higher elevation, included a larger range of elevations, or included less forest cover.

State-Listed Birds

Within the training study area, the states of Washington and Oregon have listed American white pelican (*Pelecanus erythrorhyncho*) as threatened and the tufted puffin (*Fratercula cirrhata*) as endangered. These two species are not listed under the federal ESA.

American white pelican (*Pelecanus erythrorhyncho*)

The American white pelican is widespread in much of western and southeastern North America and is associated with lakes, reservoirs, and rivers. This species of pelican breeds at widely scattered island colonies. Birds from colonies west of the North American continental divide generally winter along the Pacific coast from central California to Central America and interior locations of Southern California and southwestern Arizona (Evans & Knopf, 1993; Knopf & Evans, 2004; Yates, 1999). In Washington and Oregon, small numbers of white pelicans are seen in winter along major rivers in the Columbia basin, breeding primarily on isolated islands in freshwater lakes and rivers, and foraging in shallow areas (Stinson, 2016). American white pelicans are somewhat adapted to changes in nesting and foraging sites (resulting from droughts and flooding); however, the largest colonies exist where these resources have been consistent and disturbance by humans or mammalian predators is rare. Primary winter habitats are shallow coastal bays, inlets, and estuaries with exposed loafing and roosting sites (e.g., sand bars) near foraging areas (Stinson, 2016).

Tufted puffin (*Fratercula cirrhata*)

The tufted puffin is known for its distinctive jet black body feathers, a white face framed by long golden plumes that sweep backward and down the neck, and a bright red ring of bare skin around the eyes. Tufted Puffins range throughout the temperate and sub-arctic North Pacific (Hanson & Wiles, 2015). Though vagrants have been noted as far south as Laysan Island in the Northwestern Hawaiian Islands, they are generally restricted to the cool waters above 30–34°N latitude (Piatt & Kitaysk, 2002). In Washington, tufted puffin breeding colonies lie mainly along the outer coast from Point Grenville north to Cape Flattery. No breeding colonies were ever detected in Puget Sound (Hanson & Wiles, 2015).

3.3.2.3.5 Special Status Fishes

NMFS has jurisdiction over eight federally listed fish species that may occur within the study area, including three species of salmon, steelhead, two rockfish species, Pacific eulachon, and green sturgeon on the West Coast, all of which occur within the training study area. The USFWS has listed bull trout throughout its range, which overlaps with the Study Area. In addition, three candidate species and nine species of concern occur within the Study Area. Candidate species are any species that are undergoing a status review that NMFS has announced through an FR notice (71 FR 61022). Critical habitat is designated within the training study area for the Puget Sound Chinook Salmon Evolutionary Significant Unit (ESU), Hood-Canal Summer Run Chum Salmon ESU, Columbia River chum salmon ESU, Puget Sound steelhead, Puget Sound/Georgia Basin bocaccio, yelloweye rockfish, and green sturgeon.

Puget Sound Chinook Salmon Evolutionary Significant Unit

On June 28, 2005, the Puget Sound Chinook Salmon ESU was listed as threatened (70 FR 37160–37204). This ESU includes all wild (naturally spawned) populations of Chinook salmon from rivers and streams flowing into Puget Sound, including the Strait of Juan de Fuca from the Elwha River, eastward, including rivers and streams flowing into Hood Canal, South Sound, North Sound, and the Strait of Georgia in Washington, and 26 artificial propagation programs. The listing includes all naturally spawned populations of Chinook salmon from rivers and streams flowing into Puget Sound including the Strait of Juan De Fuca from the Elwha River eastward, as well as 26 artificial propagation programs. These programs include Kendal Creek Hatchery, Marblemount Hatchery (fall, spring yearlings, spring subyearlings, and summer run), Harvey Creek Hatchery, Whitehorse Springs Pond, Wallace River Hatchery (yearlings and subyearlings), Tulalip Bay, Issaquah Hatchery, Soos Creek Hatchery, Icy Creek Hatchery, Keta Creek Hatchery, White River Hatchery, White Acclimation Pond, Hupp Springs Hatchery, Voights Creek Hatchery, Diru Creek, Clear Creek, Kalama Creek, George Adams Hatchery, Rick's Pond Hatchery, Hamma Hamma Hatchery, Dungeness/Hurd Creek Hatchery, and Elwha Channel Hatchery.

Critical habitat was designated for the Puget Sound ESU Chinook salmon February 2000 and re-designated September 2005 (70 FR 52630). In marine waters, designated critical habitat extends to -30 mean lower low water (MLLW). DoD lands were excluded from designation because of implementation of Integrated Natural Resources Management Plan (INRMP) that outlines species protection measurements. Designated critical habitat for Puget Sound ESU Chinook salmon occurs within the training study area and outside DoD lands. NMFS also designated six PCEs, two of which occur in marine water (70 FR 52630) and are present in the training study area. These include:

- Estuarine areas free of obstruction and excessive predation with (i) water quality and quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater; (ii) natural cover such as submerged and overhanging large wood, aquatic

vegetation, large rocks and boulders side channels; and (iii) juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation;

- Nearshore marine areas free of obstruction and excessive predation with (i) water quality and quantity conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation; and (ii) natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels.

Most of the ESUs for Chinook salmon have a low abundance relative to historical levels. NMFS has reported population sizes from individual ESUs, but because all of these units occur together while at sea, it is difficult to estimate the marine population numbers in the training study area.

The general life history of anadromous Chinook salmon includes both freshwater and ocean phases of development. Incubation, hatching, and emergence occur in fresh water, followed by seaward migration to the ocean, which is preceded by the onset of smoltification. After several years at sea, maturation is initiated and adults return to freshwater habitats to spawn in their natal streams. Stream-type Chinook salmon spend extended periods in fresh water before smoltification, in contrast to the ocean-type that immigrates to the ocean as sub-yearling smolts. Coastal streams are dominated by the ocean-type, whereas the stream-type are mainly found in the headwater streams of larger river systems (Gamble, 2016; Hertz et al., 2016). The Puget Sound Chinook Salmon ESU entering the Inland Waters of the Study Area are predominantly ocean-type fish. Like other species of Pacific salmon, Chinook salmon die after spawning and are therefore not able to spawn more than once (Chasco et al., 2017).

Hood-Canal Summer Run Chum Salmon Evolutionary Significant Unit

The Hood Canal summer-run ESU chum salmon was listed as threatened in June 2005 (70 FR 37160). The listing includes all naturally spawned populations of summer-run chum salmon in Hood Canal and its tributaries, as well as populations in Olympic Peninsula rivers between Hood Canal and Dungeness Bay, Washington, and eight artificial propagation programs (81 FR 72759). However, all Hood Canal summer chum hatchery programs except Lilliwaup were terminated by 2014. The last supplementation-origin spawners, outside of Lilliwaup River, are expected to return to the Tahuya River in 2018 (National Marine Fisheries Service, 2015c). The NMFS recovery plan for this species was adopted on May 24, 2007 (72 FR 29121).

The Puget Sound Technical Review Team designated two independent populations for the Hood Canal summer-chum ESU, one that includes spawning aggregations from rivers and creeks draining into the Strait of Juan de Fuca and one that includes spawning aggregations within Hood Canal proper (National Marine Fisheries Service, 2015c). The Hood Canal summer-run chum population is composed of nine extant runs that include the Big Quilcene River, Little Quilcene River, Dosewallips River, Duckabush River, Hamma Hamma River, Lilliwaup Creek, Union River, Big Beef Creek, and Tahuya River populations.

Chum salmon are second only to Chinook in dependence upon estuaries (West Coast Salmon Biological Review Team et al., 2003). Chum salmon usually spawn in the lowest reaches of streams, and juveniles move out into the estuaries almost immediately after emerging from their spawning gravel. Ocean migration of juveniles is correlated with increasing water temperature and plankton blooms. This means survival and growth of juveniles depends less on river habitat conditions and more on favorable estuarine and ocean conditions. Chum salmon are mostly found within the continental shelf; juveniles are found at depths less than 40 meters while adults are typically epipelagic (the part of the oceanic zone into which enough light penetrates for photosynthesis) (Quinn & Myers, 2004). After spending

between one and five years in the ocean, chum salmon mature and return to their home freshwater stream to spawn. In most areas, maturity is reached at four years of age. Like other species of Pacific salmon, chum salmon die after spawning and are not able to spawn more than once.

Critical habitat was designated for the Hood Canal summer-run chum salmon ESU in February 2000 and re-designated September 2005 (70 FR 52630). Designated critical habitat includes nearshore marine areas (including areas adjacent to islands) of Hood Canal and the Strait of Juan de Fuca (to Dungeness Bay) from the line of extreme high tide out to a depth of 30 meters, with the exception of DoD lands. Two PCEs occur in marine waters, as described above for the Puget Sound Chinook salmon ESU, are essential to conserving the Hood Canal summer-run chum ESU (70 FR 52630).

Columbia River Chum Salmon Evolutionary Significant Unit

The Columbia River Chum Salmon ESU was listed as threatened on June 28, 2005 (70 FR 37160) and includes all naturally spawned populations of chum salmon in the Columbia River and its tributaries in Washington and Oregon, as well as the three artificial propagation programs: Chinook River (Sea Resources Hatchery), Grays River, and Washougal River/Duncan Creek chum hatchery programs.

The distribution and abundance of fishes, including chum salmon, depends greatly on the physical and biological factors of the marine ecosystem, such as salinity, temperature, dissolved oxygen, population dynamics, predator and prey interaction oscillations, seasonal movements, reproduction and life cycles, and recruitment success (Helfman et al., 2009). A single factor is rarely responsible for the distribution of fish species; more often, a combination of factors is accountable. This species is most commonly found in Region 3 in the Columbia River.

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Critical habitat for this species was designated on September 2, 2005. Critical habitat includes the stream channels within the designated stream reaches, and includes a lateral extent as defined by the ordinary high-water line (70 FR 52630). In estuarine and nearshore marine areas, critical habitat includes areas contiguous with the shoreline from the extreme high water line out to a depth no greater than 30 meters relative to mean lower low water. Within these areas, some of the PCEs essential for the conservation of these ESUs are:

- sites and habitat components that support one or more life stages, include freshwater spawning and rearing sites,
- freshwater migration corridors free of obstruction and excessive predation,
- estuarine areas free of obstruction and excessive predation, and
- offshore marine areas to support growth and maturation.

Critical habitat for this species includes the Columbia River and its tributaries in Region 3 near the Cape Disappointment and Fort Columbia training areas.

Puget Sound Steelhead

The Puget Sound steelhead DPS was listed in May 2007 under the ESA as a threatened DPS (72 FR 26722). The DPS includes all naturally spawned anadromous winter-run and summer-run *O. mykiss* (steelhead) populations in streams in the river basins of the Strait of Juan de Fuca, Puget Sound, and Hood Canal, Washington, bounded to the west by the Elwha River (inclusive) and to the north by the Nooksack River and Dakota Creek (inclusive), as well as the Green River natural and Hamma Hamma winter-run steelhead hatchery stocks (National Marine Fisheries Service, 2016c). The winter-run steelhead is the predominant run in Puget Sound, in part because there are relatively few basins in the Puget Sound DPS with the flow and watershed characteristics necessary to establish the summer-run life history (National Marine Fisheries Service, 2016c). All summer-run stocks are depressed and concentrated in northern and central Puget Sound and Hood Canal.

Steelhead may occur in all regions of the Action Area. Production of hatchery stocks that are either out-of-DPS-derived stocks (Skamania River summer-run) or within-DPS stocks that are substantially diverged from local populations (Chambers Creek winter-run) largely outnumber naturally produced steelhead in many basins throughout Puget Sound (National Marine Fisheries Service, 2016c).

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Threats to Puget Sound steelhead are mainly due to reduced life history, diversity of stocks, and the potential threats posed by artificial propagation and harvest in the Puget Sound. NMFS (2016a) indicated the principal factor for decline for Puget Sound steelhead is the present or threatened destruction, modification, or curtailment of its habitat or range. Within Puget Sound, these threats may include barriers to fish passage, adverse effects on water quality, loss of wetland and riparian habitats, and other urban development activities contributing to the loss and degradation of steelhead habitats (National Marine Fisheries Service, 2016a, 2016c).

Critical habitat for Puget Sound steelhead was proposed in January 2013 (78 FR 2725), and the Final Rule was published in February 2016 (81 FR 9251). Changes from the proposed critical habitat document include the addition of 101 mi. of occupied habitat, the removal of 27 mi. of areas incorrectly identified as occupied by Puget Sound steelhead in the proposed critical habitat designation, and designation of 85 mi. of occupied steelhead habitat on the Kitsap Peninsula originally proposed for exclusion. No critical habitat is designated at Naval Base Kitsap Bangor because the current INRMPs contain measures that provide benefits to this DPS, such as actions that eliminate fish passage barriers, control erosion, protect riparian zones, increase stream habitat complexity, and monitor listed species and their habitats. Two PCEs for Puget Sound steelhead occur in marine waters, as described above for the Puget Sound Chinook salmon ESU.

Bull Trout

On November 1, 1999, the Coastal-Puget Sound Bull Trout DPS was listed as threatened across five states in the coterminous United States (64 FR 58910). Bull trout are listed as a single DPS but are managed via six biologically based Recovery Units, of which only the Coastal Recovery Unit is adjacent to the Study Area (Lowery & Beauchamp, 2015; U.S. Fish and Wildlife Service, 2015). The Coastal Recovery Unit encompasses Washington and western Oregon. Within Washington, the major geographic regions containing this unit include the Olympic Peninsula, Puget Sound, and Lower Columbia River basins. The Olympic Peninsula and Puget Sound geographic regions also include their associated marine waters (Puget Sound, Hood Canal, Strait of Juan de Fuca, and Pacific Coast). The Puget Sound region contains eight core areas (Chilliwack River, Nooksack River, Upper Skagit River, Lower Skagit River, Stillaguamish River, Snohomish and Skykomish Rivers, Chester Morse Lake, and Puyallup River). The Olympic Peninsula Region contains six core areas (Dungeness River, Elwha River, Hoh River, Queets River, Quinault River, and Skokomish River). The only core areas currently supporting anadromous populations of bull trout are located within the Puget Sound and Olympic Peninsula regions.

Bull trout have declined in overall range and numbers of fish and are severely reduced throughout the Study Area. Bull. Though still widespread, there have been numerous local extirpations reported throughout the Columbia River basin. Bull trout generally occur as isolated sub-populations in headwater lakes or tributaries where migratory fish have been lost.

Bull trout are a native fish in western North America, inhabiting pristine cold-water streams. Unlike other salmonids, bull trout require colder water temperatures. They exhibit resident and migratory life history strategies throughout much of their current range. Resident bull trout complete their entire life cycle in the tributary (or nearby) streams in which they spawn and mature. Migratory bull trout spawn in tributary streams where juveniles stay from one to four years before migrating to either a lake (adfluvial), river (fluvial), or in certain coastal areas to salt water (anadromous), where maturity is reached in one of the three habitats (63 FR 31647). In the ocean, bull trout remain within 3 nautical miles (NM) of the shore. There are four distinct types of bull trout: anadromous, adfluvial (migrating between lakes, rivers, or streams), fluvial (inhabiting a stream or river), and resident. Only the anadromous type migrates from fresh water habitats to ocean habitats.

Threats to bull trout include habitat loss and fragmentation due to historically human-caused land and water management activities; overutilization for commercial, scientific, or educational purposes; disease or predation by native or nonnative/invasive species; inadequacy of existing regulatory mechanisms; fish passage issues; competition and hybridization; and climate change impacts such as warming climates, changing precipitation, and hydrologic regimes (Lowery & Beauchamp, 2015).

Critical habitat for bull trout was originally designated on September 26, 2005 (70 FR 56212) and later revised on October 18, 2010 (75 FR 63898). In marine nearshore areas, the inshore extent of critical habitat is the mean higher high-water line, including the uppermost reach of the saltwater wedge within tidally influenced, freshwater heads of estuaries. Critical habitat extends offshore to the depth of 10 meters (33 feet) relative to the MLLW line. There is minimal overlap of bull trout critical habitat with the Training Study Area, including along the west side of Hood Canal, on the southern tip of the peninsula between Bangor and Dabob Bay, in Sequim Bay. Other areas of overlap include the north side of Whidbey Island towards Anacortes and Deception Pass, sites at Skagit Island and Hope Island State Parks, the eastern most tip of Oak Harbor, potential training sites on Camano Island, sites in the Port of Tacoma, and the site at the tip of Point Defiance. The quantity and quality of critical habitat are

evaluated by reference to PCEs. Of the nine PCEs identified as essential for conserving bull trout, five PCEs occur in marine waters (75 FR 63898). These include:

- Migratory habitats with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and freshwater and marine foraging habitats, including, but not limited to, permanent, partial, intermittent or seasonal barriers;
- An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish;
- Complex river, stream, lake, reservoir, and marine shoreline aquatic environments and processes with features such as large wood, side channels, pools, undercut banks and substrates, to provide a variety of depths, gradients, velocities, and structure;
- Water temperatures ranging from 2 to 15 °Celsius (36 to 59 °Fahrenheit), with adequate thermal refugia available for temperatures at the upper end of this range. Specific temperatures within this range will vary depending on bull trout life-history stage and form; geography; elevation; diurnal and seasonal variation; shade, such as that provided by riparian habitat; and local groundwater influence; and
- Sufficient water quality and quantity such that normal reproduction, growth, and survival are not inhibited.

Puget Sound/Georgia Basin Bocaccio Rockfish DPS

Puget Sound/Georgia Basin DPSs of bocaccio (*Sebastes paucispinis*) was federally listed as endangered under the ESA in 2010 (75 FR 22276). The listing indicated that bocaccio occupy all waters of Puget Sound/Georgia basin to the northern boundary of the Northern Strait of Georgia along the southern contours of Quadra Island and the western boundary of the U.S. side of the Strait of Juan de Fuca in a straight line to the Canadian side (82 FR 7711).

Bocaccio are found from Stepovac Bay on the Alaska Peninsula to Punta Blanca in central Baja California (National Marine Fisheries Service, 2014a). Information on habitat requirements for most rockfishes is limited despite years of research, and even less is known about bocaccio in Puget Sound (Drake et al., 2010; Palsson et al., 2009). In general, most adult rockfish are associated with high relief, rocky habitats, but have also been documented in non-rocky substrates such as sand, mud, and other unconsolidated sediments. Larval and juvenile stages of some rockfishes utilize open water and nearshore habitats as they grow. Reviews of rockfish habitat utilization in Puget Sound indicate that nearshore vegetated habitats are particularly important for some species and serve as nursery areas for juveniles (Palsson et al., 2009) (79 FR 68042). Juvenile bocaccio settle to shallow, algae-covered rocky areas or to eelgrass and sand (Love et al., 2002). Palsson et al. (2009) indicate that in Puget Sound waters, recruitment habitats may include nearshore vegetated habitats, or deep-water habitats consisting of soft and low relief rocky substrates.

Critical habitat for the Puget Sound/Georgia Basin DPS of bocaccio was designated on November 13, 2014 (79 FR 68041) and updated on January 23, 2017 (82 FR 7711). Designated critical habitat that overlaps with the training study area includes deepwater (greater than 30 m for adults) and nearshore (juveniles) critical habitat (82 FR 7711) excluding DoD waterfronts and some restricted areas.

NMFS has listed the following as essential features to the conservation of adult bocaccio:

- Benthic habitats or sites deeper than 30 meters that possess or are adjacent to areas of complex bathymetry consisting of rock or highly rugose habitat, as these features support growth, survival, reproduction, and feeding opportunities by providing the structure for rockfish to avoid predation, seek food, and persist for decades. Attributes of these essential features include
 - quantity, quality, and availability of prey species to support individual growth, survival, reproduction, and feeding opportunities;
 - water quality and sufficient levels of dissolved oxygen to support growth, survival, reproduction, and feeding opportunities; and
 - the type and amount of structure and rugosity that supports feeding opportunities and predator avoidance.

NMFS has also listed the following essential features to conserve juvenile bocaccio:

- Juvenile settlement habitats located in the nearshore with substrates such as sand, rock, or cobble compositions that also support kelp (families Chordaceae, Alariaceae, Lessoniaceae, Costariaceae, and Laminariceae) are essential for conservation because these features enable forage opportunities and refuge from predators and enable behavioral and physiological changes needed for juveniles to occupy deeper adult habitats. Attributes of the essential features include
 - quantity, quality, and availability of prey species to support individual growth, survival, reproduction, and feeding opportunities; and
 - water quality and sufficient levels of dissolved oxygen to support growth, survival, reproduction, and feeding opportunities.

Critical habitat is designated within the training study area except at Navy shorelines subject to INRMPS that address listed rockfish habitat and contain measures that provide benefits to these DPSs (79 FR 68042).

Puget Sound/Georgia Basin Yelloweye Rockfish DPS

Puget Sound/Georgia Basin DPSs of yelloweye rockfish (*Sebastes ruberrimus*) were federally listed as threatened under the ESA in 2010 (75 FR 22276). Yelloweye rockfish are found within Puget Sound/Georgia Basin, inclusive of the Queen Charlotte Channel to Malcom Island and the western boundary of the U.S. side of the Strait of Juan de Fuca in a straight line to the Canadian side (82 FR 7711).

Recent reviews of Puget Sound rockfish species and their habitats (Drake et al., 2010; Palsson et al., 2009) (79 FR 68042) suggest little distinction between some rockfish species in terms of habitat use in Puget Sound. Adult yelloweye have been documented in non-rocky substrates such as sand, mud, and other unconsolidated sediments, but have also been recorded in areas of mud/cobble habitat. However, yelloweye juveniles are rarely found in nearshore waters less than 30 meters (79 FR 68042). Therefore, consistent with the discussion for bocaccio, adult yelloweye rockfish are considered associated with deeper, high-relief, rocky habitats, and larval stages may use open water and nearshore habitats, but juveniles are not anticipated to be in shallow nearshore habitats.

NMFS (2014a) documented occurrence of yelloweye rockfish mainly at the southern end of Hood Canal, in Possession Sound at Everett and south of Everett, and south of Manchester near Vashon Island. Palsson et al. (2009) noted 113 documented Puget Sound yelloweye rockfish historical records associated with recreational catch. Of these records, 14 occurred in Hood Canal waters: 1 in the 1930s and 13 in the 1960s (Miller & Borton, 1980). Yelloweye rockfish accounted for 1 percent and 1.4 percent of recreational catch in northern and southern Puget Sound, respectively, from 1996 to 2002 when their retention was prohibited (Palsson et al., 2009).

Critical habitat for yelloweye rockfish was designated on November 13, 2014 (79 FR 68041) and updated on January 23, 2017 (82 FR 7711). Critical habitat is designated within the training study area, excluding DoD waterfronts and some restricted areas. NMFS has listed the following as essential features to the conservation of adult and juvenile yelloweye rockfish:

- Benthic habitats or sites deeper than 30 m that possess or are adjacent to areas of complex bathymetry consisting of rock or highly rugose habitat. These features support growth, survival, reproduction, and feeding opportunities by providing the structure for rockfish to avoid predation, seek food, and persist for decades. Attributes of these essential features include:
 - quantity, quality, and availability of prey species to support individual growth, survival, reproduction, and feeding opportunities;
 - water quality and sufficient levels of dissolved oxygen to support growth, survival, reproduction, and feeding opportunities; and
 - the type and amount of structure and rugosity that supports feeding opportunities and predator avoidance.

Pacific Eulachon Southern DPS

The Pacific southern eulachon DPS was listed as threatened under the ESA on March 18, 2010 (75 FR 13012). This listing encompassed all subpopulations of eulachon within the states of Washington, Oregon, and California and extended from the Skeena River in British Columbia south to the Mad River in Northern California.

Eulachon is an anadromous smelt that ranges from northern California to the southeastern Bering Sea coast of Alaska (Moody & Pitcher, 2010; Willson et al., 2006). Eulachon occur in nearshore ocean waters and to 1,000 feet in depth, except for the brief spawning runs into their natal (birth) streams (National Marine Fisheries Service, 2017a). Spawning grounds are typically in the lower reaches of larger snowmelt-fed rivers with water temperatures ranging from 39 to 50°F (4 to 10°C). Spawning occurs over sand or coarse gravel substrates. Eulachon typically spend three to five years in saltwater before returning to freshwater to spawn from late winter through mid-spring (National Marine Fisheries Service, 2017a).

Eulachon abundance exhibits considerable year-to-year variability, and nearly all spawning runs from California to southeastern Alaska have shown considerable declines over the past 20 years. Major threats to the southern DPS of eulachon include climate change impacts on ocean and freshwater habitat, bycatch in offshore shrimp trawl fisheries, changes in downstream flow-timing and intensity due to dams and water diversions, and predation. Large declines in abundance, combined with these threats, suggest that the southern DPS of eulachon was at moderate risk of extinction throughout all of its range (Gustafson et al., 2010; Gustafson et al., 2012). This species is most commonly found in the Columbia River in Region 3 of the training study area.

Critical habitat for the southern DPS of Pacific eulachon was designated in October 2011 (76 FR 65324). Within the training study area, designated critical habitat has the potential to overlap with those areas that may be used for training near the Columbia River, such as Cape Disappointment and Fort Columbia.

The physical and biological features essential for conservation of eulachon include:

- freshwater spawning and incubation sites with water flow, quality and temperature conditions and substrate supporting spawning and incubation;
- Freshwater and estuarine migration corridors free of obstruction and with water flow, quality and temperature conditions supporting larval and adult mobility, and with abundant prey items supporting larval feeding after the yolk sac is depleted; and
- nearshore and offshore marine foraging habitat with water quality and available prey, supporting juveniles and adult survival.

North American Green Sturgeon Southern Distinct Population Segment

The North American green sturgeon Southern DPS was listed by as threatened under the ESA on April 7, 2006 (71 FR 17757). Green sturgeon are the most wide-ranging and most marine-oriented species of the sturgeon family and are believed to spend a majority of their lives in nearshore oceanic waters, bays, and estuaries. They spawn and rear outside of the study area. (National Marine Fisheries Service, 2015a).

Subadult and adult green sturgeon make annual migrations along the coast in the spring and fall, spending winters in the marine waters north of Vancouver Island and south of southeast Alaska, and summers in coastal waters, bays, and estuaries of Washington, Oregon, and California. Green sturgeon have been found in high concentrations along the Washington coast in Willapa Bay, Grays Harbor, and the Columbia River estuary during summer and fall. No green sturgeon have been reported in Washington coastal and Puget Sound recreational fisheries (outside of Willapa Bay and Grays Harbor) since the 2007 closure (National Marine Fisheries Service, 2015a). This information is based on anglers reporting only fish they have kept and not those released. The extent to which green sturgeon use Puget Sound is unknown, but occurrence has been documented. Adams et al. (2002) noted incidental capture of few adult or subadult green sturgeon in fisheries in Puget Sound, predominately from trawl fisheries. Two tagged southern DPS green sturgeon originating from San Pablo Bay were detected south of Whidbey Island in 2006 (Moser, 2008, as cited in (National Marine Fisheries Service, 2009) of which one of those was detected over several months over a two-year period in the area possibly foraging, holding, or resting. No tagged green sturgeon southern DPS have been detected in Hood Canal (Moser, 2008, as cited in (National Marine Fisheries Service, 2009). Occurrence of green sturgeon within the interior Puget Sound waters is possible but expected to be rare.

Critical habitat was designated on October 9, 2009 (74 FR 52300). Critical habitat has been designated in coastal U.S. marine waters within 60 fathoms (110 meters) depth from Monterey Bay, CA (including the Bay), north to Cape Flattery, WA, including the Strait of Juan de Fuca, to the U.S.-Canada boundary; the Sacramento-San Joaquin Delta and Suisun, San Pablo, and San Francisco Bays in California; the lower Columbia River estuary; and certain coastal bays and estuaries in California (Humboldt Bay), Oregon (Coos Bay, Winchester Bay, Yaquina Bay, and Nehalem Bay), and Washington (Willapa Bay and Grays Harbor) (50 CFR Part 226). Several of these areas overlap with the training study area. In Region 2, it overlaps with waters adjacent to Joseph Whidbey State Park and continues along the coast past Deception Pass State Park. In Region 3, it overlaps with Westhaven, Westport Light, Twin Harbors,

Grayland Beach, Leadbetter Point, and Cape Disappointment off the coast of Washington.

Three PCEs were identified that are essential for conserving the southern green sturgeon DPS in coastal marine areas (74 FR 52300). These include:

- **Migratory Corridor.** A safe and timely migratory pathway within marine and between estuarine and marine habitats. Safe and timely passage is defined as human-induced impediments (physical, chemical, or biological) do not alter migratory behavior of the fish.
- **Water Quality.** Coastal marine waters with adequate dissolved oxygen levels and acceptably low levels of contaminants.
- **Food Resources.** Abundant prey items for subadults and adults, which may include benthic invertebrates and fish.

3.3.2.3.6 Special Status Marine Reptiles

Leatherback Sea Turtle

The leatherback sea turtle is listed as a single population and is classified as endangered under the ESA (35 FR 8491). Although USFWS and NMFS believe the current listing is valid, preliminary information indicates an analysis and review of the species should be conducted under the DPS policy (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2013).

Unlike populations in the Caribbean and Atlantic Ocean, which are generally stable or increasing, western Pacific leatherbacks have declined more than 80 percent and eastern Pacific leatherbacks have declined by more than 97 percent since the 1980s (Kobayashi et al., 2016). Western leatherbacks occur off of Washington's coast. Because the threats to these subpopulations have not ceased, the International Union for Conservation of Nature has predicted a decline of 96 percent for the western Pacific subpopulation and a decline of nearly 100 percent for the eastern Pacific subpopulation by 2040 (Nachtigall et al., 2016; Wallace et al., 2016).

The eastern and western Pacific leatherback populations have been the subjects of several action plans and recovery plans over the last two decades including the Bellagio Blueprint for Action on Pacific Sea Turtles (Polasek et al., 2017), the U.S. Recovery Plan for Pacific populations of Leatherbacks (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 1998), and the North American Conservation Action Plan for Pacific Leatherback Sea Turtles (Seymour et al., 2017). NMFS has updated their conservation strategy for Pacific leatherback sea turtles with the publication of *Species in the Spotlight Priority Actions: 2016-2020 Pacific Leatherback Turtle Dermochelys coriacea* (National Marine Fisheries Service, 2016b). This plan focuses on five primary areas: (1) reducing fisheries interactions, (2) improving nesting beach protections and increasing reproductive output, (3) international cooperation, (4) monitoring and research, and (5) public engagement.

Occurrence within the training study area should be considered extremely rare, as this species would only be present under certain oceanographic conditions. Recent research using satellite telemetry indicates that Washington's outer coast (especially the area near the Columbia River plume, an upwelling that is favorable to leatherback foraging) is an important foraging area for the species (Benson et al., 2011). Leatherback sea turtles are not anticipated to occur in the Region 1 portion of the training study area. Within Region 2, leatherback sea turtles have been reported only on rare occasions within the Strait of Juan de Fuca (Vanselow et al., 2009; Witteveen & Wynne, 2017). As for Region 3, commercial and recreational fishermen have noted occasional sightings of single individuals or small

groups of leatherbacks off the coast of Washington. There were 78 documented occurrences from a variety of sources from 1975 to 2013, with records extending from the mouth of the Columbia River north to Cape Flattery. The number of western Pacific leatherbacks in Washington is likely decreasing over time, based on the strong declines in the nesting population in Indonesia (Athens, 2002). (Gaydos & Zier, 2014; Tsao et al., 2005)

In 2012, NMFS designated critical habitat for the leatherback sea turtle off the coast of Washington and Oregon. The designated areas include marine habitat and waters from the ocean surface down to a maximum depth of 262 feet (80 meters) (77 FR 4170). Critical habitat overlaps with the potential training areas located in Region 3.

NMFS identified one PCE for the conservation of leatherbacks in marine waters off the U.S. west coast. This PCE is the occurrence of prey species, primarily scyphomedusae of the order Semaestomeae (an order of large jellyfish), of sufficient condition, distribution, diversity, abundance, and density necessary to support individual, as well as population, growth, reproduction, and development.

3.3.2.3.7 Special Status Marine Mammals

Mexico Distinct Population Segment and Central America Distinct Population Segment Humpback Whale

Humpback whales of the Mexico DPS are listed as threatened, and those from the Central America DPS are listed as endangered under the ESA (National Marine Fisheries Service, 2016d). Together these two DPSs are considered the California, Oregon, and Washington stock of humpback whales and are listed as depleted under the MMPA (Carretta et al., 2017b; National Marine Fisheries Service, 2016d).

Humpback whales are distributed worldwide in all major oceans and most seas. They typically are found during the summer on high-latitude feeding grounds and during the winter in the tropics and subtropics around islands, over shallow banks, and along continental coasts, where calving occurs (Barlow et al., 2011; Calambokidis et al., 2008). Off the U.S. West Coast, humpback whales are more abundant in shelf and slope waters (<2,000 meters deep), and are often associated with areas of high productivity (Becker et al., 2010; Becker et al., 2012; Becker et al., 2016; Forney et al., 2012; Redfern et al., 2013). While most humpback whale sightings are in nearshore and continental shelf waters, humpback whales frequently travel through deep oceanic offshore waters during migration (Calambokidis et al., 2001; Clapham & Mattila, 1990; Clapham, 2000).

Although recent estimates show variable trends in the number of humpback whales along the U.S. West Coast, the overall trend in the estimates is consistent with growth rate of 6–7 percent for the California, Oregon, and Washington stock and appear consistent with the highest-yet abundances of humpback whales in the most recent 2014 survey of that stock (Barlow, 2016; Carretta et al., 2017b; Smultea, 2014).

Humpback whale sightings in inland Washington waters has increased. Inland water opportunistic sightings primarily occur from April through July, but sightings are reported in every month of the year. Most sightings occur in the Strait of Juan de Fuca and in the San Juan Island area, with only occasional sightings in Puget Sound. Visual surveys and acoustic monitoring studies in offshore areas have detected humpbacks along the Washington coast year-round, with peak occurrence during the summer and fall (Oleson et al., 2009).

Critical habitat has not been designated for this species.

Southern Resident Killer Whale Distinct Population Segment

Among the genetically distinct assemblages of killer whales in the northeastern Pacific, the Eastern North Pacific Southern Resident stock is one of two that may occur in the Proposed Action Area. The Southern Resident stock is listed as endangered under the ESA (70 FR 69903) and is protected and designated as depleted under the MMPA. The Southern Resident stock contains three pods (J, K, and L pods), considered one stock under the MMPA and as a “distinct population segment” (therefore, “species”) under the ESA.

The Eastern North Pacific Southern Resident stock is a transboundary stock that occurs in inland waters of Washington and British Columbia. They regularly visit coastal sites off Washington State and Vancouver Island (Ford et al., 2000) and are known to travel as far south as central California (Black, 2011). Tagging and acoustic data has shown that, throughout their range, K/L pods occurred almost exclusively on the continental shelf, with high use areas mainly between Grays Harbor and the Columbia River (Hanson et al., 2017). Photo-identification of individual whales in the stock through the years has resulted in a substantial understanding of this stock’s structure, behaviors, and movements in inland waters. Southern Resident killer whales are most frequently observed in the inland waters of Washington State and British Columbia during the late spring, summer, and fall (Hanson et al., 2017). In Washington inland waters, Southern Residents are most often observed outside the training study area in Haro Strait, along the west side of San Juan Island, and in the Strait of Juan de Fuca and enter Puget Sound typically in the fall or winter months (Hanson et al., 2017). Southern Resident killer whales regularly occur throughout the San Juan Islands and Strait of Juan de Fuca, and occur less frequently through main basins of Puget Sound (Orca Network, 2017).

Region 1. Southern Resident killer whales may occur occasionally in Puget Sound, with the exception of Hood Canal, including Dabob Bay, as they have not been documented there since 1995 (National Marine Fisheries Service: Northwest Region, 2006). Southern Residents typically enter Puget Sound in the fall or winter months (National Marine Fisheries Service: Northwest Region, 2006).

Region 2. In Region 2, Southern Residents are most often observed outside the Action Area in Haro Strait, along the west side of San Juan Island, and in the Strait of Juan de Fuca (Houghton et al., 2015; Kriete, 2007). Southern Residents enter Puget Sound typically in the fall or winter months (National Marine Fisheries Service: Northwest Region, 2006). They are less frequently seen off northern Whidbey Island and within the Region 2 action area (Hanson et al., 2017).

Region 3. They regularly visit coastal sites off Washington state and Vancouver Island (Ford et al., 1994) and are known to travel as far south as central California (Black, 2011). Tagging and acoustic data have shown that, throughout their range, K and L pods occurred almost exclusively on the continental shelf, with high use areas mainly between Grays Harbor and the Columbia River (Hanson et al., 2017).

In November 2006, NMFS designated critical habitat for Southern Resident killer whales. Within the training study area, critical habitat has been designated as marine waters deeper than 20 ft. (6 m) below extreme high tide within Puget Sound, and the Strait of Juan de Fuca. Hood Canal is not included in critical habitat. There are 18 sites owned or controlled by the DoD which are excluded from critical habitat designation, including Navy locations within Puget Sound.

The PCEs essential for conservation of the Southern Resident killer whale critical habitat have been identified as

- water quality to support growth and development;

- prey species of sufficient quantity, quality, and availability to support individual growth, reproduction, and development, as well as overall population growth; and
- passage conditions to allow for migration, resting, and foraging (National Marine Fisheries Service: Northwest Region, 2006).

3.3.3 Environmental Consequences

This analysis focuses on wildlife or vegetation types that are important to the function of the ecosystem or are protected under federal or state law or statute. The Navy has identified two primary potential stressors from the Proposed Action that may impact biological resources and are described below.

- **Physical Stressors.** The physical presence of submersibles, swimmers, surface vessels, and trainees on land.
- **Acoustic Stressors.** Some training activities generate noise in the environment, such as vessel noise, vehicular noise, the use of simulated munitions, the audible recall device, and noise generated from the use of UAS.

Since the types of wires and cables proposed for UUV training, which includes remotely operated vehicles (ROVs), would be monitored by the operator, are rigid, do not form loops, and would not be discarded, entanglement was eliminated as a potential stressor and not carried forward for analysis.

The audible recall device is an MK-137 that is intended for underwater use only. It contains a small pyrotechnic of 1.75 grams of double based propellant composition, an ignition charge of black powder, a primer, and a blasting fuse to produce a 6.6 second delay. The device is used to communicate with divers and submersible drivers per prearranged instructions. It is dropped adjacent to the diver/swimmers to alert them that a potential situation is occurring and that they should return to the surface. Due to specific protection measures described further in the document, it is not anticipated that any species would congregate near the swimmer/divers during a training evolution and, because it would only occur on an as-needed basis, which is unpredictable, and it is a *de minimis* source, the audible recall device was eliminated as a potential stressor and not carried forward for further analysis.

A number of activity-specific protection measures, installation natural resource training constraints, and other factors reduce the potential impacts of stressors on biological resources and are summarized below. These measures are common to all alternatives analyzed in this EA.

Activity-specific protection measures. In order to reduce the potential impacts of the stressors from the Proposed Action, training activities are designed with activity-specific protection measures that ensure compliance with existing agreements between the Navy and regulatory agencies. Example measures include lookout and avoidance procedures for marine mammals in water and on land, as well as avoiding potential impacts on seagrass beds by avoiding sensitive areas and timing of activities (e.g., avoiding low tides for some sensitive locations).

Installation-specific natural resource training constraints. In addition, various installations where training activities occur have identified a number of site-specific training restrictions that are included in INRMPs (U.S. Department of the Navy, 2012, 2017). These restrictions are the result of stewardship and compliance actions in consultation with USFWS and NMFS for other military proposed actions. The Navy and other services conduct training operations at various installations in Puget Sound. Training operations can require that equipment and personnel utilize the nearshore areas. Prior to scheduling of activities, natural resource managers recommend shoreline areas or seasonal timing that would result in

minimal or no impact to sensitive wildlife species. The review process identifies areas that have training constraints placed on them for environmental reasons (e.g., wetland buffers); suggests best management practices to minimize or eliminate any potential environmental degradation; identifies environmental permits, consultations, and other documents required to carry out the training activity; develops a cost estimate for any additional environmental permits; and carries out any consultations with state and federal resource and regulatory agencies. An example constraint of training activities within this EA may include avoiding training activities in proximity to bald eagle nests during certain times of year. These training constraints are also adhered to for training activities and are considered in the analysis of potential impacts of the Proposed Action. These constraints are discussed in the following analyses for potential impacts of the proposed training activities.

State park-specific natural resource training constraints. Training activities that may occur on state parks would be by agreement with the Washington State Parks and Recreation Commission. Training activities would be consistent with management objectives of individual parks, including prohibiting training in sensitive areas containing important natural and cultural resources. For example, if a site has been revegetated with native plants and the public is prohibited from entering that area, Naval Special Warfare Command would also observe this restriction and not enter the area. Some state parks have management plans with designated conservation areas that support conservation activities (e.g., providing important refugia for species, supporting reintroduction sites) or higher land use classifications (e.g., “heritage”), which is the most restrictive for access and is used to protect extremely rare species (e.g., golden paintbrush populations). The following state parks have management plans that proscribe land use classifications that would protect specific species and habitats from stressors of the Proposed Action: Blake Island State Park, Camano Island State Park, Dosewallips State Park, Fort Casey State Park, Fort Ebey State Park, Fort Flagler State Park, Fort Worden State Park, Hope Island State Park, Illahee State Park, Joseph Whidbey State Park, Manchester State Park, Scenic Beach State Park, and Sequim Bay State Park (Washington State Parks and Recreation Commission, 1997, 2006a, 2006b, 2008a, 2008b, 2008c, 2009, 2013).

Biosecurity Standard Operating Procedures. Biosecurity planning is also a standard operating procedure during exercise planning and execution. During this process, potential introduction pathways are identified specific to the training activity, and appropriate actions are taken to remove any potentially invasive species from these pathways. For example, an activity that originates in one location may form an exchange pathway for vegetation (e.g., hitchhiking seeds on clothing and equipment). In this case, self-inspection procedures are warranted, along with equipment washdowns to remove cultigens that may spread to new locations, or supplement the numbers and genetic variability of already-established invasive species. Together with site-specific recommendations for specific Navy installations and Washington state parks, the transport, introduction, and establishment of potentially invasive species is minimized to the maximum extent practical. Because of the types of training activities discussed in this EA, and with biosecurity procedures actively in place, the potential for invasive species transport and spread associated with the proposed training activities is not analyzed as a potential stressor on biological resources.

Siting for potentially invasive training activities. Siting of certain activities is an important consideration for the analysis of potential impacts on biological resources. For example, the use of simulated munitions would only occur at specific locations during simulated building clearance training activities, in existing structures and occasionally outdoors. These structures are located in previously developed areas, and the noise generated from simulated munitions would not likely impact biological resources in

any measurable way. For those activities that would occur outside, the noise generated from firing the simulated munition would be similar to that of firing an air rifle or a car door slamming and significantly less than the noise produced from firing actual live rounds. It also would not likely impact biological resources in any measurable way. Practice locations for UAS are sited only on federal properties in Region 1 or in already approved airspace (R6701 at Whidbey Island in Region 2). These siting restrictions for potentially disturbing training activities reduces the potential for biological resources to be exposed to noise-related stressors.

- **Low impact/minimally invasive training activities.** Further, it is important in the consideration of potential impacts on biological resources that the training activities considered in this EA are designed to be minimally invasive. Potential impacts from stressors on biological resources are minimized by the nature and objectives of the training activity, because the stressors that would potentially impact biological resources are similar to factors that may alert potential adversaries and non-combatants in real-world operations.

3.3.3.1 No Action Alternative

Under the No Action Alternative (described in Section 2.3.1), training activities conducted in western Washington State over the past 30 years would continue in the Region 1 training study area with two training blocks per year, as approved under the 2015 Northwest Training and Testing Final EIS/OEIS, 2010 Northwest Training Range Complex EIS/OEIS, and event-based Categorical Exclusions, as applicable. Under the No Action Alternative, an individual site would be used no more than 10 times a year. Training activities would include launch and recovery of the submersible or small boats, insertion and extraction of these vessels, diver/swimmer training, over-the-beach, special reconnaissance, and the use of unmanned underwater vehicles. Small recall devices could be used in certain prearranged situations to alert the diver/swimmers to return to the surface of the water.

The Navy consulted with both the USFWS and NMFS for NSO training activities that were included under the Navy's preferred alternative in the 2015 Northwest Training and Testing Final EIS/OEIS and in the 2010 Northwest Training Range Complex EIS/OEIS. These consultations are summarized below for NSO activities.

In 2010, the USFWS issued its *Biological Opinion on the 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* ((National Marine Fisheries Service, 2017b). In 2016, the USFWS issued its *Biological Opinion on the Navy's Northwest Training and Testing Activities* (U.S. Fish and Wildlife Service, 2016). In both consultations between the Navy and USFWS, the USFWS determined that NSO training activities ("NSW [Naval Special Warfare] Training" and "Personnel Insertion/Extraction-Submersible" respectively), analyzed in 2010 and 2015, may affect, but not adversely affect, the western snowy plover, streaked horned lark, and designated bull trout critical habitat. In both 2010 and 2016, the USFWS asserted that training and testing activities would not jeopardize the continued existence of bull trout, marbled murrelet (and designated critical habitat), and the short-tailed albatross. These adverse effects were attributed to other non-NSO training and testing activities not included in this EA. Other species that are outside of the training study area were included in these consultations, such as the northern spotted owl, Canada lynx, gray wolf, grizzly bear, and woodland caribou.

In 2010, NMFS issued its *Biological Opinion on the U.S. Navy's military readiness activities on the Northwest Training Range Complex* (National Marine Fisheries Service, 2010b) for activities described

under the Navy's preferred alternative included in the 2010 Northwest Training Range Complex Final EIS/OEIS. In 2014, NMFS reinitiated consultation with the Navy and released a subsequent revised biological opinion (National Marine Fisheries Service, 2014b). The Navy and NMFS entered consultation proceedings again for activities described under the Navy's preferred alternative included in the 2015 Northwest Training and Testing Final EIS/OEIS. These consultations included an analysis of "Personnel Insertion/Extraction-Submersible" training activities. In all of these consultations, for species that occur within the training study area of this EA, NMFS determined that training and testing activities may affect, but not adversely affect, the southern DPS of green sturgeon, and designated critical habitats for ESA-listed rockfish, Pacific eulachon, Puget Sound chinook salmon, Puget Sound steelhead, and Hood Canal summer run chum salmon. In these consultations, NMFS asserted that training and testing activities would not jeopardize the continued existence the following species that may occur within the training study area of this EA—humpback whale, southern resident killer whale, leatherback sea turtle, ESA-listed rockfish, southern DPS of Pacific eulachon, chinook salmon, chum salmon, and steelhead. These adverse effects were attributed to other non-NSO training and testing activities not included in this EA.

Event-based Categorical Exclusions prepared for naval special operations training in Region 1 determined naval special operations activities will not have an adverse effect on either federally listed species or marine mammals. The Categorical Exclusions also determined that the activities will not impact forage fish spawning habitat. This finding was based on the training being non-invasive (no live-fire, no digging, no cutting of vegetation, no fires, no human waste, etc.).

Therefore, no significant impacts on biological resources would occur with implementation of No Action Alternative.

3.3.3.2 Alternative 1

Under Alternative 1, the same training activities in the No Action Alternative would occur. The following training activities would be added: simulated building clearance and the training with UASs. The use of remote operated vehicles would be included with UUVs. The stressors from naval special operations training activities on terrestrial and marine biological resources would be limited to discrete training locations in Region 1 (within Puget Sound, see Figure 1-2 in Chapter 1, Purpose and Need for the Proposed Action). Training blocks would increase to four training blocks per year and an individual site would be used no more than 20 times per year in Region 1.

3.3.3.2.1 Terrestrial Species and Habitats

Terrestrial Vegetation

The only stressor analyzed for potential impacts on terrestrial vegetation is physical presence of personnel and logistical support vehicles. A disturbance may occur when trainees walk through an area. Logistical support vehicles would only use established roads and parking areas, and no vegetation would be removed. Acoustic stressors are not applicable to terrestrial vegetation.

The types of land-based training activities (as described in Section 2.1.1.2) that would introduce this stressor into areas of terrestrial vegetation include over-the-beach and special reconnaissance training activities. During these training activity types, trainees' foot traffic may impact vegetation; however, not all types of vegetation would be impacted by the training activities. Ground cover is most likely to be impacted by passing foot traffic, although it would quickly recover and would not impact the survival or function of the habitat. No vegetation would be removed as part of the training activity. Because the

goal of training is for the trainees to be in the field undetected, the environment tends to be minimally disturbed and materials (e.g., gear and trash) are not left behind. In addition, identical travel routes would be rarely used; the level of foot traffic associated with each group would not wear paths in the training study area. Logistical support vehicles use established roads and therefore do not impact vegetation.

Known or potential locations of ESA-listed golden paintbrush, marsh sandwort, water howellia, and other rare state-listed species are typically identified in INRMPs (for Navy installations) and in state park management plans. In general, private properties are developed areas that are not under conservation use. Because of the undisturbed habitat requirements for these species, these rare special status species are unlikely to occur on private properties. The golden paintbrush is not reported from these locations as occurring within Region 1; therefore, the activities under Alternative 1 would not impact this species. The marsh sandwort is believed to be extirpated from Washington, and the Proposed Action would not impact any potential reintroduction of this species into suitable habitats. Suitable habitat for the water howellia is reported from Camp Wesley Harris, Naval Hospital at Jackson Park, Naval Base Kitsap Bangor, Naval Base Kitsap Keyport, Navy Railroad, Toandos Buffer Zone, and Zelatched Point, but no confirmed presence of this species has been reported and this species is believed to be extirpated from locations within the training study area. The state-listed pink sand verbena could potentially occur on the Toandos Buffer Zone (U.S. Department of the Navy, 2017). Land-based training activities may occur on some of these Navy properties, as well as state lands and private properties that support suitable habitats, but locations of known populations of ESA-listed species, state-listed species, and other special habitats that are under natural resource constraints would either not be used for training or support minimally invasive activities that would not harm plants or populations. Real estate agreements with non-federal land administrators and owners would identify potential sensitive ecological resources, which would be avoided during training activities.

Impact Summary. Impacts to vegetation are not expected to occur from Alternative 1 because the training activities are designed to leave no trace, paths are not created, vegetation is not removed, no tree climbing, no digging, no construction, and no fire building. Therefore, no significant impacts on vegetation would occur with implementation of Alternative 1.

ESA Determinations. Alternative 1 would have no effect on the golden paintbrush because this plant does not occur within Region 1. Alternative 1 would also have no effect on the water howellia and marsh sandwort. These two species are believed to be extirpated from the training study area. Therefore, proposed training activities under Alternative 1 would have no effect on ESA-listed plant species.

Terrestrial Wildlife

The Navy has identified physical and acoustic stressors as potentially impacting terrestrial wildlife resources. Logistical support vehicles use established roads, and the potential to strike wildlife (e.g., native birds) can be discounted; therefore, it is not analyzed here for terrestrial wildlife.

Physical Stressors. The types of land-based training activities (as described in Section 2.1.1.2) that would introduce this type of stressor on terrestrial wildlife include over-the-beach, special reconnaissance, simulated building clearance when conducted outside, and UAS activities. Foot traffic may impact various animal species, such as invertebrates, amphibians and reptiles, birds, and mammals in different ways, depending on the specific species' ability to detect and respond to the presence of trainees during a training activity. Because the goal of training is for trainees to be in the field undetected, the

environment tends to be minimally disturbed and materials (e.g., gear and trash) are not left behind to impact species' habitat. In addition, identical travel routes are rarely used; trainees do not pass through the same areas in the training study area. Because these are students in-training, support vehicles are on standby for safety and may disturb various types of wildlife; however, the support vehicles stay on established roads. These disturbances are expected to be short term and infrequent. Example types of responses include fleeing (terrestrial mammals, invertebrates, reptiles and amphibians moving to an area away from an area), concealment (using surrounding structural components of habitat to camouflage or blend into surroundings to avoid detection), and flushing (a startle response in birds where they fly away rapidly). The duration of the disturbance would likely last as long as trainees are present, with a restoration of normal activities (e.g., resting, foraging, nest attendance) once trainees are gone from the area (Wright et al., 2007).

Within Region 1, there are no known populations of Taylor's checkerspot butterfly, Oregon silverspot butterfly, or state-listed northern leopard frog on state park lands or Navy installations that could support training activities (U.S. Department of the Navy, 2017). Therefore, exposure to physical stressors from training activities would not occur under Alternative 1. Critical habitat is designated for the Taylor's checkerspot butterfly and Oregon silverspot butterfly. However, these designations are not within Region 1, and therefore these designated critical habitats would not be impacted by Alternative 1.

The state-listed western pond turtle is not known to occur at Camp McKean, Camp Wesley Harris, and Naval Base Kitsap Bangor; however, suitable habitat may be found in these locations (U.S. Department of the Navy, 2017). Potential impacts on any western pond turtles that may occur in suitable habitats within Region 1 from the presence of trainees would likely be limited to temporary behavioral responses as described above, such as fleeing. This would likely occur in response to visual or audible cues (seeing or hearing movement of trainees during over-the-beach and special reconnaissance training), with a return to normal activities after the trainees leave the area. This impact is assumed to be temporary and minor, with no adverse impacts (injury to animals, degradation of habitats, population-level effects) resulting from training activities described under Alternative 1.

Western snowy plovers and streaked horned larks are not anticipated to occur in Region 1 training locations; therefore, Alternative 1 would have no effect on these species or designated critical habitats.

For bald eagles and other raptors (e.g., ospreys) that nest within potential training locations, known nests would be avoided. During the nesting season, on-land and in-water training activities would not occur within 330 feet of eagle nests as recommended by the USFWS National Bald Eagle Management Guidelines (U.S. Fish and Wildlife Service, 2007a). Use of UASs in the vicinity of eagle nests would also maintain a stand-off distance of 330 feet from the nest at a minimum. Raptors tend to demonstrate strong site fidelity (returning to the same nesting areas every season). These nesting sites are identified on federal properties through technical field studies supporting INRMP updates. On other non-federal properties (e.g., state and local parks, private lands), these nest locations would be identified in real estate agreements, and would be used by training activity planners to identify site-specific training constraints. Because known nests would be avoided, trainees would not disturb nesting activities. For unknown or undetected eagle or osprey nests, the potential for disturbing nesting activities would be minimal because of the low-impact training activities that would occur in these areas.

Under Alternative 1, effects from physical stressors would be temporary and minor, with no adverse impacts (injury to animals, degradation of habitats, population-level effects) resulting from training activities.

Acoustic Stressors. The two sources of noise analyzed for potential impacts on terrestrial wildlife are the use of UAS and simulated munitions. UASs would be categorized as Federal Aviation Administration (FAA) Group 1 or Group 2 systems and are small hand-launched, battery-operated models (see Section 2.1.1.3, Unmanned Aircraft Systems Training Activities) or small gasoline powered models. UAS would be used in training activities during approximately 10 percent of the land-based training activities, and only on federal property. These locations within Region 1 include Naval Magazine Indian Island, Naval Base Kitsap Keyport, and the Toandos Buffer Zone. The majority of activities using simulated munitions would occur within enclosed spaces (buildings). For those activities that would occur outside, the noise generated would similar to that of firing an air rifle or a car door slamming. While terrestrial wildlife may be able to detect the sound, it is unlikely that this noise would induce a measurable response. Therefore, the use of simulated munitions is not analyzed further in the document.

For mammals, reptiles and amphibians, and birds, noise from UAS may alert different kinds of animals by simulating a potential threat. Predators of waterbirds and passerines include birds of prey. Noise from a UAS may alert birds to some threat in the air, which may be perceived as a predator. Such responses would likely be temporary, where normal activities would resume after the UAS left the area or was no longer perceived as a threat.

Bald eagle nesting sites are identified on federal properties through technical field studies supporting INRMP updates. Bald eagle nests are considered a training constraint, and UAS training would not occur within at least 330 feet of bald eagle nests. For unknown or undetected eagle or osprey nests, the potential for disturbing nesting activities would be minimal because of the low noise generated by UAS.

UAS use would not overlap with areas where western snowy plovers or streaked-horned larks would be present; therefore, there would be no effect from UAS training on these two ESA-listed birds.

Impact Summary. Impacts on terrestrial wildlife in the terrestrial environment are expected to be minimal, short term, and recoverable based on the (1) relatively low intensity of the impacts, (2) localized nature of the impacts, (3) infrequent nature of the impacts, (4) brief duration of the activities, and (5) standard operating procedures designed to minimize or avoid impacts on sensitive species and their habitats. For these reasons, long-term consequences to individuals or populations of birds in the terrestrial environment are not expected to result from the activities under Alternative 1. Therefore, no significant impacts on terrestrial wildlife would occur with implementation of Alternative 1.

MBTA Conclusion. A variety of bird species would be encountered in the training study area, including those protected under the MBTA. Under the MBTA regulations applicable to military readiness activities (50 CFR Part 21), impacts from the activities under Alternative 1 would not result in a significant adverse effect on migratory bird populations for the same reasons listed above. Therefore, no significant impacts on migratory birds would occur with implementation of Alternative 1.

BGEPA Conclusion. Bald eagles are known to occur and nest regularly within the training study area, while golden eagles may occur intermittently during migrations (but are generally associated with higher elevation locations in western Washington). On private properties, any known eagle nests would be identified through real estate agreements, which would be considered a training constraint during the nesting season. Because training activities would avoid bald eagle nests on private properties (identified

through real estate agreements), on state properties (nests identified through park management plans and real estate agreements with individual parks) and Navy installations (specified in INRMP documents), no take or disturbance of known bald or golden eagles are anticipated from activities under Alternative 1. Further, in accordance with the BGEPA, no activities under Alternative 1 would impact unoccupied nests and thereby adversely impact an eagle's use of the location upon its return.

ESA Determinations. The land-based training activities described under Alternative 1 would have no effect on the Taylor's checkerspot butterfly, the Oregon silverspot butterfly, western snowy plover, or streaked-horned lark because the land-based training activities do not overlap with extant populations. Activities described under Alternative 1 would have no effect on critical habitat designations for the Taylor's checkerspot butterfly, Oregon silverspot butterfly, western snowy plover, or streaked-horned lark because Region 1 training locations do not overlap with these critical habitat designations. As a result, in accordance with ESA Section 7 (a)(2), the Navy would not be required to consult with the USFWS for these species and their designated critical habitat under Alternative 1.

3.3.3.2.2 Marine Species and Habitats

Marine Vegetation

The only stressor analyzed for potential impacts on marine vegetation is physical presence. There are no ESA-listed marine vegetation species within the training study area and no critical habitat designations for marine plants.

Under Alternative 1, activities that involve vessels and personnel in the water and walking to shore through the intertidal zone could impact marine vegetation present in Region 1. No vessels would have contact with the seafloor or the beach. Because marine vegetation is already adapted to natural disturbances by waves, tides, currents, storm energy, and cycles of erosion and deposition, walking through the intertidal zone would not cause long-term or permanent impairment to the surrounding marine vegetation.

Impact Summary. Proposed training activities would have minimal impacts on submerged vegetation because the types of training activities that would occur in areas supporting marine vegetation are minimally invasive to marine environments. Because marine vegetation is already adapted to natural disturbances, any disturbances from activities under Alternative 1 would not be expected to cause long-term or permanent impairment to the surrounding marine vegetation, particularly at the proposed training frequency. Therefore, no significant impacts on marine vegetation would occur with implementation of Alternative 1.

Marine Invertebrates

The only stressor analyzed for potential impacts on marine invertebrates is physical presence. There are no ESA-listed marine invertebrate species within the training study area and no critical habitat designations.

Under Alternative 1, activities that involve vessels and personnel in the water and walking to shore through the intertidal zone could impact marine invertebrates present in Region 1. No vessels would have contact with the seafloor or the beach. Because marine invertebrates are already adapted to natural disturbances by waves, tides, currents, storm energy, and cycles of erosion and deposition, walking through the intertidal zone would not cause long-term or permanent impairment to marine invertebrates.

Impact Summary. Proposed training activities would have minimal impacts on marine invertebrates because the types of training activities that would occur in areas supporting marine invertebrates are minimally invasive. Because marine invertebrates are already adapted to natural disturbances, any disturbances from activities under Alternative 1 would not be expected to cause long-term or permanent impairment to marine invertebrates, particularly at the proposed training frequency. Therefore, no significant impacts on marine invertebrates would occur with implementation of Alternative 1.

Fishes

The Navy has identified physical and acoustic stressors as potentially impacting fishes in Region 1. Potential impacts to ESA-listed species and designated critical habitat, as well as federally managed fish species within the training study area, are also discussed below for each stressor.

Physical Stressors. Activities proposed under Alternative 1 that involve vessels, personnel, and submersible operations in the water could impact fish present in Region 1 of the training study area. Activities proposed under Alternative 1 also include surface and underwater vessel movement, trainees swimming from boats to shore, and walking in the intertidal and nearshore zones. Fish would likely respond to trainees in the water by fleeing the area and would return to normal activities after the activity (e.g., foraging, resting). These impacts would be short term and minor, with no long-term impacts on fish or fish populations in the areas where training activities would occur.

Vessels do not normally collide with fish since it is expected that fish are capable of detection and avoidance. One study on fishes' behavioral responses to vessels showed that most adults exhibit avoidance responses to engine noise (Jørgensen et al., 2004), reducing the potential for vessel strikes.

Activities involving vessel movements occur intermittently and range in duration from a few minutes to a few hours. While vessel movements have the potential to expose fish occupying the water column to sound and general disturbance, potentially resulting in short-term behavioral or physiological responses, such responses would not be expected to compromise the general health or condition of individual fish. Both submersibles and support vessels would operate with lights. Lighting would likely attract fish, but the lighting sources are minimal under the surface (e.g., chemical lights or "light sticks" so that the support vessel can track the trainees' use of the submersible). Because of the minimal lighting used under the surface, any behavioral change by a fish would be minimal and temporary.

Acoustic Stressors. The two sources of noise analyzed for potential impacts on fishes in Alternative 1 are vessel noise and sonar navigation device.

Vessel noise has the potential to expose fish to sound and general disturbance, which could result in short-term behavioral or physiological responses (e.g., avoidance, stress, increased heart rate). Moderate- to low-level passive sound sources, including vessel noise, would not likely cause any direct injury or trauma due to characteristics of the sounds and the moderate source levels. Navy vessels make up a very small percentage of the overall traffic (Mintz, 2012). Under Alternative 1, the use of small vessels during training activities would not substantially increase ambient noise levels in the training study area.

Submersibles use a sonar device to report depths to aid in navigation during a training activity. These devices have similar specifications to commercially available "fish finders" and other hand-held sonar devices, which typically generate frequencies over 200 kilohertz (kHz) and source levels less than 160 decibels referenced to 1 micropascal (dB re 1 μ Pa). In the NMFS' 2014 *Biological Opinion of U.S.*

Navy's Training Exercises and Testing Activities in the Northwest Training and Testing Area (National Marine Fisheries Service, 2014b, 2015b), devices with these specifications are considered “*de minimis*” sources of sound in the water. For fishes, the frequencies over 200 kHz overlaps with the hearing sensitivities of some fish species (e.g., a few species of shad within the Clupeidae family), but the low-intensity sound levels generated by these devices, the rapid dissipation of high frequency sonar in water, and the localized area of impacts are unlikely to impact fishes (Popper & Hawkins, 2016). Similarly, sound generated from UUV operation may introduce a relatively small amount of additional noise into the marine environment. UUVs are designed to be as quiet as possible to avoid detection, it is highly unlikely that sound generated from UUVs would disturb fish in any measureable or meaningful way.

Impact Summary. The risk of physical presence, disturbance, or strike from vessels, and acoustic energy (noise) generated during training activities under Alternative 1 would be extremely low because (1) most fish can detect and avoid vessel (surface and submersible) and human movements, and (2) activities occur at infrequent intervals and for a brief duration of time. Potential impacts of exposure to vessels are not expected to result in substantial changes to an individual’s behavior, fitness, or species recruitment and are not expected to result in population-level impacts. Since impacts from strikes would be unlikely, impacts on fishes or fish populations would be negligible. Therefore, no significant impact on fishes would occur with implementation of Alternative 1.

ESA Determination. Activities proposed under Alternative 1 that involve vessels and personnel in the water may affect ESA-listed species present in Region 1. As described above for other fish species, impacts to ESA-listed fish are expected to be limited to short-term, insignificant behavioral reactions, and effects to fish populations would not occur. Based on the above analysis, the effect determination is may affect, not likely to adversely affect for Puget Sound Chinook salmon, Hood Canal summer run chum salmon, Puget Sound Steelhead, Puget Sound/Georgia Basin bocaccio and yelloweye rockfishes, North American green sturgeon, and bull trout.

Columbia River chum salmon, Pacific eulachon, and North American green sturgeon critical habitats do not occur in Region 1 and therefore would not be affected. Puget Sound Chinook Salmon ESU, Hood Canal summer run chum, Puget Sound Steelhead, Puget Sound/Georgia Basin DPS bocaccio and yelloweye rockfish, and bull trout have designated critical habitats within Region 1 as discussed in Section 3.3.2.3.5 (Special Status Fishes). PCEs and essential physical and biological features described in that section would not be modified, either temporarily or permanently, as a result of the minimally invasive proposed training activities as discussed above in marine vegetation, marine invertebrates, and fishes. Furthermore, impacts to water resources (Chapter 3, Affected Environment and Environmental Consequences) were determined to be negligible or non-existent. Therefore, the Navy’s effect determination for designated critical habitat for these species is no effect.

Essential Fish Habitat Conclusion. Pursuant to the EFH requirements of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations, activities proposed under Alternative 1 that involve vessels and personnel in the water were analyzed for potential impacts to EFH species and habitats present in Region 1. Such activities would include trainees swimming from boats to shore and walking in the intertidal and nearshore zones. The physical presence of training activities in nearshore areas where EFH species and habitats occur could disturb these resources when trainees leave the water and walk through the shallow intertidal zones. As discussed above, some temporary behavioral or physiological responses would occur from vessel noise, but these impacts would be short term, temporary in nature, and would not have a measurable effect. Disturbances from activities under

Alternative 1 would also not be expected to cause any impairment to the EFH because of the dynamic nature of these nearshore habitats and because standard operating procedures would be used to avoid impact to EFH species and habitats. Due to the low-impact nature of the training activities, EFH would not be adversely impacted in Region 1, and no direct or indirect changes to EFH that would have a measurable impact on waters, substrate, or prey necessary for spawning (fish, invertebrates, or vegetation), breeding, feeding, or growth to maturity of aquatic species would occur. Therefore, the Navy has concluded that there would be no adverse effect to EFH under Alternative 1 and consultation with NMFS would not be required.

Sea Turtles

Sea turtles are not expected to occur in Region 1, including the ESA leatherback sea turtle as described in Section 3.3.2.3.6 (Special Status Marine Reptiles). Also, the leatherback sea turtle critical habitat has not been designated in this area.

Impact Summary. Impacts to sea turtles are not expected to occur from Alternative 1 as sea turtles are not expected to occur in Region 1. Therefore, no impacts to sea turtles would occur with implementation of Alternative 1.

ESA Determination. Alternative 1 would have no effect on the leatherback sea turtle or its critical habitat because neither occurs in Region 1. Therefore, the effect determination for Alternative 1 is no effect for the Leatherback sea turtle and its designated critical habitat, and ESA Section (7)(a)(2) consultation with NMFS would not be required.

Marine Mammals

The Navy has identified physical and acoustic stressors as potentially impacting marine mammals in Region 1. Humpback whales and the Southern Resident killer whales are the only two ESA-listed marine mammals that would likely occur where training activities are typically scheduled. Critical habitat has only been designated for the Southern Resident killer whales within the training study area. Numerous non-ESA-listed marine mammals likely occur in nearshore waters of the training study area. These species are protected under the MMPA.

Physical Stressors. Activities proposed under Alternative 1 that involve vessels, UASs, personnel, and submersible operations in the water are not expected to impact marine mammals protected under the MMPA potentially found within Region 1. Such activities would include small vessel movements, submersible movements through the water, UASs flying over the water, and in-water presence of trainees swimming to beaches. These activities are proposed to occur in a variety of nearshore areas of the training study area. Boats carrying trainees for specific qualification training activities comply with established boating laws and reduce speed in accordance with established safety procedures, avoiding contact and proximity to marine mammals.

Marine mammals engage in avoidance behavior when surface vessels move toward them (Magalhães et al., 2002; Senigaglia et al., 2016). It is not clear whether these responses are caused by the physical presence of a surface vessel, the underwater noise generated by the vessel, or an interaction between the two. Physical disturbance from vessel use, including UASs flying over the water, is not expected to result in more than a short-term behavioral response because marine mammals engage in these avoidance behaviors. Furthermore, most vessel use would be nearshore and by small craft within the training study area, and the potential for contact with marine mammals, which generally occur in the offshore area, would be extremely low.

It is most likely that any marine mammals in the training study area would have an initial reaction to the vessel or UAS presence, such as leaving the area or tolerating the activity (i.e., continuing feeding, socializing, migrating, sleeping); a secondary reaction to the multiple trainees' presence in the water would not be likely to occur. Due to the passage of time (less than an hour) between the boat presence and trainees entering the water, animals are likely to continue with their initial reaction of either retreating from the area or tolerating the activity at the site.

All vessels would comply with established boating laws and reduce speed in accordance with established safety procedures, avoiding contact and proximity to marine mammals. A crewman on the vessels would act as a lookout during training evolutions to avoid marine mammals that may enter the area during training activities. If a marine mammal is observed in the vicinity of the training area when submersibles are used, the support vessel would signal the submersible for recall. If a marine mammal is in the immediate area of a training activity, the activity would cease until the marine mammal leaves the area. In some instances, canceling the training for the night may be necessary. All vessels, including UASs, would avoid direct "head-on" approaches to marine mammals and would maneuver to maintain a mitigation zone of 1,500 feet around observed whales and 600 feet around all other marine mammals (with the exception of bow wave-riding dolphins). It should be noted that these requirements do not apply when a vessel's safety is at risk (e.g., a course correction would cause an imminent and serious threat to personnel and equipment). If a marine mammal other than a whale continues to close in on the vessel after there has already been one maneuver or speed change to avoid the marine mammal, no further action is required. Due to these standard operating procedures, it is highly unlikely that collisions between marine mammals and vessels would occur during training.

During the transition from diver/swimmer to over-the-beach training, trainees would look for hauled out animals while coming ashore such as California sea lions, Stellar sea lions, or harbor seals. If any hauled out marine mammals are spotted on the beach, all personnel, vehicles, vessels, and UASs, would stay a safe distance of at least 50 yards away so as to not disturb the animals.

Acoustic Stressors. The three sources of noise analyzed for potential impacts on marine mammals in Alternative 1 are vessel noise, sonar navigation device, and the use of UAS.

Noise generated by the vessels is probably an important contributing factor to the responses of cetaceans to the vessels. In one study, North Atlantic right whales were documented to show little overall reaction to the playback of sounds of approaching vessels, but they did respond to an alert signal by swimming strongly to the surface (Nowacek et al., 2016). Moderate- to low-level passive sound sources, including vessel noise, would not likely cause any direct injury or trauma due to characteristics of the sounds and the moderate source levels. Navy vessels make up a very small percentage of the overall traffic (Mintz, 2012). Under Alternative 1, the use of small vessels during training activities would not substantially increase ambient noise levels in the training study area.

Submersibles use a sonar device to report depths to aid in navigation during a training activity. These devices have similar specifications to commercially available "fish finders" and other hand-held sonar devices, which typically generate frequencies over 200 kHz and source levels less than 160 dB re 1 μ Pa. In the NMFS' 2015 *Biological Opinion on Navy Activities on the Northwest Training Range Complex and NMFS's Issuance of an MMPA Letter of Authorization* (National Marine Fisheries Service, 2015b), devices with these specifications are considered "*de minimis*" sources of sound in the water and are not considered in models that estimate potential behavioral or injurious effects on marine mammals. This is because these types of devices do not produce pressure waves that are considered dangerous or that

would cause temporary changes in behavior when exposed to the sound source. In addition, because the frequency bands used in these types of devices are very narrow, masking of underwater sounds that marine mammals use for orientation or underwater vocalizations would not occur, as would be expected for broader frequency band widths of other sonar systems (Au et al., 2000; Popper & Hawkins, 2016). PCEs that comprise designated critical habitat for the southern resident killer whale include (1) water quality to support growth and development; (2) prey species of sufficient quantity, quality, and availability to support individual growth, reproduction, and development, as well as overall population growth; and (3) passage conditions to allow for migration, resting, and foraging. Training activities would not impact water quality in any measurable way as to inhibit the growth and development of southern resident killer whales, nor would training activities limit movements of whales during migration, to access resting areas, or to access foraging grounds. Southern Resident killer whale prey, such as chinook salmon, would also not be measurably impacted by the Proposed Action. Impacts to prey species would be short in duration, localized to very small areas, and insignificant.

UASs would be categorized as FAA Group 1 or Group 2 systems and are small hand-launched, battery-operated models (see Section 2.1.1.3, Unmanned Aircraft Systems Training Activities) or small gasoline-powered models. UAS would be used in training activities during approximately 10 percent of the land-based training activities, and only on federal property in Region 1. These locations include Naval Magazine Indian Island, Naval Base Kitsap Keyport, and the Toandos Buffer Zone. The UASs would fly over the land at these locations as well as the adjacent waterways. Marine mammals on the surface of the water or hauled out on land may hear the noise from the UAS engine. It is expected that the marine mammals would react to the UAS similar to marine vessels described above under Physical Stressors. Christiansen et al. (2016) measured the in-air and underwater noise levels of two unmanned aerial vehicles, and found that, in air, the broadband source levels were around 80 dB re 20 μ Pa, while, at a meter underwater, received levels were 95–100 dB re 1 μ Pa when the vehicle was only 5–10 m above the surface, and were not quantifiable above ambient noise levels when the vehicle was higher. Therefore, if an animal is near the surface and the unmanned aerial vehicle is low, it may be detected, but in most cases these vehicles are operated at much higher altitudes (e.g., over 30 m) and so are not likely to be heard. The same standard operating procedures and avoidance measures would occur and are designed to not disturb the animals.

Impact Summary. Impacts on marine mammals in water and on land are not expected to occur under Alternative 1. Training activities associated with the Proposed Action are low impact and activities would occur at infrequent intervals and for a brief duration of time. Impacts due to physical stressors would be avoided using standard operating procedures designed to minimize or avoid impacts on marine mammals in water and hauled out on beaches. Noise associated with these activities is expected to be *de minimis*. For these reasons, long-term consequences to individuals or populations of marine mammals are not expected to result from the activities under Alternative 1. Therefore, no significant impacts on marine mammals would occur with implementation of Alternative 1.

ESA Determination. Activities proposed under Alternative 1 that involve vessels and personnel in the water may affect ESA-listed species present in Region 1. As described above, impacts to ESA-listed whales are avoided through standard operating procedures and effects to whale populations would not occur. Noise associated with these activities is expected to be *de minimis*. Based on the above analysis, effects to humpback whale and southern resident killer whales are expected to be insignificant and discountable. Therefore, the effect determination for humpback whales and southern resident killer whales is may affect, not likely to adversely affect.

Designated critical habitat occurs within Region 1 for southern resident killer whales. Proposed training activities would not affect PCEs as describe in Section 3.3.2.3.7 (Special Status Marine Mammals – *Southern Resident Killer Whale Distinct Population Segment*). PCEs described in that section would not be modified, either temporarily or permanently, as a result of the minimally invasive proposed training activities as discussed above in Section 3.3.2.3.7. Additionally, as discussed in Section 3.3.3.2.2 (Marine Species and Habitats – *Fishes*), there would not be a measurable effect to prey species and the availability of prey species would not be altered. Furthermore, impacts to water resources (Chapter 3, Affected Environment and Environmental Consequences) were determined to be negligible or non-existent. Therefore, the Navy’s effect determination for designated critical habitat for southern resident killer whales is no effect.

MMPA Conclusion. Pursuant to the MMPA and as discussed above, the Navy has determined that, under Alternative 1, the Proposed Action is not likely to result in takes of marine mammals.

Marine Birds

Foraging areas for the ESA-listed marbled murrelet, state-listed American white pelican, and other seabirds and shorebirds overlap with the in-water training areas of Region 1. The Navy has identified physical and acoustic stressors as potentially impacting seabirds and shorebirds in Region 1 marine environments under Alternative 1.

Physical Stressors. Seabirds and shorebirds foraging in Region 1 have the potential to be disturbed by the physical presence of personnel, vessels, and UASs. Behavioral changes, such as cessation of foraging activities and moving away from training activities, could occur. This would likely occur in response to visual cues (seeing movement of trainees in the water or walking over-the-beach), with a return to normal activities after the trainees leave the area or if the bird moves to another location away from the training activity. These impacts are expected to be short term (only lasting while trainees are in a location) and minor (the birds can access areas where they are undisturbed by training activities or the duration of impact is short).

Acoustic Stressors. Seabirds and shorebirds foraging in Region 1 have the potential to be disturbed by acoustic sources from sonars, vessels, and UASs.

Diving birds when underwater could be exposed to the sound emitted by the submersible’s navigation device. As discussed under Marine Mammals, Acoustic Stressors, submersibles use a sonar device similar to commercially available “fish finders” for navigation. While there are no published studies specific to sonar and its effects on any seabirds, the frequency used doesn’t rise to the level of causing injury to the seabirds (U.S. Fish and Wildlife Service, 2016). Devices with these specifications are considered “*de minimis*” sources of sound in the water.

Vessel noise has the potential to expose seabirds and shorebirds to sound and general disturbance, which could result in short-term behavioral or physiological responses (e.g., avoidance, stress, increased heart rate). Moderate- to low-level passive sound sources, including vessel noise, would not likely cause any direct injury or trauma due to characteristics of the sounds and the moderate source levels. Navy vessels make up a very small percentage of the overall traffic (Mintz, 2012). Under Alternative 1, the use of small vessels during training activities would not substantially increase ambient noise levels in the training study area.

UASs could be used over the water as well as over the land at Naval Magazine Indian Island, Naval Base Kitsap Keyport, and the Toandos Buffer Zone in Region 1. Shorebirds may respond to audible cues of a

UAS, with a return to normal activities after the UAS flies over the area. This impact is assumed to be temporary and minor, and should not affect the population of marine birds.

Impact Summary. Impacts on seabirds and shorebirds foraging in Region 1 are expected to be minimal, short term, and recoverable based on the (1) relatively low intensity of the impacts, (2) localized nature of the impacts, (3) infrequent nature of the impacts, and (4) brief duration of the activities. For these reasons, long-term consequences to individuals or populations of seabirds and shorebirds are not expected to result from the activities under Alternative 1. Therefore, no significant impacts on marine birds would occur with implementation of Alternative 1.

ESA Determination. The marbled murrelet is the only ESA-listed bird in Region 1. As described above for other marine bird species, impacts to ESA-listed marbled murrelets foraging in the nearshore of Region 1 are expected to be limited to short-term, insignificant behavioral reactions, and effects to marbled murrelet populations would not occur.

Marbled murrelet nesting is not known to occur in the forested portions of the training study area; however, suitable nesting habitat may be present in some areas of the study area. Potential impacts, such as temporary behavioral responses, could occur on nesting marbled murrelet from the physical presence of trainees. This would likely occur in response to visual or audible cues (seeing or hearing movement of trainees during over-the-beach and special reconnaissance training) with a return to normal activities after the trainees leave the area. Although marbled murrelets may detect the presence of trainees in these areas, the goal of training is for trainees to be in the field undetected and activities are not expected to result in adverse impacts to nesting activities.

Alternative 1 may affect the marbled murrelet because training activities within Region 1 may overlap with nearshore areas used for foraging and forested areas used for nesting. However, as described above, effects resulting from the training activities are expected to be insignificant. Therefore, the Navy's effect determination for marbled murrelets under Alternative 1 is may affect, not likely to adversely affect. Designated critical habitat for this species does not occur within the training study area in Region 1. Therefore, the Navy's effect determination for designated critical habitat for marbled murrelet is no effect.

MBTA Conclusion. A variety of marine birds would be encountered in Region 1, including those listed under the MBTA. Under the MBTA regulations applicable to military readiness activities (50 CFR Part 21), impacts from the activities under Alternative 1 would not result in a significant adverse effect on migratory bird populations in the marine environment for the same reasons listed above. Therefore, impacts on migratory seabirds from implementation of Alternative 1 would not be significant.

3.3.3.3 Alternative 2

Under Alternative 2, the locations identified for training activities, number of training blocks per year, and site usage per year are the exact same as those identified in Alternative 1 for Region 1. However, Alternative 2 adds two new regions, Region 2 and Region 3. Regions 2 and 3 would have one training block every other year and an individual site would be used no more than three times every other year. The same training activities as identified in Alternative 1 would occur under Alternative 2, with the exception that UAS and Simulated Building Clearance training activities would not occur in Region 3. Additional UAS training would occur in Region 2 at R6701. Also, one new proposed training activity, High-Angle Climbing, would occur at Deception Pass State Park in Region 2.

3.3.3.3.1 Terrestrial Species and Habitats

Terrestrial Vegetation

The stressor, analysis, and conclusions identified in Alternative 1, Section 3.3.3.2.1 (Terrestrial Species and Habitats – *Terrestrial Vegetation*), are applicable to Alternative 2. The difference is the anticipated presence of the ESA-listed golden paintbrush and the state listed pink sand verbena.

In Region 2, the golden paintbrush is known to occur at proposed training locations on Fort Casey State Park and the Navy’s Seaplane Base on Whidbey Island. The state-listed pink sand verbena occurs only in Region 3 at Leadbetter Point State Park (U.S. Fish and Wildlife Service, 2017). As in Alternative 1, real estate agreements with individual parks and private land owners would include sensitive ecological resources and appropriate restrictions to avoid impacts to vegetation. Any ESA-listed or state-listed plants would be treated as training area constraints, prohibiting training from occurring at that location.

High-angle climbing would occur at Deception Pass State Park on rock formations and cliff faces. While there is some vegetation growing in these areas, High-angle climbing utilizes climbing equipment and ropes to scale the surfaces. Trainees would not be using trees or vegetation to help in their climbing activities, as such, vegetation would not be disturbed.

Impact Summary. Impacts to vegetation are not expected to occur from Alternative 2 because the training activities are designed to leave no trace, paths are not created, vegetation is not removed, no tree climbing, no digging, no construction, and no fire building. Additionally, state-listed pink sand verbena and other sensitive ecological resources would be avoided. Therefore, no significant impacts on vegetation would occur with implementation of Alternative 2.

ESA Determinations. The occupied habitat for the golden paintbrush within Region 2 at Fort Casey State Park and the Navy’s Seaplane Base on Whidbey Island would not be used for training activities. Therefore, proposed training activities under Alternative 2 would have no effect on ESA-listed plant species.

Terrestrial Wildlife

The stressors, analysis, and conclusions identified in Alternative 1, Section 3.3.3.2.1 (Terrestrial Species and Habitats – *Terrestrial Wildlife*), are applicable to Alternative 2. In addition to species analyzed under Alternative 1, Region 2 also includes the presence of designated critical habitat for the Taylor’s Checkerspot butterfly. In Region 3, the ESA-listed snowy plover and streaked horned lark and designated critical habitat for both species occur within the study area.

Within Regions 2 and 3, the only location where Taylor’s checkerspot critical habitat is designated that overlaps with the training study area is at Deception Pass State Park (Bowman Bay area, West Beach, and along the shorelines where Fidalgo and Whidbey Island face each other). Taylor’s checkerspot butterflies are believed to be extirpated from this location, and the designated critical habitat is no longer occupied (Washington Department of Fish and Wildlife, 2012c).

Within training locations under Alternative 2, the state-listed western pond turtle may occur on all the locations analyzed under Alternative 1, in addition to NAS Whidbey Island (U.S. Department of the Navy, 2012, 2017). Because of the similarity of training activities and habitats where these activities would occur, the potential impacts on the western pond turtle is the same under Alternative 2 as with Alternative 1.

Physical Stressors. Within Region 3, western snowy plovers and streaked-horned larks would likely occur at Grayland Beach State Park and Leadbetter Point State Park. Over-the-beach and special reconnaissance training activities would likely occur near nesting locations. As practice, snowy plover and streaked-horned lark nesting sites are usually roped off to prevent park visitors from trampling nest sites. Because training activities would not egress into roped-off areas for conservation purposes, nest trampling would be avoided and disturbance to nesting birds would be minimized. For adult and juvenile birds, foraging usually occurs during daylight. Potential impacts on the western snowy plover and the streaked-horned lark from the physical presence of trainees would likely be limited to temporary behavioral responses, such as flushing from nests or moving away from human presence. This would likely occur in response to visual or audible cues (seeing or hearing movement of trainees during over-the-beach and special reconnaissance training), with a return to normal activities after the trainees leave the area or if the plover moves to another location away from the training activity. This impact is assumed to be temporary and minor, with no adverse impacts (e.g., injury to animals, degradation of habitats, population-level effects) resulting from training activities described under Alternative 2.

For High-Angle Climbing, there is a possibility of cliff nesting birds. Naval special operations support staff would work with state park managers to identify sensitive areas and avoid the cliff nesting sites.

Acoustic Stressors. As with Alternative 1, the only noise sources analyzed under Alternative 2 for potential impacts on terrestrial wildlife are the use of UAS. The analysis under Alternative 2 includes the locations analyzed under Alternative 1, with the addition of Fort Casey and within R6701 restricted airspace designation. Although these additional areas must be analyzed under Alternative 2, the description of impacts for terrestrial wildlife is generally the same as described under Alternative 1. In Region 2, we have the addition of the Taylor's checkerspot butterfly, Oregon silverspot butterfly, and the northern leopard frog potentially occurring within the training study area.

Yack et al. (2000) found that species of *Hamadryas* butterflies use sounds during interactions with other conspecifics. It is hypothesized that the butterflies are listening to the flight sounds or foraging calls of predatory birds (Mikhail, 2014). It is plausible that butterflies could interpret frequencies generated from UAS as predatory flight sounds or foraging calls; however, it is not known if the frequencies generated by UAS electric motors and spinning propellers overlaps with hearing sensitivities of butterflies.

For amphibians, noise from UAS may alert them by simulating a potential threat. Such responses would likely be temporary, where normal activities would resume after the UAS left the area or was no longer perceived as a threat.

However, there are no known populations of Taylor's checkerspot butterfly, Oregon silverspot butterfly, or northern leopard frog on state park lands or Navy installations that could support proposed UAS training activities (U.S. Department of the Navy, 2017). It is highly unlikely that non-state or federal lands used during training activities would support these species; therefore, it is unlikely that this acoustic stressor would impact these species.

Impact Summary. Impacts on terrestrial wildlife in the terrestrial environment under Alternative 2 are expected to be the same as those identified in Alternative 1. Therefore, no significant impacts on terrestrial wildlife would occur with implementation of Alternative 2.

MBTA Conclusion. Impacts under Alternative 2 would not result in a significant adverse effect on migratory bird populations for the same reasons listed in Alternative 1. Therefore, no significant impacts on migratory birds would occur with implementation of Alternative 2.

BGEPA Conclusion. As in Alternative 1, training activities would avoid bald eagle nests on private properties (identified through real estate agreements), on state properties (nests identified through park management plans and real estate agreements with individual parks) and Navy installations (specified in Integrated Natural Resource Management Plan documents), no take or disturbance of known bald or golden eagles are anticipated from activities under Alternative 2. Further, in accordance with the BGEPA, no activities under Alternative 2 would impact unoccupied nests and thereby adversely impact an eagle's use of the location upon its return.

ESA Determinations. The land-based training activities described under Alternative 2 would have no effect on the Taylor's checkerspot butterfly or the Oregon silverspot butterfly because the land-based training activities do not overlap with existing populations. Land-based training activities under Alternative 2 may affect the western snowy plover and streaked horned lark. However, based on the analysis above, adverse effects are not expected and the Navy's effect determination is may affect, not likely to adversely affect.

Critical habitat occurs in the training study area for Taylor's checkerspot butterfly (Deception Pass State Park in Region 2), western snowy plover (Grayland Beach State Park and Leadbetter Point State Park in Region 3) and streaked horned lark (Regions 3). Impacts to Taylor's checkerspot butterfly critical habitat are not expected to occur from Alternative 2 because the training activities do not alter the habitat. Training activities have a goal of leaving no trace, create no paths, remove no vegetation, and no digging, construction, or fire building would occur. For western snowy plover critical habitat, the proposed training would not alter sandy beaches or dune systems, vegetative areas, or feeding habitats such as surf- or water-deposited organic debris that attracts small invertebrates. For the streaked horned lark critical habitat, the proposed training would not alter large open water or field areas. Additionally, the nature of the training, leaving no trace and the small overall footprint of the training activities would not affect the critical habitat. Therefore, the Navy's effect determination for designated critical habitat for these species is no effect.

3.3.3.3.2 Marine Species and Habitats

Marine Vegetation

The stressor, analysis, and conclusions identified in Alternative 1, Section 3.3.3.2.2 (Marine Species and Habitats – *Marine Vegetation*), are applicable to Alternative 2. There are no ESA-listed marine vegetation species and no critical habitat designations for marine plants within the proposed training areas in Regions 2 and 3.

Impact Summary. Proposed training activities under Alternative 2 would have minimal impacts on submerged vegetation for the same reasons as identified in Alternative 1. Therefore, no significant impacts on marine vegetation would occur with implementation of Alternative 2.

Marine Invertebrates

Similar to Alternative 1, the only stressor analyzed for potential impacts on marine invertebrates under Alternative 2 is physical presence. There are no ESA-listed marine invertebrate species and no critical habitat designations for marine invertebrates within the additional proposed training areas in Regions 2 and 3.

Under Alternative 2, vessels would have contact with the seafloor when the submersible would be parked or anchored on the sandy bottom in Region 3. Parking and anchoring would present less of a disturbance to the sandy bottom than that caused by natural waves, tides and currents due to the small

footprint of the anchor and the submersible. Marine invertebrates are already adapted to natural disturbances by waves, tides, currents, as well as storm energy, and cycles of erosion and deposition. As a result, parking and anchoring would not cause long-term or permanent impairment to marine invertebrates.

Impact Summary. Proposed training activities under Alternative 2 would have minimal impacts on marine invertebrates for the same reasons as identified in Alternative 1 and stated above. Therefore, no significant impacts on marine invertebrates would occur with implementation of Alternative 2.

Fishes

The stressors, analysis, and conclusions identified in Alternative 1, Section 3.3.3.2.2 (Marine Species and Habitats – *Fishes*), are applicable to Alternative 2. The difference is the presence of two additional ESA-listed species in Region 3: Columbia River chum salmon and Pacific eulachon. As in Alternative 1, the American green sturgeon occurs there as well as Regions 2 and 3. All three of these species have critical habitat in the training study area in Region 3. The North American green sturgeon also has critical habitat in Region 2. The PCEs and essential physical and biological features for these species are identified in 3.3.2.3.5 Special Status Fishes. The analysis and impacts on these ESA-listed fishes would be the same as those described in Alternative 1 for fishes.

Impact Summary. Proposed training activities under Alternative 2 would have minimal impacts on fishes for the same reasons as identified in Alternative 1 and stated above. Therefore, no significant impacts on fishes would occur with implementation of Alternative 2.

ESA Determination. Impacts on fishes under Alternative 2, as well as the ESA determinations, are expected to be the same as those identified in Alternative 1. As described in Alternative 1 and above for other fish species, impacts to the Columbia River chum salmon, Pacific Eulachon, and North American green sturgeon in Alternative 2 are expected to be limited to short-term, insignificant behavioral reactions, and effects to fish populations would not occur. Based on the analysis under Alternative 1 and above, the effect determination is may affect, not likely to adversely affect for all three ESA-listed species.

The no effect determination for species critical habitat discussed in Alternative 1 would remain the same for Region 1 in Alternative 2. Columbia River chum salmon (Region 3), Pacific eulachon (Region 3), and North American green sturgeon (Regions 2 and 3) designated critical habitats also overlap with proposed training in Alternative 2. PCEs and essential physical and biological features described in Section 3.3.2.3.5 (Special Status Fishes) would not be modified, either temporarily or permanently, as a result of the minimally invasive proposed training activities as discussed in marine vegetation, marine invertebrates, and fishes in Alternative 1 and above for Alternative 2. Furthermore, impacts to water resources (Chapter 3, Affected Environment and Environmental Consequences) were determined to be negligible or non-existent. Therefore, the Navy's effect determination for designated critical habitat for these species is no effect.

EFH Determination. Pursuant to the EFH requirements of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations, activities proposed and potential impacts under Alternative 2 would be the same as those for Alternative 1, with the exception of submersible parking and anchoring on the seafloor in Region 3. Under Alternative 2, vessels would have contact with the seafloor when the submersible would be parked or anchored on the sandy bottom. Parking and anchoring would present less of a disturbance to the sandy bottom than that caused by natural waves, tides and currents. Like marine invertebrates, fish are already adapted to natural disturbances by waves,

tides, currents, as well as storm energy, and cycles of erosion and deposition. Additionally, due to the small footprint of the anchor and the submersible, parking and anchoring would not cause long-term or permanent impairment to fishes. Proposed training activities are unlikely to have any effects to EFH. Impact on waters, substrate, or prey necessary for spawning (fish, invertebrates, or vegetation), breeding, feeding, or growth to maturity of aquatic species would not occur. Therefore, the Navy has concluded that there would be no adverse effect to EFH under Alternative 2 and consultation with NMFS would not be required.

Sea Turtles

Since sea turtles are unlikely to be found in Regions 1 and 2, the Navy has identified physical and acoustic stressors as potentially impacting sea turtles for Region 3 only. The leatherback sea turtle (Region 3) is the only ESA-listed sea turtle expected to occur where training activities would be scheduled.

Physical Stressors. Activities proposed under Alternative 2 that involve vessels, UASs, personnel, and submersible operations in the water could impact sea turtles present in Region 3 of the training study area. Such activities would include small vessel movements, submersible movements under the water, and in-water presence of trainees swimming from boats to shore and walking in the intertidal and nearshore zones. Although sea turtle presence in the training study area would be rare, training activities do have the potential to disturb turtles and elicit an alerting, avoidance, or other behavioral reaction. Sea turtles can detect approaching vessels, likely by sight rather than by sound (Bartol & Ketten, 2006). Vessel-related injuries to sea turtles in Region 3 of the training study area is unlikely since their presence in the region would be rare. During proposed training activities, a crewman would act as a lookout during training evolutions on boats and support vessels to avoid sea turtles that may enter the area during training activities. During nighttime training, the lookout would be equipped with night vision goggles. If a sea turtle is in the immediate area of a training activity, the activity would cease until the sea turtle leaves the area.

Acoustic Stressors. Submersibles use a sonar device to report depths to aid in navigation during a training activity. These devices have similar specifications to commercially available “fish finders” and other hand-held sonar devices, which typically generate frequencies over 200 kHz and source levels less than 160 dB re 1 μ Pa. In the NMFS’ 2015 *Biological Opinion on Navy Activities on the Northwest Training Range Complex and NMFS’s Issuance of an MMPA Letter of Authorization* (National Marine Fisheries Service, 2015b), devices with these specifications are considered “*de minimis*” sources of sound in the water. In addition, as described above under Alternative 1 for marine mammals, sea turtles near the surface may detect a UAS if the vehicle is low, but in most cases these vehicles are operated at much higher altitudes (e.g., over 30 m) and so are not likely to be heard. For sea turtles, the behavioral effects threshold used by the NMFS is 175 dB or greater; therefore, no behavioral effects would be expected because the sonar devices would not exceed the source level threshold for behavioral effects.

Impact Summary. Proposed training in Region 3 is expected to occur every other year. As described above, impacts on sea turtles are expected to be minimal, short term, and recoverable based on the (1) relatively low intensity of the impacts, (2) localized nature of the impacts, (3) infrequent nature of the impacts, (4) brief duration of the activities, and (5) standard operating procedures designed to minimize or avoid impacts on sea turtles in water. For these reasons, long-term consequences are not expected to result from the activities under Alternative 2. Therefore, no significant impacts on sea turtles would occur with implementation of Alternative 2.

ESA Determination. Activities proposed under Alternative 2 that involve vessels and personnel in the water may affect the ESA-listed leatherback sea turtle in Region 3. As described above, impacts to leatherback sea turtle are avoided through standard operating procedures and effects to the leatherback sea turtle population would not occur. Noise associated with these activities is expected to be *de minimis*. Based on the above analysis, effects to leatherback sea turtles are expected to be insignificant and discountable. Therefore, the effect determination for leatherback sea turtle is may affect, not likely to adversely affect.

Designated critical habitat for the leatherback sea turtle occurs within Region 3. Proposed training activities would not affect PCEs as described in Section 3.3.2.3.6 (Special Status Marine Reptiles – *Leatherback Sea Turtle*). The PCE described in that section is the occurrence of prey species, primarily a type of large jellyfish. There is no effect to or on the availability of prey species, as discussed in Section 3.3.3.3.2 (Marine Species and Habitats – *Sea Turtles*). Therefore, the Navy’s effect determination for designated critical habitat for leatherback sea turtle is no effect.

Marine Mammals

The stressors, analysis, and conclusions identified in Alternative 1, Section 3.3.3.2.2 (Marine Species and Habitats – *Marine Mammals*), are applicable to Alternative 2. The difference is the addition of training areas in Regions 2 and 3. There are no additional marine mammal species or changes that were previously analyzed.

Impact Summary. Impacts on marine mammals in the marine environment under Alternative 2 are expected to be the same as those identified in Alternative 1. The addition of the training areas in Regions 2 and 3 do not change the minimal, short-term, and recoverable impacts described in Alternative 1. The same standard operating procedures would be applied. Therefore, no significant impacts on marine mammals would occur with implementation of Alternative 2.

ESA Determination. Impacts on ESA-listed whales under Alternative 2, as well as the ESA determinations, are expected to be the same as those identified in Alternative 1 for all three Regions in the study area. Impacts on designated critical habitat within Regions 2 and 3 would be the same as described in Alternative 1 for Region 1. Therefore, the Navy’s effect determination for designated critical habitat for southern resident killer whales is no effect.

MMPA Conclusion. Pursuant to the MMPA and as discussed above and in Alternative 1, the Navy has determined that, under Alternative 2, the Proposed Action is not likely to result in takes of marine mammals.

Marine Birds

The stressors, analysis, and conclusions identified in Alternative 1, Section 3.3.3.2.2 (Marine Species and Habitats – *Marine Birds*), are applicable to Alternative 2. The difference is the addition of training areas in Regions 2 and 3. There are no additional marine bird species or changes that were previously analyzed. The analysis and impacts identified in Alternative 1 for marine birds are applicable to marine birds in Regions 2 and 3.

Impact Summary. Impacts on marine birds in the marine environment under Alternative 2 are expected to be the same as those identified in Alternative 1. The addition of the training areas in Regions 2 and 3 do not change the minimal, short-term, and recoverable impacts described in Alternative 1. Therefore, no significant impacts on marine birds would occur with implementation of Alternative 2.

ESA Determination. Impacts on ESA-listed marbled murrelet, as well as the ESA determinations, under Alternative 2 are expected to be the same as those identified in Alternative 1. Therefore, the Navy's effect determination for marbled murrelets under Alternative 2 is may affect, not likely to adversely affect. Designated critical habitat for this species does not occur within the training study area in Regions 2 and 3. Therefore, the Navy's effect determination for designated critical habitat for marbled murrelet is no effect.

MBTA Conclusion. A variety of marine birds would be encountered in Regions 2 and 3, similar to Region 1 as described in Alternative 1. Impacts under Alternative 2 would be the same as in Alternative 1 and would not result in a significant adverse effect on migratory marine bird populations in the marine environment. Therefore, impacts on migratory seabirds from implementation of Alternative 2 would not be significant.

3.3.3.4 Alternative 3 (Preferred Alternative)

As with Alternative 2, Alternative 3 would include the same proposed training activities within Regions 1, 2, and 3. The only difference is Alternative 3 would increase the training blocks in Region 1 to six times per year and an individual site would be used no more than 36 times per year. Training activities associated with the Proposed Action are low impact and activities would occur at infrequent intervals and for a brief duration of time. Because the goal of training is for the trainees to be in the field undetected, the environment tends to be minimally disturbed and materials (e.g., gear and trash) are not left behind. In addition, identical travel routes would be rarely used; the level of foot traffic associated with each group would not wear paths in the training study area. Logistical support vehicles use established roads and do not impact resources. Therefore, increase in the number of training blocks and site usage is not expected to change the impacts, analysis, and determinations as described in Alternative 2. Because of the non-invasive nature of the training activities, terrestrial and marine species and habitats would experience impacts ranging from no measurable effects to short-term (lasting from minutes to hours depending on the type of activity) and minor (not inhibiting any major biological function) effects as described in Alternative 2. Given the nature of the action (i.e., "leave no trace"), the increase in the number of training blocks in Region 2 would not have a substantially greater impact on terrestrial or marine species and habitats. Therefore, the impact summaries and conclusions for ESA, EFH, MMPA, MBTA, and BGEPA in Alternative 2 would apply to Alternative 3.

Under Alternative 3, the Navy initiated consultation with NMFS in May 2018. The biological assessment addressed potential impacts to the following ESA-listed species in accordance with Section (7)(a)(2) of the ESA: Puget Sound Chinook salmon, Hood Canal summer run chum salmon, Puget Sound steelhead, Puget Sound/Georgia Basin bocaccio and yelloweye rockfishes, North American green sturgeon, Columbia River chum salmon, Southern DPS Pacific Eulachon, leatherback sea turtle, humpback whale Mexico DPS and Central America DPS, and southern resident killer whales. In October 2018, NMFS determined the preferred alternative may affect, not likely to adversely affect these species or their critical habitat designations. NMFS also determined the action may affect, not likely adversely affect EFH and consultation under Magnuson-Stevens Act would not be required for this action.

Under Alternative 3, the Navy initiated consultation with USFWS in May 2018. The biological assessment addressed potential impacts to the following ESA-listed species in accordance with Section (7)(a)(2) of the ESA: bull trout, marbled murrelet, streaked horn lark, and the western snowy plover. In November 2018, USFWS concurred with the Navy's may affect, not likely to adversely affect determinations for these species. To avoid the nesting season of western snowy plovers and streaked horned larks at

Leadbetter Point and Grayland Beach State Parks, the Navy agreed training at these two state parks would only occur between September 15 and March 15.

Impact Summary. Proposed training in Region 3 is expected to occur every other year. As described above, impacts on sea turtles are expected to be minimal, short term, and recoverable based on the (1) relatively low intensity of the impacts, (2) localized nature of the impacts, (3) infrequent nature of the impacts, (4) brief duration of the activities, and (5) standard operating procedures designed to minimize or avoid impacts on sea turtles in water. For these reasons, long-term consequences are not expected to result from the activities under Alternative 3. Therefore, no significant impacts on sea turtles would occur with implementation of Alternative 3.

ESA Determination. Activities proposed under Alternative 3 that involve vessels and personnel in the water may affect the ESA-listed leatherback sea turtle in Region 3. As described above, impacts to leatherback sea turtle are avoided through standard operating procedures and effects to the leatherback sea turtle population would not occur. Noise associated with these activities is expected to be *de minimis*. Based on the above analysis, effects to leatherback sea turtles are expected to be insignificant and discountable. Therefore, the effect determination for leatherback sea turtle is may affect, not likely to adversely affect.

Designated critical habitat for the leatherback sea turtle occurs within Region 3. Proposed training activities would not affect PCEs as described in Section 3.3.2.3.6 (Special Status Marine Reptiles – *Leatherback Sea Turtle*). The PCE described in that section is the occurrence of prey species, primarily a type of large jellyfish. There is no effect to or on the availability of prey species, as discussed in Section 3.3.3.3.2 (Marine Species and Habitats – *Sea Turtles*). Therefore, the Navy’s effect determination for designated critical habitat for leatherback sea turtle is no effect.

Marine Mammals

The stressors, analysis, and conclusions identified in Alternative 1, Section 3.3.3.2.2 (Marine Species and Habitats – *Marine Mammals*), are applicable to Alternative 3. The difference is the addition of training areas in Regions 2 and 3. There are no additional marine mammal species or changes that were previously analyzed.

Impact Summary. Impacts on marine mammals in the marine environment under Alternative 3 are expected to be the same as those identified in Alternative 1. The addition of the training areas in Regions 2 and 3 do not change the minimal, short-term, and recoverable impacts described in Alternative 1. The same standard operating procedures would be applied. Therefore, no significant impacts on marine mammals would occur with implementation of Alternative 3.

ESA Determination. Impacts on ESA-listed whales under Alternative 3, as well as the ESA determinations, are expected to be the same as those identified in Alternative 1 for all three Regions in the study area. Impacts on designated critical habitat within Regions 2 and 3 would be the same as described in Alternative 1 for Region 1. Therefore, the Navy’s effect determination for designated critical habitat for southern resident killer whales is no effect.

MMPA Conclusion. Pursuant to the MMPA and as discussed above and in Alternative 1, the Navy has determined that, under Alternative 3, the Proposed Action is not likely to result in takes of marine mammals.

Marine Birds

The stressors, analysis, and conclusions identified in Alternative 1, Section 3.3.3.2.2 (Marine Species and Habitats – *Marine Birds*), are applicable to Alternative 3. The difference is the addition of training areas in Regions 2 and 3. There are no additional marine bird species or changes that were previously analyzed. The analysis and impacts identified in Alternative 1 for marine birds are applicable to marine birds in Regions 2 and 3.

Impact Summary. Impacts on marine birds in the marine environment under Alternative 3 are expected to be the same as those identified in Alternative 1. The addition of the training areas in Regions 2 and 3 do not change the minimal, short-term, and recoverable impacts described in Alternative 1. Therefore, no significant impacts on marine birds would occur with implementation of Alternative 3.

ESA Determination. Impacts on ESA-listed marbled murrelet, as well as the ESA determinations, under Alternative 3 are expected to be the same as those identified in Alternative 1. Therefore, the Navy's effect determination for marbled murrelets under Alternative 3 is may affect, not likely to adversely affect. Designated critical habitat for this species does not occur within the training study area in Regions 2 and 3. Therefore, the Navy's effect determination for designated critical habitat for marbled murrelet is no effect.

MBTA Conclusion. A variety of marine birds would be encountered in Regions 2 and 3, similar to Region 1 as described in Alternative 1. Impacts under Alternative 3 would be the same as in Alternative 1 and would not result in a significant adverse effect on migratory marine bird populations in the marine environment. Therefore, impacts on migratory seabirds from implementation of Alternative 3 would not be significant.

3.4 Public Health and Safety

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

Community emergency services are organizations which ensure public safety and health by addressing different emergencies. The three main emergency service functions include police, fire and rescue service, and emergency medical service.

Operational safety may refer to the actual use of the facility or built-out proposed project, or training or testing activities and potential risks to inhabitants or users of adjacent or nearby land and water parcels. Safety measures are often implemented through designated safety zones, warning areas, or other types of designations. The FAA issues a COA to operators of UASs to engage in a specific activity for operational safety.

Environmental health and safety risks to children are defined as those that are attributable to products or substances a child is likely to come into contact with or ingest, such as air, food, water, soil, and products that children use or to which they are exposed.

3.4.1 Regulatory Setting

Aircraft safety is based on the physical risks associated with aircraft flight. Military aircraft fly in accordance with Federal Aviation Regulations Part 91, *General Operating and Flight Rules*, which govern such things as operating near other aircraft, right-of-way rules, aircraft speed, and minimum safe altitudes. These rules include the use of tactical training and maintenance test flight areas, arrival and departure routes, and airspace restrictions as appropriate to help control air operations. In addition, naval aviators must also adhere to the flight rules, air traffic control (ATC), and safety procedures provided in Navy guidance. The FAA issues a NOTAM to disseminate information on upcoming or ongoing military training exercises with airspace restrictions (including the operation of UAS). Operators of civilian aircraft are responsible for being aware of any NOTAMs that are in effect. The FAA issues COAs to public and government operators for specific UAS activities. COAs may include specific safety provisions or limitations that a UAS operator must follow as part of the approval. The Department of Defense has signed a memorandum of agreement with the FAA that includes the procedure for obtaining a COA and requires additional safety measures (U.S. Department of Defense & Federal Aviation Administration, 2013). For example, under this memorandum, UAS cannot be operated over populated areas unless airworthiness allows.

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

3.4.2 Affected Environment

The training study area and contiguous nearshore waters encompass a broad spectrum of populations and landownership types, including private lands, public parks, harbors, golf courses, and recreation areas. Commercial, institutional, recreational, and military activities take place simultaneously within this area.

The affected environment includes portions of Skagit, Island, Jefferson, Kitsap, Pierce, Clallam, and Mason Counties, as well as Pacific and Grays Harbor Counties. There are several schools, hospitals, and churches within the training study area. The American Community Survey's five-year estimate for 2011–2015 estimated that the State of Washington had a population of approximately 1,596,576 children below the age of 18 (22.9 percent of the total population of Washington). These estimates do not include tourists and other visitors who may be found throughout the training study area.

Several federal, state, and local emergency services respond to emergencies within the training study areas, including local fire, police, and emergency medical services as well as the U.S. Coast Guard (USCG). NSWC currently designs and implements the safety and inspection procedures for its training activities within the training study area. In the absence of specific guidance on matters of safety, the NSWC follows the most prudent course of action to ensure the safety of all training participants and the nonparticipating public. The following paragraphs briefly discuss general rules and practices for recreational, commercial, institutional, and military use in sea surface areas, on land, and in airspace.

Although much of the offshore navigable and public waters in the training study area are freely accessible to the public for recreational and commercial activities, these waters include restricted areas, safety zones, danger zones, and prohibited areas. The USCG ensures that private and commercial vessels are aware of operations that could affect them and that they comply with all maritime regulations as administered by the USCG. The Navy's safety measures ensure public health and safety primarily through published and periodically reviewed standard operating procedures designed to minimize or avoid civilian exposure to training activities.

Department of Defense facilities are typically restricted from public use and access. Within the training study area, this includes NAVBASE Kitsap (Bremerton, Bangor, Keyport, Manchester Fuel Department, Zelatched Point, Toandos Buffer Zone, and Camp McKean), NAVMAG Indian Island, and NAS Whidbey Island. The remaining lands in the training study area are generally publicly accessible to recreation, commercial, and institutional activities where authorized by the landowners or land managers; this includes several state parks and public recreation areas (Figure 1-1).

The airspace in the training study area is accessible to general aviation (recreational, private, corporate) and commercial aircraft. Special use airspace is "airspace of defined dimensions identified by an area on the surface of the earth wherein activities must be confined because of their nature, or wherein limitations are imposed upon aircraft operations that are not a part of those activities, or both" (JO FAA 7400.8Z section 73.3 [2017]). Within the training study area, this includes warning areas, restricted areas, MOAs, and ATC-assigned areas. The FAA has authorized R-6701 for UAS. All other airspace in which the NSWC may operate UASs would require a COA from the FAA.

3.4.3 Environmental Consequences

The safety and environmental health analysis contained in the respective sections addresses issues related to the health and well-being of military personnel and civilians living on or in the vicinity of the training study area. Specifically, this section provides information on hazards associated with the

training activities identified in Chapter 2 (Description of Proposed Action and Alternatives). Additionally, this section addresses disproportionate environmental health and safety risks to children.

3.4.3.1 No Action Alternative

Under the No Action Alternative, training activities conducted in western Washington State over the past 30 years would continue in Region 1 training study area with two training blocks per year (as approved under the 2015 Northwest Training and Testing Final EIS/OEIS, 2010 Northwest Training Range Complex EIS/OEIS, and event-based Categorical Exclusions, as applicable). Training activities under the No Action Alternative include launch and recovery of the submersible or small boats; driving these vessels (including unmanned underwater vehicles) to training locations (insertion and extraction); swimming and diving; walking in the nearshore, on the beach (over-the-beach), and on land (special reconnaissance); and staying overnight (special reconnaissance).

Should the public observe any training activities, individuals, including children, may be curious or potentially startled. However, the intent of proposed training is to build trainees skills, experience, and confidence by challenging them in a location with dynamic weather and land/cold-water conditions. As part of the rigorous training, the trainees learn skills needed to avoid detection along with the goal of leaving no trace of their presence during or after training activities. Navy policy requires that training activities ensure the safety and health of personnel and the public and requires that every possible precaution in planning and executing its actions are enforced to prevent injury to people or damage to property. Naval special operations personnel conduct all training events in accordance with military training procedures, approved standard operating procedures, and protective measures, including Chief of Naval Operations Instruction 5100.23G, *Navy Safety and Occupational Health Program Manual* (2011). These policies assure a thorough consideration of public health and safety in conjunction with Navy personnel and their activities. As described in Chapter 2 (Description of Proposed Action and Alternatives), the proposed training activities do not include using live-fire weapons or explosives. Public safety is further ensured because trainees do not carry loaded weapons or explosives during training events.

The No Action Alternative does not include the construction, improvement, or maintenance of any road or right-of-way. The No Action Alternative also does not include designating or altering any special use airspace or restricted waters. All personnel transit to and from training areas using existing roads and waterways in compliance with all applicable safety regulations.

Supervisor and safety personnel focus on maintaining a safety buffer around the small submersible or watercraft consistent with USCG regulations, namely the USCG Navigation Rules and Regulations Handbook, and as site conditions and the surrounding environment dictate. For example, navigation lights on a dive boat (red over white over red) or a dive flag indicate that a dive is in progress and other vessels should keep well clear and at slow speed. Dive site locations avoid locations that experience heavy traffic patterns, such as Washington State Ferry System routes or fishing activities. In the event maritime vessels approach an active dive site, safety personnel would utilize Channel 16 (intended for international distress, safety, and calling) to contact vessels. If an oncoming vessel does not respond, a safety boat would approach the vessel and, depending on the situation, ask it to (1) hold its position; (2) go around the dive site; (3) if necessary, be escorted by the safety boat around the dive site; or (4) recall its divers to the surface or go to deep submerge. This ensures safety for the trainees and the training vessels as well as for any commercial and civilian craft that may transit adjacent to the event location.

In addition to maintaining a safety buffer, supervisor and safety support personnel are responsible for identifying hazards to navigation that could affect the safety of the trainees, and recalling swimmers and divers, or the small submersible, to the surface, if conditions require. If the public enters the training area, the selected training may temporarily cease while the public transits the training area.

For all open-water training events involving broadcast navigational hazards (NOTAMs), support personnel are present to ensure that training areas are clear and safe to conduct the training activity. In addition, on-call military medical response personnel are also available throughout each training event.

Trainees use fish-finder type sonar when conducting water-based training. To ensure safe and effective sonar use, NSWC applies safety procedures consistent with the U.S. Navy Diving Manual, Appendix 1A, *Safe Diving Distances from Transmitting Sonar*, the Navy's governing document for protecting divers during active sonar use (U.S. Department of the Navy, 2011). The manual provides procedures for calculating safe distances from active sonar. These procedures are derived from experimental and theoretical research conducted at the Naval Submarine Medical Research Laboratory and the Navy Experimental Diving Unit. Safety distances vary based on conditions that include diver dress, type of sonar, and duration of time in the water. These safety distances would also be applicable to recreational swimmers and divers. The sonar used during naval special operations training is the same as fish-finder type sonar employed by recreational and commercial fishermen, and commonly used throughout the training study area. Considering the existing use of fish-finder type sonar in the training study area, anticipated infrequent and short-term use of areas proposed for training and the large expanse of the training study area (Regions 1, 2, and 3), naval special operations training is not anticipated to overlap with recreational swimmers or divers or result in impacts to individuals.

Naval special operations personnel conducting training activities at state/city/county/district parks, harbors, and private property would be in accordance with real estate agreements and approvals, and when authorized by the property owner. NSWC would coordinate with law enforcement, park managers (where applicable), and property owners prior to use of property for training. NSWC would secure the appropriate permits, permissions, passes, or approvals prior to performing activities on these properties. NSWC's safety measures include standard operating procedures designed to avoid or minimize civilian exposure to training activities. If the public enters the training area while a training event is underway, the training may temporarily cease while the public transits the training area. Prior to land-based training, support staff would typically visit a site prior to the training event to ensure there is minimal public in the area; if public is present, and then the training event could shift away from the public or would not take place at the selected site. Live-fire weapons and ammunition are not part of this training activity. Additionally, support staff would be on site at all times to ensure the overall safety of the training environment. While schools and churches are present throughout the training study area, the measures described above to minimize naval special operations training interaction with the public would avoid potential impacts to the public's use of school and church facilities.

During training events, NSWC dedicates a vehicle for emergency response. Navy Region Northwest would be contacted if there is a spill of any hazardous substance or oil into state waters, ground, or air in accordance with the Navy's Oil and Hazardous Substance Integrated Contingency Plan (U.S. Department of the Navy, 2016). Navy Region Northwest would also be contacted if there is a spill of oil that would violate water quality standards, cause a film or sheen or discoloration on the water surface or shoreline, or cause sludge or emulsion to be deposited beneath the surface of the water. Should any spill pose a threat to human health, 911 would be called first. Any petroleum-contaminated soil from an accidental spill would be treated, stored, transported, handled, labeled, and disposed of in accordance

with federal, state, and local regulations. This ensures safety for the trainees and the training vessels as well as for any commercial and civilian craft that may transit adjacent to the event location.

In accordance with the requirements of EO 13045, this section also evaluates whether implementing the No Action Alternative would result in an environmental health and safety risk that would disproportionately affect children. The proposed activities would not be hazardous to non-participants and all activities would be consistent with both historic and current training activities within the training study area. Support staff would typically visit a site prior to the training event to ensure there is minimal public in the area; if the public is present, the safety support personnel will assess the situation and, based upon safety considerations of all, they will either not start the training, continue the training, temporarily suspend the training, completely stop the training, or relocate the training to another approved training site. As such, any effect on children would be fleeting—a glimpse of trainees or just being present in the general area. Therefore, the No Action Alternative would not result in environmental health or safety risks that would disproportionately affect children.

In addition, all activities would be completely consistent with both historic and current training activities within the training study area.

As presented above under the No Action Alternative, the proposed minimization would result in continued avoidance of impacts to public health and safety. Therefore, no significant impacts on public health and safety would occur with the continuation of training under the No Action Alternative.

3.4.3.2 Alternative 1

Under Alternative 1, proposed training activities would be conducted in western Washington State in Region 1 and would include an increased tempo above the No Action Alternative from two to four training blocks per year. Within Region 1, an individual site would be used no more than 20 times per year. The same training activities in the No Action Alternative would occur. The following training activities would be added: simulated building clearance and the training with UASs. The use of remote operated vehicles would be included with UUVs.

The same impacts, analysis, and measures from the No Action Alternative would apply to the proposed training activities and locations in Alternative 1. The increase in training blocks and potential training locations when compared to the No Action Alternative would not designate or alter any special use airspace or restricted waters. As described under the No Action Alternative, personnel would transit to and from training areas using existing roads, and waterways in compliance with all applicable safety regulations. Supervisor and safety personnel would be present at training sites to ensure safety of the training site for trainees and public (if present) for both UAS and simulated building clearance training as described in the No Action Alternative for other training activities.

The simulated building clearance training activity would consist of trainees conducting simulated actions against a site, or a military individual designated as part of the exercise who would be simulating a threat or enemy, within a confined area or building. Simulated building clearance sites would typically be separated from the public would comprise approximately 10 percent of each training block. The simulated munitions are marking rounds, which are specialized plastic/paint capsules that are environmentally friendly and water-soluble. The temporary marks these simulated munitions make are about the circumference of a dime. Sounds associated with the firing of the simulated munitions sound would be similar to an air rifle or a car door slamming and significantly less than the sound produced from firing actual live rounds. It is unlikely that the public would hear the sound since the proposed training would occur away from the public. No property damage would occur, and cleanup (picking up

simulated marking rounds/washing away paint marks if present) would be handled by the instructors and support staff immediately at the conclusion of the training scenario. Support staff would be on site at all times in order to ensure the overall safety in the training environment. The brass casings associated with the simulated munitions would then be recycled as part of Naval Undersea Warfare Center (NUWC) recycling program.

Proposed UAS training would occur at NAVBASE Kitsap Keyport, Toandos Buffer Zone, and NAVMAG Indian Island. UASs would carry non-hazardous payloads and would be operated in accordance with all FAA safety regulations and the Department of Defense's memorandum of agreement with the FAA (U.S. Department of Defense & Federal Aviation Administration, 2013). To operate UAS, NSWC would obtain COAs prior to operating these systems in Region 1. If necessary, these COAs would include additional safety measures that would be adhered to while operating the UAS. UAS training activities would have staff on hand who would be responsible for the safety and oversight of trainees participating in these activities and would utilize ground-based observers when operating UAS.

For the reasons given in Section 3.4.3.1 (No Action Alternative) and above, Alternative 1 would not result in environmental health or safety risks that would disproportionately affect children. Alternative 1 would have the same safety restrictions and requirements as described under the No Action Alternative. Therefore, no significant impacts on public health and safety would occur with implementation of Alternative 1.

3.4.3.3 Alternative 2

Under Alternative 2, the locations, training activities, number of training blocks per year, and site usage per year are the exact same as those identified in Alternative 1 for Region 1. However, Alternative 2 adds two new training regions, Regions 2 and 3. Regions 2 and 3 would have one training block every other year with an individual site being used no more than three times every other year in each region. The same training activities as identified in Alternative 1 would occur under Alternative 2, with the exception that UAS and simulated building clearance training activities would not occur in Region 3. Additional UAS training would occur in Region 2 at R6701. Also, one new proposed training activity, high-angle climbing, would occur at Deception Pass State Park in Region 3.

The same impacts, analysis, and measures from Alternative 1 would apply to the proposed training activities and regions in Alternative 2. The increase in training blocks and training in Regions 2 and 3 when compared to the Alternative 1 would not designate or alter any special use airspace or restricted waters. As described under the Alternative 1, personnel would transit to and from training areas using existing roads, and waterways in compliance with all applicable safety regulations. Supervisor and safety personnel would be present at training sites to ensure safety of the training site for trainees and public (if present) for both UAS training at R6701 and High-Angle Climbing, both in Region 2, as described in the Alternative 1 for other training activities.

UAS training would not require a COA from FAA due to UAS usage being already approved at R6701. As described in Alternative 1, UAS usage at R6701 would carry non-hazardous payloads and would be operated in accordance with all FAA safety regulations and the Department of Defense's memorandum of agreement with the FAA (U.S. Department of Defense & Federal Aviation Administration, 2013).

Alternative 2 includes the addition of high angle climbing as a training activity. Naval special operations support staff would coordinate with Deception Pass State Park managers prior this training activity. Support staff would set up safety climbing ropes in advance of training activity and would monitor the

ropes to ensure the public would not use of ropes. At completion of the training, the ropes would be removed.

For the reasons given in Section 3.4.3.2 (Alternative 1) and above, Alternative 2 would not result in environmental health or safety risks that would disproportionately affect children. Alternative 2 would have the same safety restrictions and requirements as described under Alternative 1. Therefore, no significant impacts on public health and safety would occur with implementation of Alternative 2.

3.4.3.4 Alternative 3 (Preferred Alternative)

As with Alternative 2, Alternative 3 would include the same proposed training activities and areas within Regions 1, 2, and 3. The only difference is Alternative 3 would increase the training blocks in Region 1 to six times per year and an individual site would be used no more than 36 times per year. The increase in the number of training blocks and site usage is not expected to change the impacts, analysis, and measures as described in Alternative 2. While there is an increase in total training blocks under Alternative 3, for the same reasons given in Section 3.4.3.3 (Alternative 2), Alternative 3 would not result in environmental health or safety risks that would disproportionately affect children. Alternative 3 would have the same safety restrictions and requirements as described under Alternative 2. Therefore, no significant impacts on public health and safety would occur with implementation of Alternative 3.

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3.5 Noise

This discussion of noise includes the types or sources of noise and the associated sensitive receptors in the human environment. Noise in relation to biological resources and wildlife species is discussed in the Biological Resources section (Section 3.3) and noise in relation to diver safety is discussed in the Public Health and Safety section (Section 3.4). Noise is also discussed in Socioeconomics (Section 3.1) and Cultural Resources (Section 3.2).

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air or water, and are sensed by the human ear. Sound is all around us. Sounds that will be analyzed in this document will be based on intensity—the acoustic energy, which is expressed in terms of sound pressure, in decibels (dB).

Noise is defined as unwanted or annoying sound that interferes with or disrupts normal human activities. The response of different individuals to similar noise events is diverse and is influenced by the type of noise, perceived importance of the noise, its appropriateness in the setting, time of day, type of activity during which the noise occurs, and sensitivity of the individual. However, the principal human response to noise is annoyance.

3.5.1 Basics of Sound and A-weighted Sound Level

The loudest sounds that can be detected comfortably by the human ear have intensities that are a trillion times higher than those of sounds that can barely be detected. This vast range means that using a linear scale to represent sound intensity is not feasible. The dB is a logarithmic unit used to represent the intensity of a sound, also referred to as the sound level. To mimic the human ear's non-linear sensitivity and perception of different frequencies of sound, the spectral content is weighted. For example, environmental noise measurements are usually on an "A-weighted" scale that filters out very low and very high frequencies in order to replicate human sensitivity. It is common to add the "A" to the measurement unit in order to identify that the measurement has been made with this filtering process (dBA). In this document, the dB unit refers to A-weighted sound levels.

Figure 3.5-1 provides a chart of A-weighted typical noise sources (Cowan, 1994). Some noise sources (e.g., air conditioner, vacuum cleaner) are continuous sounds that maintain a constant sound level for some period of time. Other sources (e.g., automobile, heavy truck) are the maximum sound produced during an event like a vehicle pass-by. Other sounds (e.g., urban daytime, urban nighttime) are averages taken over extended periods of time. A variety of noise metrics have been developed to describe noise over different time periods, as discussed below.

3.5.2 Affected Environment

3.5.2.1 Sensitive Receptors

A noise-sensitive receptor is defined as a land use where people involved in indoor or outdoor activities may be subject to stress or considerable interference from noise. Such locations or facilities often include residential dwellings, hospitals, nursing homes, educational facilities, and libraries. Sensitive receptors may also include noise-sensitive cultural practices, some domestic animals, or certain wildlife species.

The training study area and contiguous nearshore waters (Figure 1.3-1) encompass a broad spectrum of populations and landownership types, including DoD facilities, private lands, public parks, harbors, golf courses, and recreation areas. Commercial, institutional, recreational, and military activities take place

simultaneously within this area. The affected environment includes portions of Skagit, Island, Jefferson, Kitsap, Pierce, Clallam, Pacific, and Grays Harbor Counties.

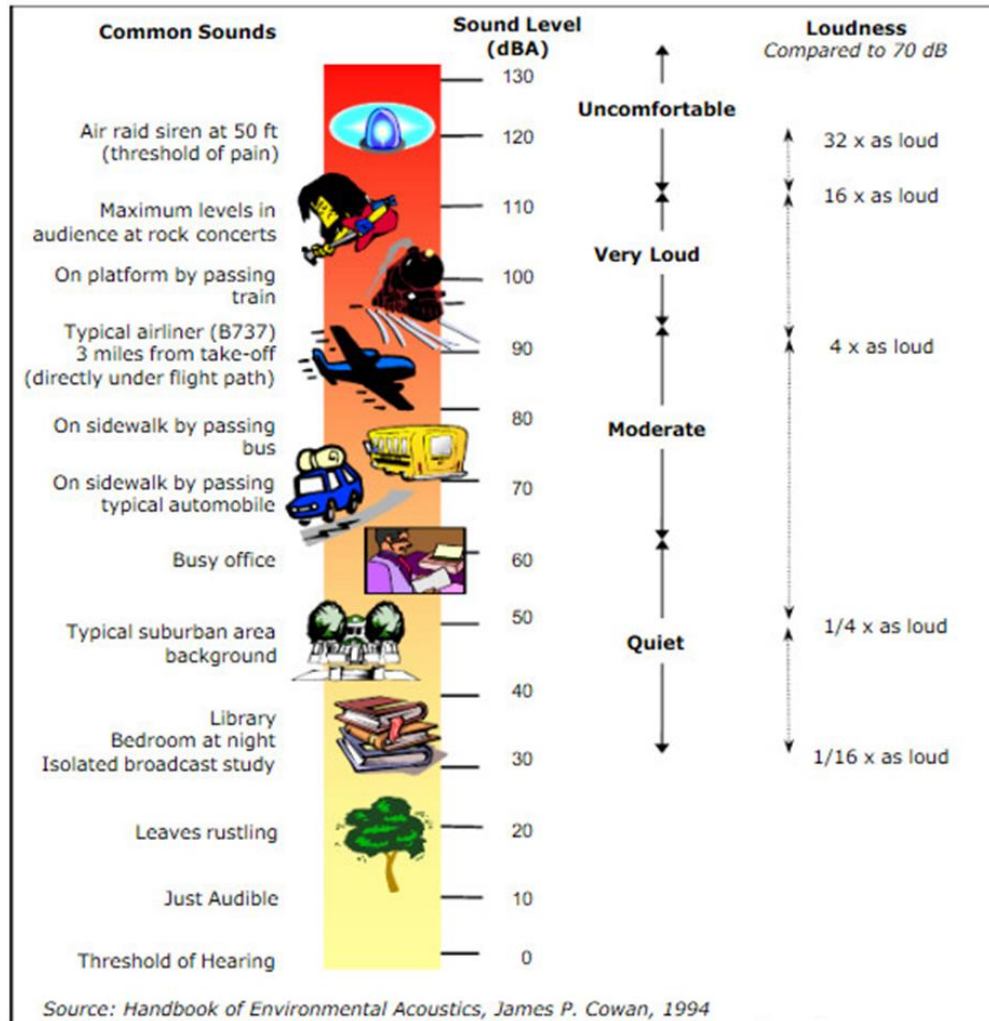


Figure 3.5-1: A-Weighted Sound Levels from Typical Sources

3.5.2.2 Ambient Noise Conditions

Ambient sound levels would likely vary by location. Ambient background noise in urbanized areas typically varies from 60 to 70 dBA. Typical residential noise has been measured at 65 dBA (Cavanaugh & Tocci, 1998).

While Mt. Baker-Snoqualmie National Forest is not within the training study area, it is an appropriate surrogate for noise levels in state parks. 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).

3.5.3 Environmental Consequences

Analysis of potential noise impacts includes estimating likely noise levels from the Proposed Action and determining potential effects to sensitive receptors. As part of the rigorous training, the trainees learn

skills needed to avoid detection. It is unlikely that the general public would hear the training and, if they did, it would be similar to a passing boat that frequents the area, or recreational UAS use.

3.5.3.1 No Action Alternative

Under the No Action Alternative, training activities conducted in western Washington State over the past 30 years would continue in Region 1 training study area with two training blocks per year as identified in Chapter 2.

Under the No Action Alternative, systems used during training activities include small submersible craft such as manned or UUVs. Vessels such as small ships or small boats are used in conjunction with training systems during certain training scenarios. The same vessels, as well as jet skis, are used for safety and training support. On land, support vehicles are on standby for safety; however, the support vehicles stay on established roads.

Sources of in-air noise include the marine support vessels and surface vehicles that accompany trainees on land, or provide transport to trainees. Airborne noise emissions were modeled for a multipurpose ship and a fishing research vessel and compared with field measurements (Badino et al., 2012). At 25 meters from the operating vessels, the modeled received noise level was approximately 60 dBA for the fisheries vessel, and 70 dBA for the multipurpose vessel. At distances of 100 meters, these received levels would drop to approximately 48 and 58 dBA, respectively, due to propagation loss. Surface support vessels would likely be at or greater than 100 m from shore during training activities. Further, vessel operation associated with training activities are intermittent, and not at a fixed position. Similarly, a jet ski typically creates received noise levels approximately 80 dBA at a distance of 20 ft. (Komanoff & Shaw, 2000). At a distance of approximately 100 ft. (30.5 m), the received noise from a jet ski would be approximately 65 dBA and, by 200 ft. (61 m), the received noise would generally be below 60 dBA, nearing typical ambient levels. As such, sensitive receptors along the shoreline and further inland would not be impacted from sounds emitting from surface vessels and is consistent with the status quo of the environment.

The main noise sources on land are not from the training activities, but from vehicles used to transport trainees via public roads or provide training support. Typical sound levels from a single diesel truck driving by is approximately 88 dBA at 50 ft. (U.S. Department of Transportation, 2006). There is minimal travel of personnel and equipment from the staging areas on federal property to the individual training sites. Personnel utilize government and public waterways and roads, and travel includes military support vehicles towing small boats as well as the movement of safety and maintenance equipment.

Transportation also includes military personnel involved in the safety and training phases of the event. The noise contribution from vehicles would be intermittent. Additionally, intermittent trips by Navy vehicles on public roads would only incrementally add to the existing road noise since their contribution to the overall usage of the road would be minimal.

Independent of location, the amount of noise created by the proposed training activities would not be sufficient enough to affect community noise levels. Any disturbances would be expected to be short term and infrequent and any impacts to sensitive receptors would be minimal and short term based on the (1) relatively low intensity of the impacts, (2) localized nature of the impacts, (3) infrequent nature of the impacts, and (4) brief duration of the activities. Therefore, no significant impacts on the noise environment would occur with the continuation of training under the No Action Alternative.

3.5.3.2 Alternative 1

Under Alternative 1, proposed training activities would be conducted in western Washington State in Region 1 and would include an increased tempo above the No Action Alternative from two to four training blocks per year. Within Region 1, an individual site would be used no more than 20 times per year. The same training activities in the No Action Alternative would occur. The following training activities would be added: simulated building clearance and training with unmanned aircraft systems.

The majority of simulate building clearance activities using simulated munitions would occur within enclosed spaces (buildings). For those activities that would occur outside, the noise generated from firing the simulated munition would be similar to that of firing an air rifle or a car door slamming and significantly less than the noise produced from firing actual live rounds.

UAS would be utilized 10 percent of the time concurrent with other water-based or land-based training activities. Small hand-held UASs and the ScanEagle (or similar type of UAS) are the most commonly used UASs during training activities. UASs are allowed in FAA-designated restricted airspace (R6701) and operate below 2,000 feet above ground level. For reference, at a distance of 28 ft. (8.5 m), the received level from a Shadow UAS is approximately 108 dBA; at 204 ft. (62.2 m), the received level drops to 85 dBA. Once the UAS reaches approximately 3,000 ft. (914.4 m) AGL, the Shadow would no longer be heard on the ground (National Guard Bureau & U.S. Army Corps of Engineers, 2008). The hand-held UASs and the ScanEagle are designed to be quieter models than the Shadow and, thus, noise levels would be inaudible at a lower altitude than that of the Shadow, though it would be expected to be audible at operating elevations (between 65 and 85 dBA depending on elevation).

Under Alternative 1, with the exception of UASs, the increase in training blocks and potential training locations when compared to the No Action Alternative would result in the same parameters and considerations as described above. Noise-generating events from proposed training activities would remain intermittent and the contribution of noise from training activities would be low. Training activities would have the same goals, requirements, and safety restrictions as the No Action Alternative. Alternative 1 would not have a substantially greater impact on the noise environment compared to the No Action Alternative. Therefore, no significant impacts on the noise environment would occur with implementation of Alternative 1.

3.5.3.3 Alternative 2

Under Alternative 2, proposed training activities would be conducted in western Washington State in Region 1 as identified in Alternative 1. In addition, under Alternative 2, Regions 2 and 3 would be added as training venues with one training block every other year. The same training activities as identified in Alternative 1 would occur under Alternative 2, with the exception that UAS and simulated building clearance training activities would not occur in Region 3. Additional UAS training would occur in Region 2 at R6701. Also, one new proposed training activity, High-Angle Climbing, would occur at Deception Pass State Park in Region 2, but the training activity is not expected to produce any additional noise.

Under Alternative 2, the increase in training blocks and potential training locations when compared to Alternative 1 would result in the same parameters and considerations as described above.

Noise-generating events from proposed training activities would remain intermittent and the contribution of noise from training activities would be low. Training activities would have the same goals, requirements, and safety restrictions as Alternative 1. Alternative 2 would not have a substantially greater impact on the noise environment compared to Alternative 1. Therefore, no significant impacts on the noise environment would occur with implementation of Alternative 2.

3.5.3.4 Alternative 3 (Preferred Alternative)

Under Alternative 3, proposed training activities would be conducted in Region 1, 2, and 3 as identified in Alternative 2. In addition, under Alternative 3, there would be an increase in training tempo in Region 1 from four training blocks to six training blocks per year.

Under Alternative 3, the increase in training blocks when compared to Alternative 2 would result in the same parameters and considerations as described above. Noise-generating events from proposed training activities would remain intermittent and the contribution of noise from training activities would be low. Training activities would have the same goals, requirements, and safety restrictions as Alternative 2. Alternative 3 would not have a substantially greater impact on the noise environment compared to Alternative 2. Therefore, no significant impacts on the noise environment would occur with implementation of Alternative 3.

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3.6 Summary of Potential Impacts on Resources

Table 3.6-1 provides a summary of potential environmental consequences of the action alternatives. The Navy will implement best management practices and standard operating procedures to avoid or reduce potential impacts on resources analyzed in this EA (see Section 2.3.5). Below is a summary for ESA conclusions.

There is no designated critical habitat for the golden paintbrush, water howellia, marsh sandwort, and humpback whale. Additionally, the proposed training activities would not overlap with the following critical habitats: Oregon silverspot butterfly and marbled murrelet.

3.6.1 No Action Alternative

The No Action Alternative relies upon the ESA consultations conducted under the 2015 Northwest Training and Testing EIS/OEIS and the 2010 Northwest Training Range Complex EIS/OEIS.

3.6.2 Alternative 1

3.6.2.1 ESA-Listed Species

Proposed training would have no effect on the water howellia or marsh sandwort as these species are believed to be extirpated from the training study area. Based on the analysis in Section 3.3 (Biological Resources), the proposed training activities may affect, not likely to adversely affect Puget Sound Chinook salmon, Hood Canal summer run chum salmon, Puget Sound Steelhead, Puget Sound/Georgia Basin bocaccio and yelloweye rockfishes, North American green sturgeon, bull trout, humpback whale, southern resident killer whale, and the marbled murrelet.

3.6.2.2 Critical Habitat

As described in Section 3.3, the proposed training activities would not have an effect on critical habitat in Region 1 for Puget Sound Chinook Salmon ESU, Hood Canal summer run chum, Puget Sound Steelhead, Puget Sound/Georgia Basin DPS bocaccio, yelloweye rockfish, bull trout, and southern resident killer whale because essential physical and biological features described in that section would not be modified, either temporarily or permanently.

3.6.3 Alternative 2

3.6.3.1 ESA-Listed Species

Alternative 2 species will be the same as Alternative 1. The difference is, golden paintbrush, Taylor's checkerspot butterfly, and the Oregon silverspot butterfly all occur in Region 2. Region 3 adds the western snowy plover, streaked-horned lark, leatherback sea turtle, Columbia River Chum Salmon, and the Pacific Eulachon. Proposed training would have no effect on the golden paintbrush, because known locations would be avoided. Proposed training activities would have no effect on Taylor's checkerspot butterfly and the Oregon silverspot butterfly because activities would not overlap with existing populations of those species. Based on the analysis in Section 3.3 (Biological Resources), the proposed training activities may affect, not likely to adversely affect the leatherback sea turtle, Columbia River Chum Salmon, and the Pacific Eulachon.

Based on the analysis in Section 3.3 and after consultation with USFWS, the proposed training activities may affect, not likely to adversely affect the western snowy plover and streaked-horned lark since the training would occur outside of their nesting season at Leadbetter Point and Grayland Beach State Parks.

3.6.3.2 Critical Habitat

Alternative 2 critical habitat would be the same as Alternative 1. The difference is the addition of designated critical habitat for the following species: Taylor's checkerspot butterfly (only at Deception Pass State Park), western snowy plover, streaked-horned lark, Columbia River chum salmon, Pacific eulachon, North American green sturgeon, and the leatherback sea turtle. Based on the analysis in Section 3.3, the proposed training activities would not have an effect on critical habitat for these species in Regions 1, 2, and 3 because essential physical and biological features described in that section would not be modified, either temporarily or permanently.

3.6.4 Alternative 3

3.6.4.1 ESA-listed Species and Critical Habitats

Alternative 3 species and habitats would be the same as Alternative 2. The only difference is Alternative 3 would increase the training blocks in Region 1 to six times per year and an individual site would be used no more than 36 times per year. Training activities associated with the Proposed Action are low impact and activities would occur at infrequent intervals and for a brief duration of time. Because the goal of training is for the trainees to be in the field undetected, the environment tends to be minimally disturbed and materials (e.g., gear and trash) are not left behind. In addition, identical travel routes would be rarely used; the level of foot traffic associated with each group would not wear paths in the training study area. Therefore, the increase in the number of training blocks and site usage is not expected to change the impacts, analysis, and determinations as described in Alternative 2.

Table 3.6-1: Summary of Potential Impacts on Resource Areas

Resource Area: Socioeconomics			
No Action Alternative	Alternative 1	Alternative 2	Alternative 3
There would be no change to the socioeconomics of the local area or region from the No Action Alternative. Training would not restrict transportation and shipping patterns, commercial and recreational fishing activities, or the ability of individuals to use or access recreational activities. Public parks and waterways remain open to the public during training and access is not restricted.	There would be no adverse impact to the socioeconomics of the local area or region from slight increases in the number of personnel trained by NSWC. Compared to the No Action Alternative, the aggregate impact on socioeconomic and recreation resources would not observably differ from current conditions, and impacts are negligible.	There would be no adverse impact to the socioeconomics of the local area or region from slight increases in the number of personnel trained by NSWC. Compared to the No Action Alternative, the aggregate impact on socioeconomic and recreation resources would not observably differ from current conditions, and impacts are negligible.	There would be no adverse impact to the socioeconomics of the local area or region from slight increases in the number of personnel trained by NSWC. Compared to the No Action Alternative, the aggregate impact on socioeconomic and recreation resources would not observably differ from current conditions, and impacts are negligible.
Resource Area: Cultural Resources			
No Action Alternative	Alternative 1	Alternative 2	Alternative 3
There would be no impact to cultural resources. The proposed training activities would be non invasive in nature with a training goal to leave no trace of their presence during or after training activities. Use of the underwater audible recall device is not expected to affect any potential underwater cultural resources due to the small force of the double-based propellant.	There would be no adverse impact to the increase in proposed training blocks and locations in Region 1 compared to the No Action Alternative. The same training activities in the No Action Alternative and the introduction of simulated building clearance and UAS activities would be non-invasive in nature and would follow protocols to minimize the potential for impacts on archeological resources and architectural resources.	There would be no adverse impact to the adding locations in Region 2 and 3 compared to the No Action Alternative. The same training activities in the No Action Alternative and introduction of simulated building clearance, UAS, and high-angle climbing activities would be non-invasive in nature and would follow protocols to minimize the potential for impacts on archeological resources and architectural resources.	There would be no adverse impact to adding locations in Region 2 and 3 plus the slight increase in number of personnel, and increase in training blocks in Region 1 compared to the No Action Alternative. The training activities and introduction of simulated building clearance, UAS, and high-angle climbing activities would be non-invasive in nature and would follow protocols to minimize the potential for impacts on archeological resources and architectural resources.

Table 3.6-1: Summary of Potential Impacts on Resource Areas (continued)

Resource Area: Cultural Resources			
No Action Alternative	Alternative 1	Alternative 2	Alternative 3
			<p>The proposed training would be non-invasive in nature and the Navy would follow the following five measures: (1) reopen consultation per 36 CFR 800.5(d) if necessitated by a change in the undertaking; (2) ensure a Secretary of Interior (Sol) qualified archaeologist reviews new and renewed real estate agreements for new information such as the presence of eroding archaeological deposits or feature; (3) implement the Inadvertent Discovery Plan; (4) ensure a Sol-qualified archaeologist provides sensitivity training prior to the start of each training block; and (5) Sol qualified archaeologist will periodically confirm to WA SHPO staff that adverse effects are being avoided. The Navy consulted with the Advisory Council on Historic Preservation, Washington State Historic Preservation Officer, 25 tribes and 33 interested parties. Per 36 CFR 800.5(c)(3)(i), the Navy's responsibilities under Section 106 are fulfilled.</p>

Table 3.6-1: Summary of Potential Impacts on Resource Areas (continued)

Resource Area: Biological Resources			
No Action Alternative	Alternative 1	Alternative 2	Alternative 3
<p>The No Action Alternative would not have an adverse effect on terrestrial and marine biological resources. The training activities would not impact forage fish spawning habitat.</p> <p>The No Action Alternative training activities relies on the 2010 USFWS Biological Opinion on the 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. The activities were also covered under the 2010 NMFS Biological Opinion on the U.S. Navy’s Military readiness activities in the Northwest Training Range Complex.</p>	<p>Proposed training activities and the associated disturbances would have minimal effects on terrestrial and marine biological resources because of the short duration, infrequency of occurrence, and low intensity of the proposed training activities.</p> <p>Based on the analysis in Section 3.3, the proposed training activities may affect, not likely to adversely affect Puget Sound Chinook salmon, Hood Canal summer run chum salmon, Puget Sound Steelhead, Puget Sound/Georgia Basin bocaccio and yelloweye rockfishes, North American green sturgeon, bull trout, humpback whale, southern resident killer whale, and the marbled murrelet. There would be no effect for critical habitat.</p> <p>Impacts from the activities under Alternative 1 would not result in a significant adverse effect on migratory bird populations. In accordance with BGEPA, no eagles would be taken by the proposed training activities, nor would the activities limit use of nesting locations in the future.</p>	<p>Alternative 2 species will be the same as Alternative 1. The difference is, golden paintbrush, Taylor’s checkerspot butterfly, and the Oregon silverspot butterfly all occur in Region 2. Region 3 adds the western snowy plover, streaked-horned lark, leatherback sea turtle, Columbia River Chum Salmon, and the Pacific Eulachon. Proposed training would have no effect on the golden paintbrush, because known locations would be avoided. Proposed training activities would have no effect on Taylor’s checkerspot butterfly and the Oregon silverspot butterfly because activities would not overlap with existing populations of those species. Based on the analysis in Section 3.3, the proposed training activities may affect, not likely to adversely affect the western snowy plover, streaked-horned lark, leatherback sea turtle, Columbia River Chum Salmon, and the Pacific Eulachon. There would be no effect for critical habitat.</p>	<p>The types of impacts would be the same as under Alternative 2, with an increase in tempo of training activities in Region 1.</p> <p>As with Alternatives 2, Alternative 3 may affect, not likely to adversely affect ESA-listed species and a no effect for critical habitat. The Navy consulted with NMFS on Puget Sound Chinook salmon, Hood Canal summer run chum salmon, Puget Sound steelhead, Puget Sound/Georgia Basin bocaccio and yelloweye rockfishes, North American green sturgeon, Columbia River chum salmon, Southern DPS Pacific Eulachon, leatherback sea turtle, humpback whale Mexico DPS and Central America DPS, and southern resident killer whales. NMFS determined the preferred alternative was not likely to adversely affect these species or their critical habitat designations. NMFS also determined the action would not adversely affect EFH and consultation under Magnuson-Stevens Act would not be required for this action.</p>

Table 3.6-1: Summary of Potential Impacts on Resource Areas (continued)

Resource Area: Biological Resources			
No Action Alternative	Alternative 1	Alternative 2	Alternative 3
	<p>Known eagles and other raptors nest sites would be avoided. Training would not occur within 330 feet of eagle nests.</p>	<p>Impacts from the activities under Alternative 2 would not result in a significant adverse effect on migratory bird populations. In accordance with BGEPA, no eagles would be taken by the proposed training activities, nor would the activities limit use of nesting locations in the future.</p>	<p>The Navy consulted with USFWS on bull trout, marbled murrelet, streaked horn lark, and the western snowy plover. USFWS concurred with the Navy's may affect, not likely to adversely affect determinations for these species. To avoid the nesting season of western snowy plovers and streaked horned larks at Leadbetter Point and Grayland Beach State Parks, the Navy agreed training at these two state parks would only occur between September 15 and March 15.</p> <p>Impacts from the activities under Alternative 3 would not result in a significant adverse effect on migratory bird populations. In accordance with BGEPA, no eagles would be taken by the proposed training activities, nor would the activities limit use of nesting locations in the future.</p> <p>Known eagles and other raptors nest sites would be avoid. Training would not occur within 330 feet of eagle nests.</p> <p>No take, as defined by the MMPA, of marine mammals would occur.</p>

Table 3.6-1: Summary of Potential Impacts on Resource Areas (continued)

Resource Area: Public Health and Safety			
No Action Alternative	Alternative 1	Alternative 2	Alternative 3
<p>There would be no impacts to public health and safety under the No Action Alternative. Training activities are delayed, moved, or cancelled if there is a question about the safety of the public. NSWC incorporates several best management practices into their different types of training, such as having safety vessels and support personnel on site during the training to not only ensure the safety of trainees, but also to ensure the safety of the public.</p> <p>Under the No Action Alternative, trainees do not carry loaded weapons or explosives during training events. All personnel transit to and from training areas using existing roads, and waterways in compliance with all applicable safety regulations.</p> <p>All training events on land and within state owned harbors are conducted in accordance with real estate agreements and approvals. Support staff would ensure a safety buffer would be established around land and maritime training areas, and the NSWC dedicates a vehicle for emergency response during training events.</p>	<p>There would be no impacts to public health and safety under Alternative 1. The same safety parameters, considerations, and impacts as the No Action Alternative would take place.</p> <p>Alternative 1 adds UAS training over three Navy owned properties. UAS would carry non-hazardous payloads and be operated within FAA safety regulations and the Department of Defense's memorandum of agreement with the FAA.</p> <p>Potential impacts would not be significant for UAS training because NSWC would coordinate with the Federal Aviation Administration to obtain a Certificate of Authorization for UAS operations. NSWC would operate UASs within the limits of the Certificate of Authorization and issue a Notice to Airmen.</p> <p>Alternative 1 also adds simulated building clearance. The same safety parameters, considerations, and impacts as the No Action Alternative would take place.</p> <p>There would be no significant impacts on the environment due to noise.</p>	<p>There would be no impacts to public health and safety under Alternative 2. The same parameters, considerations, and impacts as No Action Alternative would take place under Alternative 2, but with the additional locations of Regions 2 and 3.</p> <p>Alternative 2 also adds UAS training in Region 2 restricted airspace R-6701, which covers a portion of Whidbey Island. This airspace is currently authorized for UAS use. Simulated building clearance would be added to Region 2. The same safety parameters, considerations, and impacts as the No Action Alternative would take place.</p> <p>There would be no significant impacts on the environment due to noise.</p> <p>The increase in tempo, location, and UAS activity proposed in Region 1 and Region 2 would result in the same parameters, consideration and impacts as presented under the No Action Alternative.</p>	<p>There would be no impacts to public health and safety under Alternative 3. The same parameters, considerations, and impacts as the No Action Alternative would take place under Alternative 3, with an increased training tempo in Region 1 and additional locations of Regions 2 and 3.</p> <p>Alternative 3 also adds UAS training in Region 2 restricted airspace R-6701, which covers a portion of Whidbey Island. This airspace is currently authorized for UAS use. Simulated building clearance would be added to Region 2. The same safety parameters, considerations, and impacts as the No Action Alternative would take place.</p> <p>There would be no significant impacts on the environment due to noise.</p> <p>The increase in tempo, location, and UAS activity proposed in Region 1 and Region 2 would result in the same parameters, consideration and impacts as presented under the No Action Alternative.</p>

Table 3.6-1: Summary of Potential Impacts on Resource Areas (continued)

Resource Area: Noise			
No Action Alternative	Alternative 1	Alternative 2	Alternative 3
There would be no significant impacts on the environment due to noise. Training events would continue to be performed with the training objective that the activities be undetected. Independent of location, the amount of noise created by these activities would likely be similar to ambient noise levels or, if above ambient, similar to a general public user of the area and not sufficient enough to affect the community noise levels.	The increase in tempo, location, and UAS activity proposed in Region 1 under Alternative 1 would result in the same parameters, consideration and impacts as presented under the No Action Alternative. The amount of noise created would be similar to ambient noise levels, or if above ambient, similar to a general public user of the area and not sufficient enough to affect the community noise levels.	The amount of noise created would be similar to ambient noise levels, or if above ambient, similar to a general public user of the area and not sufficient enough to affect the community noise levels.	The amount of noise created would be similar to ambient noise levels, or if above ambient, similar to a general public user of the area and not sufficient enough to affect the community noise levels.

Notes: BGEPA = Bald and Golden Eagle Protection Act, EFH = Essential Fish Habitat, ESA = Endangered Species Act, FAA = Federal Aviation Administration; MBTA = Migratory Bird Treaty Act, MMPA = Mammal Protection Act, NWTT EIS/OEIS = Northwest Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement, NWTRC = Northwest Training Range Complex, UAS = Unmanned Aircraft System, U.S. = United States

4 Cumulative Impacts

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

4.1 Definition of Cumulative Impacts

The approach taken in the analysis of cumulative impacts follows the objectives of the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations, and CEQ guidance. Cumulative impacts are defined in 40 Code of Federal Regulations section 1508.7 as “the impact on the environment that 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.”

To determine the scope of environmental impact analyses, agencies shall consider cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact analysis document.

In addition, CEQ and United States (U.S.) Environmental Protection Agency have published guidance addressing implementation of cumulative impact analyses—Guidance on the Consideration of Past Actions in Cumulative Effects Analysis (Council on Environmental Quality, 2005) and Consideration of Cumulative Impacts in Environmental Protection Agency Review of NEPA Documents (U.S. Environmental Protection Agency, 1999). CEQ guidance entitled Considering Cumulative Impacts Under NEPA (1997) states that cumulative impact analyses should

“...determine the magnitude and significance of the environmental consequences of the proposed action in the context of the cumulative impacts of other past, present, and future actions...identify significant cumulative impacts...[and]...focus on truly meaningful impacts.”

Cumulative impacts are most likely to arise when a relationship or synergism exists between a proposed action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to the proposed action would be expected to have more potential for a relationship than those more geographically separated. Similarly, relatively concurrent actions would tend to offer a higher potential for cumulative impacts. To identify cumulative impacts, the analysis needs to address the following three fundamental questions.

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

4.2 Scope of Cumulative Impacts Analysis

The scope of the cumulative impacts analysis involves both the geographic extent of the effects and the time frame in which the effects could be expected to occur. For this Environmental Assessment (EA), the training study area delimits the geographic extent of the cumulative impacts analysis. In general, the training study area will include those areas previously identified in Chapter 3 (Affected Environment and Environmental Consequences) for the respective resource areas. The time frame for cumulative impacts centers on the timing of the proposed action.

Another factor influencing the scope of cumulative impacts analysis involves identifying other actions to consider. Beyond determining that the geographic scope and time frame for the actions interrelate to the proposed action, the analysis employs the measure of “reasonably foreseeable” to include or exclude other actions. For the purposes of this analysis, public documents prepared by federal, state, and local government agencies form the primary sources of information regarding reasonably foreseeable actions. Documents used to identify other actions include notices of intent for Environmental Impact Statements (EISs) and EAs, management plans, land use plans, and other planning related studies.

4.3 Past, Present, and Reasonably Foreseeable Actions

This section will focus on past, present, and reasonably foreseeable future projects at and near the Proposed Action locale. In determining which projects to include in the cumulative impacts analysis, a preliminary determination was made regarding the past, present, or reasonably foreseeable action. Specifically, using the first fundamental question included in Section 4.1 (Definition of Cumulative Impacts), it was determined if a relationship exists such that the affected resource areas of the Proposed Action (included in this EA) might interact with the affected resource area of a past, present, or reasonably foreseeable action. If no such potential relationship exists, the project was not carried forward into the cumulative impacts analysis. In accordance with CEQ guidance (Council on Environmental Quality, 2005), these actions considered but excluded from further cumulative effects analysis are not catalogued here as the intent is to focus the analysis on the meaningful actions relevant to informed decision-making. Projects included in this cumulative impacts analysis are listed in Table 4-1 and briefly described in the following subsections.

Table 4-1: Cumulative Action Evaluation

Project	Project Description	Project Timeframe		
		Past	Present	Future
Electronic Attack Squadron Expeditionary Wing	The Navy retained 3 expeditionary squadrons that operated Prowlers, and their transition to Growler, in addition to relocating a reserve squadron to Naval Air Station (NAS) Whidbey Island.	X	X	X
Encroachment Protection Partnering Agreement Transactions-Hood Canal	Under the Readiness and Environmental Protection Integration Program, the Navy has established a multi-year agreement with The Trust for Public Lands, Washington Department of Natural Resources and Jefferson Land Trust. To date, the Navy and its partners have purchased protective easements on 5,149 ac. of upland and shoreline properties around Hood Canal including protection of approximately two miles of the riparian corridor along the Dosewallips River. These areas provide protection for designated critical habitat for Endangered Species Act (ESA)-listed salmonid species. Additional Readiness and Environmental Protection Initiative transactions are underway within the agreement area around Hood Canal.	X	X	X
Hood Canal Bedlands Encroachment Protection Easement	The Navy and Washington Department of Natural Resources signed a restrictive easement that covers 4,804 acres (ac.) of aquatic land on July 7, 2014, and precludes construction in the easement area. It does not affect public access, privately owned lands, recreational uses, aquaculture, or geoduck harvest. All 4,804 ac. overlays designated critical habitat for ESA-listed salmonid species. The restrictive easement area also protects large tracts of wild stock geoduck and extensive Eelgrass habitat. The easement will protect the area for 55 years. The Department of Natural Resources will continue to manage the land under its aquatic lands program.	X	X	X
Hood Canal Coordinating Council (HCCC) Projects	The HCCC is a council of governments formed in 1985 in response to community concerns about water quality problems and related natural resource issues in the Hood Canal watershed. Completed, ongoing and future projects include salmon recovery efforts, habitat enhancement and restoration, water quality protection, and climate adaptation.	X	X	X
Hood Canal In-Lieu Fee Mitigation Program	The Hood Canal In-Lieu Fee Mitigation Program is a voluntary program sponsored by the HCCC, where entities can purchase mitigation credits to offset unavoidable adverse impacts to aquatic resources within the Hood Canal watershed. The service area is divided into two components for the In-Lieu Fee Program: Freshwater Environment, which generally includes areas landward of the marine riparian zone including freshwater and estuarine wetlands and streams up to and excluding any National Park or National Forest Lands; and Marine/Nearshore Environment, which extends from the marine riparian area at the top of the coastal bluffs to the adjacent aquatic intertidal and subtidal zones. The mitigation strategy selected for each permitted impact will be based on an assessment of type and degree of disturbance to the landscape or drift cell.	X	X	X

Table 4-1: Cumulative Action Evaluation (continued)

Project	Project Description	Project Timeframe		
		Past	Present	Future
Integrated Natural Resources Management Plan (INRMP), Manchester Fuel Department	The revised INRMP would update existing INRMP that is consistent with the military use of the property and would meet the goals and objectives established in the Sikes Act Improvement Act. The INRMP would implement an ecosystem-based conservation program.	X	X	X
INRMP, NAS Whidbey Island	The Navy adopted and is implementing a revised INRMP in a manner that is consistent with the military use of the property to ensure no net loss of military capabilities and meet the goals and objectives established in the Sikes Act Improvement Act. The INRMP implements an ecosystem-based conservation program.	X	X	X
INRMP, Naval Magazine (NAVMAG) Indian Island	The revised INRMP updated an existing INRMP that is consistent with the military use of the property and would meet the goals and objectives established in the Sikes Act Improvement Act. The INRMP implements an ecosystem-based conservation program.	X	X	X
Northwest Training and Testing (NWTT)	The Navy's Proposed Action is to conduct training and testing activities primarily within existing range complexes, including the NWTRC, operating areas, testing ranges, and select Navy pier side locations in the Pacific Northwest. Two types of naval special warfare training were included in the analysis: (1) personnel insertion/extraction using submersibles; and (2) personnel insertion/extraction non-submersibles using rotary wing aircraft, fixed-wing aircraft, or small boats. On land training was not included in the document.	X	X	X
Olympic View Marina	In January 2010, Olympic View Marina, LLC began replacing the abandoned Seabeck Marina located on Seabeck Bay approximately 7 miles (mi.) south of Naval Base (NAVBASE) Kitsap Bangor on the east side of Hood Canal. Removal of concrete debris from the beach was completed in October 2010. A 600 ft. breakwater was installed in 2014. Additional moorage slips may be added as demand increases.	X	X	X
P-8A Multi-Mission Aircraft Supplemental EIS	The Navy decided in 2008 to provide facilities and functions to support homebasing twelve P-8A Multi Mission Maritime Aircraft (MMA) squadrons and one Fleet Replacement Squadron into the U.S. Navy Fleet. The introduction of the MMA squadrons in the U.S. Navy Fleet was analyzed in an EIS. Since the completion of the original EIS, the Navy prepared a Supplemental EIS. The change in aircraft stationed at NAS Whidbey Island has been incorporated into the Action. Informal consultation with the U.S. Fish and Wildlife Service in accordance with section 7(a)(2) of the ESA for the proposed action concluded with a letter of concurrence from the U.S. Fish and Wildlife Service on May 13, 2013. The Record of Decision was signed in June 2014, and the transition to the P-8A aircraft is currently underway. Based on the Record of Decision, there will be an overall increase of 18 aircraft at the base by 2020.	X	X	X

Table 4-1: Cumulative Action Evaluation (continued)

Project	Project Description	Project Timeframe		
		Past	Present	Future
Port Gamble Bay Cleanup	The Port Gamble Bay and Mill Site consists of the fill on which the former sawmill was located, the adjacent uplands and most of Port Gamble Bay. Historical operations on this property resulted in the release of pollutants from wood waste and pilings. Some of these contaminants have been found in soil surrounding the mill and in sediments and shellfish tissue in Port Gamble Bay. The Port Gamble Bay cleanup is complete (Sullivan, 2017). Cleanup construction in the bay began in September 2015 and was completed in January 2017. Within the first year, cleanup crews: removed 3,312 pilings; excavated 19,098 cubic yards of intertidal sediments; dredged 22,360 cubic yards; removed and recycled 3,063 tons of steel, concrete and other debris; delivered 69,051 tons of clean capping and habitat materials. Also underway are efforts to improve marine and shoreline habitat and restore native species such as oysters.	X		
Replacement of EA-18G Aircraft at NAS Whidbey Island	The Navy analyzed the replacement of Prowler (EA-6B) aircraft with Growler (EA-18G) aircraft, including the dis-establishment of three expeditionary squadrons. Existing facilities and functions were modified to accommodate the replacement airframe. Additionally, implementation of replacement resulted in a decrease in the number of aircraft and personnel associated with the Airborne Electronic Attack squadrons and a reduction in flight training operations.	X	X	X
Swimmer Interdiction Security System In-water Structure and Support Facilities, NAVBASE Kitsap Bangor	The Navy has implemented a Swimmer Interdiction Security System to meet special U.S. Government security requirements for military installations in response to the terrorist attacks of September 11, 2001. The system protects waterside Navy assets and sailors, and would remain in operation as long as valuable naval assets were located on NAVBASE Kitsap Bangor. Specially trained marine mammals and their human handlers respond rapidly to security alerts by detecting, classifying, and marking the location of underwater objects or intruders. Humans work aboard small power boats, and marine mammals would be in enclosures.	X	X	X
TRIDENT Second Explosives Handling Wharf (EHW-2)	Construction and operation of a second EHW adjacent to the existing EHW would include an operations support building and facility support equipment such as heavy duty cranes, power utility booms, six lightning protection towers, and camels. Pile supported entrance and exit trestles connecting the wharf to shore were constructed. In-water construction began in 2012 and concluded in 2015; other construction is ongoing. To compensate for unavoidable impacts on aquatic resources and ensure no net loss of these resources, the Navy purchased credits from the Hood Canal in-Lieu Fee Program, revegetated laydown areas, funded research studies, and funded improvements to fish hatcheries and beach substrate. In addition, the Navy funded acquisition and preservation of upland habitat at Port Gamble.	X	X	X

Table 4-1: Cumulative Action Evaluation (continued)

Project	Project Description	Project Timeframe		
		Past	Present	Future
USCG Training	The USCG conducts training throughout the Study Area. The District 13 Coast Guard unit is located in the Pacific Northwest along the coasts of Oregon and Washington. District 13 conducts the same operational duties as the units in District 11 and covers more than 460,000 square miles of the Pacific Ocean.	X	X	X
INRMP, NAVBASE Kitsap	The INRMP combined and updated existing individual natural resource management plans for NAVBASE Kitsap properties in Washington State into a comprehensive, coordinated INRMP that is consistent with the military use of the property and would meet the goals and objectives established in the Sikes Act Improvement Act. The INRMP implements an ecosystem-based conservation program.		X	X
Land-Water Interface, NAVBASE Kitsap Bangor	The objective is to provide security upgrades for the Naval Restricted Area by constructing two Land-Water Interface barriers, which would connect both ends of the onshore Restricted Area enclave to the existing floating barriers. The Land-Water Interface barriers would extend from the high-water mark to the terminations of the Port Security Barriers. Construction occurred from August 2016 to August 2018.		X	X
Pleasant Harbor Marina and Golf Resort	The Statesman Group of Companies is upgrading facilities and constructing a new master planned development at Pleasant Harbor south of Brinnon. The project would be located on the west side of Hood Canal approximately 9 mi. southwest of NAVBASE Kitsap Bangor. An existing 300-slip boat marina has been refurbished and resort facilities have been developed including parking lots, retail, and paved roads (Jefferson County Department of Community Development, 2015). The 256-acre development, when complete, would include resort housing, a hotel, a restaurant, a spa, a clubhouse, a 9-hole golf course and 3-hole practice course, and other resort-type facilities.		X	X
Bangor Transit Protection Program Pier and Support Facilities, NAVBASE Kitsap Bangor	This project consists of a new floating pier with finger piers, connected to the shore by a trestle and ramp. Total overwater area is approximately 1.6 acres. On-land facilities would include a new operations and headquarters building with a footprint of 9,000 ft. ² , and parking lots totaling 22,000 ft. ²			X
Construct Magazines, NAVMAG Indian Island	The project is constructing three new magazines and demolishing several existing magazines.			X

Table 4-1: Cumulative Action Evaluation (continued)

Project	Project Description	Project Timeframe		
		Past	Present	Future
EA-18G Growler Airfield Operations	The Navy is continuing and increasing the existing electronic attack squadron (VAQ) operations at NAS Whidbey Island's Ault Field and Outlying Field Coupeville; increase VAQ capabilities and augment the training squadron by adding up to 36 aircraft to support an expanded Department of Defense mission for identifying, tracking, and targeting in a complex electronic warfare environment; construct and renovate facilities at Ault Field to accommodate additional aircraft; and station additional personnel at, and relocate family members to, NAS Whidbey Island and the surrounding community.			X
Electromagnetic Measurement Range, NAVBASE Kitsap Bangor	The proposed Electromagnetic Measurement Range Sensor System equipment project includes installation of sensor equipment, including an underwater instrument array, data/power cables, a pile-supported platform, an in-water navigation aid, and an upland monitoring system.			X
Manchester Fuel Tank Replacement, Manchester Fuel Department.	The Navy is constructing six new 125,000 barrel (5.25 million gallons) aboveground storage tanks that will replace 1940s and 1950s vintage field constructed underground storage tanks (UST). Up to 34 of the existing field constructed USTs will be permanently closed in place by filling with inert material in accordance with Washington State UST Regulations.			X
Marine Structure Maintenance and Pile Replacement Activities, Navy Region Northwest	This project covers repair, maintenance, and replacement of piles during projects at Navy Region Northwest installations for 2019–2023.			X
Port Gamble Dock	The Olympic Property Group has applied for a permit for a dock at a former mill site in Port Gamble. The proposed dock would be 365 ft. (111 m) in length with an area of about 4,800 ft. ² (446 square meters), and would include an abutment, pier, truss, and gangway, as well as a primary float, seaplane float, and kayak launching float. The dock would accommodate up to nine boats.			X
Port Gamble Sewage Treatment Plant	The old treatment plant discharges its effluent into Hood Canal and would be replaced with a new treatment plant that discharges to groundwater through an upland drain field. The new plant would have a membrane bioreactor, a type of filtering system capable of producing effluent close to the quality of drinking water. The new plant would treat up to 100,000 gallons of sewage per day and would be built and operated by Kitsap Public Utility District.			X

Table 4-1: Cumulative Action Evaluation (continued)

Project	Project Description	Project Timeframe		
		Past	Present	Future
Service Pier Extension, NAVBASE Kitsap Bangor	Construction of an extension to the Service Pier (33,000 ft. ²), a new Pier Services and Compressor Building (2,100 ft. ²) on the existing pier, upland Maintenance Support Facility (50,000 ft. ²), and an approximately 420-car parking lot with associated outdoor storage (4,000 ft. ²).			X
Supplement to the NWTT EIS/Overseas EIS (OEIS)	The Supplement to the Final 2015 NWTT EIS/OEIS's Proposed Action is to conduct at-sea training and testing activities within the Study Area. To achieve and maintain military readiness, the Navy proposes to conduct at-sea training and testing activities at levels required to support military readiness requirements beyond 2020; and accommodate evolving mission requirements, including those resulting from the development, testing, and introduction of new vessels, aircraft, and weapons systems into the fleet.			X

Notes: EIS = Environmental Impact Statement

4.3.1 Other Ongoing Activities

4.3.1.1 Coastal and Marine Spatial Planning

Coastal and Marine Spatial Planning is a comprehensive, transparent, adaptive, and science-based process to analyze and allocate the spatial and temporal distribution of human activities in marine areas. In 2009, President Obama signed a memorandum establishing the Interagency Ocean Policy Task Force; in 2010, the task force released a set of final recommendations known as the National Policy for the Stewardship of Our Oceans, Coasts, and Great Lakes. The policy adopted an ecosystem-based approach to management and an overarching framework of regional-scale coastal marine special planning. In the Pacific Northwest, efforts in coastal and marine spatial planning include the creation of the West Coast Governor's Agreement in 2006 to cohesively manage and protect the West Coast's ocean and coastal resources. Specific projects include the updating of the Territorial Sea Plan and the passing of a law in Washington to create a state Marine Spatial Planning plan.

Current projects in Washington State include the Baseline Characterization of Coastal and Ocean Recreational Use Patterns and Mapping Marine Mammals and Identifying Ecologically Important Areas. The Recreational Use Patterns project is being launched by the Surfrider Foundation and is an Internet survey for coastal and ocean recreational users to summarize the intensity with which certain coastal areas are used for recreational activities, and the specific recreational activities they participate in along the Washington coast. The Washington Department of Fish and Wildlife is continuing a forage fish survey along the Washington coast, creating a bird and mammal geodatabase while conducting marine mammal aerial surveys, and using existing data to identify Ecologically Important Areas off of the Washington Coast for the Mapping Project.

4.3.1.2 Coastal Land Development and Tourism

Coastal land development adjacent to the training study area is both intensive and extensive. Development has impacted and continues to impact coastal resources through point and nonpoint source pollution; concentrated recreational use; and intensive ship traffic using major port facilities. Coastal development also includes extensive coastal tourism development (hotels, resorts, restaurants,

food industry, residential homes, etc.) and the infrastructure supporting coastal development (retail businesses, marinas, fishing tackle stores, dive shops, fishing piers, recreational boating harbors, beaches, recreational fishing facilities, etc.). Increased population densities as a result of this development creates a more difficult environment to conduct undetected training. Coastal development intensifies use of coastal resources, resulting in potential impacts on water quality, marine habitat, and air quality. Coastal development is therefore closely regulated by Washington through the Coastal Zone Management Act.

In 2015, visitors to Washington spent \$20.7 billion, which was an increase of 5.4 percent over 2014 (Washington Tourism Alliance, 2016). Washington attracts tourists through water trails, the Cascadia Marine Trail, and other ocean tourism ventures that are based on conservation, environmental impact, visitor management, and community relations and education (Labor, 1999). Rapid expansion of tourism could increase pressure for additional coastal and urban development which would result in potential indirect and cumulative effects on marine resources (Harriott, 2002). The Marine Institute found that the issues relating to tourism included visitor pressures on coastal ecology; carrying capacity; information gap (i.e., insufficient data to assess impacts of tourism); anthropogenic impacts (i.e., displacement of seabirds, habitat and roosting opportunities, conflicts with users and wildlife, altering food sources); threats to ecology; development pressure; infrastructural support; user conflicts; and motorized crafts (Connolly et al., 2001).

4.3.1.3 Commercial and Recreational Fishing

Commercial and recreational fishing constitutes an important and widespread use of the southwestern coast of Washington and Puget Sound. Fishing can adversely affect fish populations, other species, and habitats. Potential impacts of fishing include overfishing of targeted species, bycatch, entanglement, and habitat destruction, all of which negatively affect fish stocks and other marine resources. Bycatch is the capture of fish, marine mammals, sea turtles, seabirds, and other nontargeted species that occur incidentally to normal fishing operations. Use of mobile fishing gear such as bottom trawls disturbs the seafloor and reduces habitat structural complexity. Indirect impacts of trawls include increased turbidity, alteration of surface sediment, removal of prey (leading to declines in predator abundance), removal of predators, ghost fishing (i.e., lost fishing gear continuing to ensnare fish and other marine animals), habitat destruction, and the generation of marine debris. Lost gill nets, purse seines, and long-lines may foul and disrupt bottom habitats and have the potential to entangle or be ingested by marine animals.

4.3.1.4 Maritime Traffic

Portions of the training study area are heavily traveled by commercial, recreational, and government marine vessels, with several commercial ports occurring near the training study area. Several U.S. Navy harbors are located in the Puget Sound: Naval Station Everett, Naval Base (NAVBASE) Kitsap Bremerton, NAVBASE Kitsap Bangor, Naval Undersea Warfare Center Keyport, and Naval Magazine Indian Island. Maritime traffic on the Puget Sound is heavy, many large commercial vessels use the Ports of Everett, Seattle, Tacoma, and others in the area, and they enter and depart Puget Sound each day. Additional traffic on the Sound is created by the frequent runs of large Washington State vehicle and passenger ferries as they cross the Sound on generally east-west traffic routes that are perpendicular to normal inbound and outbound maritime traffic channels. Additionally, many recreational and commercial small craft operate throughout the Puget Sound and adjacent waters.

Ocean shipping is a significant component of the regional economy. Washington State handles 7 percent of the country's exports and 6 percent of its imports. Container vessels made the most calls at the Port of Seattle, accounting for 64 percent, while 28 percent of the calls were by dry-bulk ships. Seattle and Tacoma were ranked 7th and 11th, respectively, among U.S. ports for total cargo imported and exported in 2011. Taken together, these two ports make up the nation's fourth-largest container load center in the United States (American Association of Port Authorities, 2012). The United States has grown increasingly dependent on international trade over the past 50 years. Section 3.1 (Socioeconomics) provides additional information for marine vessel traffic in the training study area. Primary concerns for the cumulative impacts analysis include vessels striking marine mammals and sea turtles, introduction of non-native species through hull fouling and ballast water, and underwater sound from ships and other vessels.

4.3.1.5 Ocean Pollution

Pollution is the introduction of harmful contaminants that are outside the norm for a given ecosystem. Ocean pollution has and will continue to have serious impacts on marine ecosystem. Common ocean pollutants include toxic compounds such as metals, pesticides, and other organic chemicals; excess nutrients from fertilizers and sewage; detergents; oil; plastics; and other solids. Pollutants enter oceans from non-point sources (i.e., storm water runoff from watersheds), point sources (i.e., wastewater treatment plant discharges), other land-based sources (i.e., windblown debris), spills, dumping, vessels, and atmospheric deposition. In the Puget Sound, specific pollution problems include polluted stormwater runoff, fossil fuel transport, agricultural pollution, vessel pollution, marine debris, toxic clean up of historic sites, and wastewater pollution (Puget Soundkeeper, 2018). On the Washington Coast, oil pollution remains a risk as billions of liters of oil are transported off the coast yearly. The most visible impacts of oil pollution are oiled shores and wildlife, but oil spills also result in mortality of a great number of coastal seabirds in the affected area. Pollution and biotoxin levels are monitored for fish and shellfish harvests on the Southwestern Washington Coast (Skewgar & Pearson, 2011).

4.3.1.6 Academic Research

Wide-scale academic research is conducted in the region of influence by federal entities, such as both the Navy and National Oceanic and Atmospheric Administration/National Marine Fisheries Service (NMFS), as well as state and private entities and other partnerships, such as the Northwest Association of Networked Ocean Observing Systems.

Although academic research aims to capture data without disturbing the ambient conditions of the ocean environment, vessels contribute traffic, noise, and strike hazard; seismic activity contributes noise; and various other collection methods, such as trawling, could be disruptive to the ecosystems under observation. Impacts from academic research operations can be similar to the impacts expected from oil and gas air gun survey activities.

4.4 Cumulative Impact Analysis

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

4.4.1 Socioeconomics

4.4.1.1 Description of Geographic Study Area

The region of influence (ROI) for socioeconomics includes the training study area and characteristics of socioeconomic resources found in and around it.

4.4.1.2 Relevant Past, Present, and Future Actions

Actions that may interact with the affected socioeconomic resource areas of the training study area include present and foreseeably future actions such as the Northwest Training and Testing (NWTT) EIS/Overseas EIS (OEIS) and Supplemental EIS/OEIS, Hood Canal In-Lieu Fee Mitigation Program, P-8A Multi-Mission Aircraft and EA-18G Growler home basing, coastal land development and tourism, commercial and recreational fishing, and maritime traffic.

4.4.1.3 Cumulative Impact Analysis

Cumulative socioeconomic impacts from past, present, and future actions within the ROI would be less than significant because training activities that result from the Proposed Action's aggregate impact on socioeconomic resources would not be observably different from existing conditions and impacts would be negligible. When analyzed with present and future actions, impacts to socioeconomics from training activities and temporary duty assignment of a small number of personnel would have negligible impacts on the socioeconomic resources in the ROI. Therefore, implementation of the Proposed Action, combined with the past, present, and reasonably foreseeable future projects, would not result in significant impacts within the ROI.

4.4.2 Cultural Resources

4.4.2.1 Description of Geographic Study Area

The ROI for cultural resources is the Area of Potential Effect, which consists of the terrestrial portions of the training study area and submerged wrecks.

4.4.2.2 Relevant Past, Present, and Future Actions

Actions that are relevant to the cumulative impacts on cultural resources in the ROI include the NWTT EIS/OEIS and Supplemental EIS/OEIS, Waterfront Restricted Area Land-Water Interface at NAVBASE Kitsap Bangor, the Waterfront Restricted Area Service Pier Extension at NAVBASE Kitsap Bangor, the Marine Structure Maintenance and Pile Replacement Activities, and coastal land development and tourism.

4.4.2.3 Cumulative Impact Analysis

Cumulative impacts on cultural resources from past, present, and future actions within the ROI would be less than significant because cultural resources are avoided as standard protocol for all actions in the ROI. The Proposed Action does not involve construction, digging, or other practices that would affect cultural resources. Prior to training commencing, a Secretary of Interior qualified archaeologist will provide cultural sensitivity training to the support staff and trainees. If there was an unintentional discovery of new cultural resources, the Navy would implement its Inadvertent Discovery Plan and reinitiate the Section 106 process. If, in the process of meeting Section 106 procedures, it is determined that the items discovered fall under the Native American Graves Protection and Repatriation Act, then the Navy would follow the necessary procedures to meet its Native American Graves Protection and Repatriation Act responsibilities. Therefore, implementation of the proposed training activities under

the Proposed Action, combined with the past, present, and reasonably foreseeable future projects, would not result in significant impacts within the ROI.

4.4.3 Biological Resources

4.4.3.1 Description of Geographic Study Area

The ROI for biological resources contains both the terrestrial and marine portions of the training study area.

4.4.3.2 Relevant Past, Present, and Future Actions

Actions that are relevant to the cumulative impacts on biological resources in the ROI include NWTT EIS/OEIS and Supplemental EIS/OEIS, which includes U.S. Coast Guard (USCG) activities Swimmer Interdiction Security System EIS, NAVBASE Kitsap Bangor, construction and maintenance projects such as Pile Replacement Activities, Waterfront Restricted Area Land-Water Interface, NAVBASE Kitsap Bangor, Waterfront Restricted Area Service Pier Extension, NAVBASE Kitsap Bangor, homebasing activities such as the Proposed Action for the EA-18G Growler Airfield Operations Environmental Impact Statement, and P-8A MMA Supplemental EIS. Other relevant actions include coastal and marine spatial planning, coastal land development and tourism, commercial and recreational fishing, maritime traffic, and ocean pollution.

4.4.3.3 Cumulative Impact Analysis

Impacts from actions listed in Section 4.4.3.2 (Relevant Past, Present, and Future Actions) on biological resources are discussed in this section. Biological resources analyzed in Section 3.3 (Biological Resources) include terrestrial and aquatic biological resources within the training study area, along with species protected under federal and state regulatory frameworks. Projects that may potentially impact biological resources analyzed in this EA are summarized below. Where appropriate, the Navy is consulting or has consulted on ESA-listed species and critical habitats pursuant to Section 7(a)(2) of the ESA.

The NWTT EIS/OEIS and Supplemental EIS/OEIS covers training and testing activities in the Offshore area of Washington State and Oregon, as well as the Inland Waters in the Puget Sound and activities at the Southeast Alaska Acoustic Measurement Facility in Alaska. These activities are ongoing and proposed to occur into the foreseeable future and include acoustic (i.e., sonar and explosives) and in-water physical disturbance and strike stressors, entanglement stressors, ingestion stressors, and secondary stressors. These stressors could impact biological resources in the ROI. The Navy has consulted and coordinated with NMFS and the U.S. Fish and Wildlife Service regarding the Proposed Action for the EIS/OEIS and Supplemental EIS/OEIS and biological resources. The Navy has a Letter of Authorization and will need to obtain another Letter of Authorization from the NMFS for takes of marine mammals under the Marine Mammal Protection Act (MMPA) as a result of the training and testing activities in the NWTT EIS/OEIS and Supplemental EIS/OEIS. The Navy's standard operating procedures, minimization measures, and mitigation measures resulting from these consultations reduce impacts to biological resources in the ROI to the maximum extent practicable.

USCG training activities contribute vessel noise and could result in collisions with marine mammals and sea turtles. Sonar detection systems could have impacts on marine mammals, including toothed whales and pinnipeds, but only short-term, minor, adverse effects would be expected as the high frequency is not unlike common commercial fish finder systems. As such, the underwater sound from the Proposed Action would not be contributing to the overall sound in the ocean or Puget Sound.

Construction activities associated with the Land-Water Interface, NAVBASE Kitsap Bangor action include in-water and upland construction activities that are anticipated to take two years. No pile driving would be required. This activity could also impact other marine biological resources in the training study area including species that are listed under the ESA. The Service Pier Extension, NAVBASE Kitsap Bangor would also include construction on both the water and the land, including pile driving which would require an Incidental Harassment Authorization under the MMPA.

Under the Marine Structure Maintenance and Pile Replacement Activities Program, the Navy plans to repair or replace structurally unsound piles at various Navy Region Northwest installations over a five-year period beginning in 2018. These activities would require pile driving or removal and the Navy has applied for a letter of authorization under the MMPA.

The homebasing of twelve P-8A MMA squadrons and one fleet replacement squadron at NAS Whidbey Island would have no significant impact to biological resources in the training study area. The homebasing action for the EA-18G Growler Airfield Operations would increase noise in the terrestrial environment. However, these increases would be short-term, intermittent, and would not cause long-term impacts.

Proper siting and design and other mitigation measures would minimize potential impacts on coastal sediment transport processes, marine navigation, commercial shipping, fishing activities, seafloor habitats, marine mammals, sea turtles, areas of special concern, archaeological sites, and U.S. Department of Defense training and exercise activities.

Recreational fishing includes impacts from vessel traffic (strike, noise, water pollution, marine debris) and can compound impacts on fish stocks already experiencing exploitation. Commercial fishing can adversely affect fish populations, non-target species, and habitats. Bycatch includes the unintentional capture of fish, marine mammals, sea turtles, seabirds, and other non-targeted species that occur incidental to normal fishing operations. Primary environmental concerns regarding increased maritime traffic include vessels striking marine mammals and sea turtles, introduction of non-native species through ballast water, and underwater sound from ships and other vessels. Coastal development intensifies use of coastal resources through dune and nearshore habitat loss and disturbance, point and nonpoint source water pollution, entrainment in outflows and other structures, and air quality degradation. Tourism has the potential to impact marine biological resources, for example, collisions between whale watching ships and whales are common.

Training activities, under the Proposed Action, would be in compliance with existing installation management plans that restrict aircraft operations to certain times of year and certain locations. Training activities that would occur on state park lands would be in compliance with state park management plans. These plans identify special conservation and heritage areas where special ecological resources occur (e.g., special plant communities, bald eagle nests, species reintroduction sites). Training would not occur in special conservation and heritage areas identified in state park management plans or sensitive areas identified through coordination with the Washington State Parks Commission. For these reasons, long-term consequences to individuals or populations of wildlife species in the terrestrial environment are not expected to result from the activities. Therefore, there would be no significant impact to terrestrial biological resources including birds and vegetation.

Marine species would likely respond to the physical presence of trainees by temporarily stopping normal activities (e.g., feeding, resting) to move away from the activity. This type of impact is anticipated to be short-term (where normal activities would resume after training events cease or move through the area)

and minor (minor behavioral changes). Potential effects to the species overall would be insignificant, as effects on individuals would be temporary and effects to habitat discountable because of the stealthy nature (i.e., leave no trace) of the training activities. Movement of watercraft in the training area of Puget Sound could possibly disturb listed marine mammals and fish, but that is not likely due to the short lengths of the trainings and the low disturbance of the training watercraft relative to other watercraft disturbances in the vicinity.

Because of the low impact nature of Naval Surface Warfare Center training activities, would not cause a measureable impact to the biological resources when added to the other projects discussed in this section. For that reason, Naval Surface Warfare Center proposed training activities would not cumulatively add to the overall impact on species and habitats within the training study area.

Cumulative biological resource impacts from past, present, and future actions within the ROI would be less than significant because of the reasons stated in the paragraphs above. Therefore, implementation of the Proposed Action, combined with the past, present, and reasonably foreseeable future projects, would not result in significant impacts within the ROI.

Cumulative biological resource impacts that would occur with implementation of the alternatives include a “may affect” determination for the ESA-listed Southern Resident killer whale Evolutionary Significant Unit (ESU), humpback whales, leatherback sea turtle, Bull trout, Chinook salmon (Puget Sound Chinook Salmon ESU), Chum salmon (Hood-Canal Summer Run Chum Salmon ESU), Pacific eulachon, Puget Sound/Georgia Basin Distinct Population Segment bocaccio and yelloweye rockfishes, Green sturgeon, marbled murrelet and the western snowy plover. The Navy consulted with U.S. Fish and Wildlife Service and NMFS informally, pursuant with section 7 (a)(2) of the ESA for ESA-listed species. The Navy agreed to train outside the western snowy plover and streaked horn lark nesting season at Leadbetter Point and Grayland Beach State Parks. Training at these two state parks would occur between September 15th and March 15th.

4.4.4 Public Health and Safety

4.4.4.1 Description of Geographic Study Area

The public health and safety ROI contains the training study area.

4.4.4.2 Relevant Past, Present, and Future Actions

Past, present, and reasonably foreseeable future actions that could add to impacts on public health and safety are those actions that contribute further to maritime traffic. Recreational and commercial fishing activities, Northwest Training and Testing EIS/OEIS and Supplemental EIS/OEIS, the Swimmer Interdiction Security System at Naval Base Kitsap Bangor, and USCG Training activities would increase the number of vessels in the water, which would increase the chance of hazardous spills or discharges. No current or foreseeable projects would require the use of local police for traffic control and therefore would not cumulatively impact emergency services.

4.4.4.3 Cumulative Impact Analysis

Cumulative public health and safety impacts from past, present, and future actions within the ROI would be less than significant because increases in vessel traffic associated with the proposed training activities under the Proposed Action are negligible and any spills or discharges that take place during training events would be cleaned up in accordance with Navy protocols. Activities are coordinated with local and tribal law enforcement, park rangers, and property owners. All training events would be conducted in accordance with military training procedures, approved standard operating procedures, and protective

measures, including Chief of Naval Operations Instruction 5100.23G, *Navy Safety and Occupational Health Program Manual* (2011) and Federal Aviation Administration safety regulations when UAS or when naval special operations training activities are conducted in conjunction with other Department of Defense service aircraft assets. To further maintain safety during training activities, the Navy would coordinate with USCG to inform mariners on safety of navigation. Therefore, implementation of the Proposed Action, combined with the past, present, and reasonably foreseeable future projects, would not result in significant impacts within the ROI.

4.4.5 Noise

4.4.5.1 Description of Geographic Study Area

The noise ROI is the training study area and contiguous nearshore waters. This area encompasses a broad spectrum of populations and landownership types, including private lands, public parks, harbors, golf courses, and recreation areas. Commercial, institutional, recreational, and military activities take place simultaneously within this area.

4.4.5.2 Relevant Past, Present, and Future Actions

Actions that may interact with the affected noise areas of the training study area include present and future activities such as the Northwest Training and Testing EIS/OEIS and Supplemental EIS/OEIS, EA-18G Growler Airfield Operations, USCG Training, the Marine Structure Maintenance and Pile Replacement Activities, the P-8A Multi-Mission Aircraft, and Maritime Traffic.

4.4.5.3 Cumulative Impact Analysis

There are sensitive receptors, including schools and churches, throughout the training study area. Generally, training activities would occur away from areas where people are congregating or have concentrations of people in nearshore areas and on public or federal lands, in natural settings. Cumulative noise impacts from past, present, and future actions within the ROI would be less than significant because the primary purpose of training activities would be to remain undetected and be silent or quiet as possible as to avoid detection. Therefore, implementation of the Proposed Action, combined with the past, present, and reasonably foreseeable future projects, would not result in significant noise impacts within the ROI.

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5 Other Considerations Required by NEPA

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

In accordance with 40 Code of Federal Regulations section 1502.16(c), analysis of environmental consequences shall include discussion of possible conflicts between the Proposed Action and the objectives of federal, regional, state and local land use plans, policies, and controls. Table 5-1 identifies the principal federal and state laws and regulations that are applicable to the Proposed Action, and describes briefly how compliance with these laws and regulations would be accomplished.

Table 5-1: Executive Orders and Principal Federal and State Laws Applicable to the Proposed Action

Federal and State Laws, Regulations, and Policies and Executive Orders	Status of Compliance
National Environmental Policy Act (NEPA) (42 U.S.C. section 4321 et seq.); Council on Environmental Quality (CEQ) NEPA implementing regulations (40 CFR parts 1500-1508); Navy procedures for Implementing NEPA (32 CFR part 775)	This Environmental Assessment (EA) was prepared in accordance with NEPA, CEQ regulations implementing NEPA, and Navy NEPA procedures. Public participation and review were conducted in compliance with NEPA. See Section 1.7 (Public and Agency Participation and Intergovernmental Coordination).
Antiquities Act (16 U.S.C. sections 431–433)	In accordance with Navy procedures, the Proposed Action is consistent with the Act’s objectives for protection of archaeological and historical sites and objects, preservation of cultural resources, and the public’s access to them. On April 26, 2017, Executive Order (EO) 13792, <i>Review of Designations Under the Antiquities Act</i> , was issued and directed the Secretary of the Interior to review designations of national monuments made since 1996. See Section 3.2 (Cultural Resources) for the assessment.
Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668 et seq.)	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 BGEPA. The BGEPA is discussed in detail in regards to the Proposed Action in Section 3.3 (Biological Resources). During nesting season, training will not occur within 330 feet of known eagle nest sites.
Clean Air Act (CAA) (42 U.S.C. section 7401 et seq.); CAA General Conformity Rule (40 CFR section 93[B]); State Implementation Plan (SIP)	All emissions are mobile sources and the emissions would be highly dispersed across the regions. All areas are in attainment. No permits or conformity determinations are required.
Clean Water Act (CWA) (33 U.S.C. 1251 et seq.)	The Proposed Action does not require a permit pursuant to sections 401, 402, or 404 of the Clean Water Act, as the Proposed Action does not include construction or demolition activities.
Rivers and Harbors Act (33 U.S.C. section 407)	No permit is required under the Rivers and Harbors Act as no construction in navigable waterways is proposed.
Coastal Zone Management Act (16 U.S.C. section 1451 et seq.)	On August, 13, 2018, the Navy submitted a consistency determination to the Washington State Department of Ecology in compliance with the Coastal Zone Management Act. On September 28, 2018, Washington State Department of Ecology concurred with the Navy’s consistency determination (Appendix B)

Table 5-1: Executive Orders and Principal Federal and State Laws Applicable to the Proposed Action (continued)

Federal and State Laws, Regulations, and Policies and Executive Orders	Status of Compliance
National Historic Preservation Act (54 U.S.C. section 306108 et seq.)	The Proposed Action is consistent with the national policy for the preservation of historic sites, buildings, and objects of national significance. The Navy initiated the Section 106 consultation process with the ACHP, WA SHPO, tribes, and key stakeholders in April 2017. See Appendix B (Correspondence for Naval Special Operations Training in Western Washington State) for correspondence between the Navy, ACHP, WA SHPO, tribes, and key stakeholders. Consultation concluded on July 23, 2019. See Section 5.1.3 below for more detailed information.
Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 et seq.)	In the event human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered, the Navy would consult with Native American organizations.
State of Washington Cultural Resource Laws <ul style="list-style-type: none"> • Indian Graves and Records (RCW 27.44) • Archaeological Sites and Resources (RCW 27.53) • Abandoned and Historic Cemeteries and Historic Graves (RCW 68.60) • Archaeological Site Public Disclosure Exemption (RCW 42.56.300) • Discovery of Human Remains (RCW 68.50) 	Cultural resources may also be covered by state, local, and territorial laws. These types of cultural resources are considered as part of a NEPA assessment. As a result of the Navy’s NPHA Section 106 consultation, an Inadvertent Discovery Plan (IDP) was created. The Navy will incorporate the State’s IDP procedures on non-federal/tribal lands during each training block in accordance with the applicable state law.
Endangered Species Act (16 U.S.C. section 1531 et seq.)	In accordance with Section 7 of the ESA, the Navy prepared a Biological Assessment (see Appendix A). The analysis indicated the Preferred Alternative may affect, but is not likely to adversely affect ESA listed species. The Navy concluded that there are no effects to ESA critical habitats that overlap the training study area (see Section 3.3, Biological Resources and Appendix A). On May 11, 2018, the Navy initiated informal consultation with NMFS regarding potential effects of the Preferred Alternative. On October 2, 2018 NMFS concurred the Preferred Alternative may affect, not likely to adversely affect ESA species or their critical habitat designations (Appendix B). On May 11, 2018, the Navy also initiated informal consultation with USFWS. The Navy agreed to train at Leadbetter Point and Grayland Beach State Parks between September 15 and March 15, which is outside the nesting season for the western snowy plover and the streaked horned lark. On November 28, 2018, USFWS concurred with the Navy’s may affect, not likely to adversely affect determination for ESA species and critical habitat (Appendix B).
Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (16 U.S.C. section 1801 et seq.)	The Navy concluded the Preferred Alternative would not adversely affect EFH. NMFS concurred with the Navy in their October 2018 letter. For more information, see Section 3.3 (Biological Resources), Appendix A, and Appendix B.

Table 5-1: Executive Orders and Principal Federal and State Laws Applicable to the Proposed Action (continued)

Federal and State Laws, Regulations, and Policies and Executive Orders	Status of Compliance
Marine Mammal Protection Act (MMPA) (16 U.S.C. section 1361 et seq.)	The Proposed Action is not expected to result in injury or harassment of any marine mammal as defined by the MMPA.
Migratory Bird Treaty Act (16 U.S.C. section 703–712)	The Proposed Action is not anticipated to result in adverse effects on migratory bird populations and would be in compliance with the MBTA.
Comprehensive Environmental Response and Liability Act (CERCLA) (42 U.S.C. section 9601 et seq.)	There are CERCLA sites within the training study area, both on and off Navy property. The Navy is not disturbing sites where the contamination is and the Navy will abide by the land use restrictions that apply to off-base sites. For on-base sites, the Navy is allowed to walk across the sites but will not be digging. The Navy would report any spill or release of hazardous substance of a quantity equal to or greater than the reportable quantity.
Farmland Protection Policy Act (7 U.S.C. sections 4201–4209)	No impacts on farmlands would occur as a result of the implementation of the Proposed Action because no farmland would be irreversibly converted to non-agricultural uses.
Submerged Lands Act of 1953 (43 U.S.C. sections 1301–1315)	The Proposed Action is consistent with regulations concerning the Submerged Lands Act.
Sunken Military Craft Act (Public Law 108–375, 10 U.S.C. section 113 Note and 118 Stat. 2094–2098)	The Sunken Military Craft Act does not apply to actions taken by, or at the direction of, the United States. See Section 3.2 (Cultural Resources) for the assessment.
EO 12088, <i>Federal Compliance with Pollution Control Standards</i>	All necessary actions would be taken for the prevention, control, and abatement of environmental pollution.
EO 12898, <i>Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations</i>	The Proposed Action would not result in any disproportionately high and adverse human health or environmental effects on minority or low-income populations.
EO 13045, <i>Protection of Children from Environmental Health Risks and Safety Risks</i>	The Proposed Action would not result in environmental health risks and safety risks that may disproportionately affect children.
EO 13175, <i>Consultation and Coordination with Indian Tribal Governments</i>	The Navy provided early notification and solicited input from sixteen Tribes that have usual and accustomed fishing grounds and stations in the training study area. See Section 5.1.2 (American Indian Traditional Resources) and Appendix B (Correspondence for Naval Special Operations Training in Western Washington State) for more information.
Executive Order 13783, <i>On Promoting Energy Independence and Economic Growth</i>	The Proposed Action is consistent with the policy and immediate review of all agency actions that potentially burden the safe, efficient development of domestic energy resources. This Executive Order revokes Executive Order 13653, <i>Preparing the United States for the Impacts of Climate Change</i> .

Notes: ACHP = Advisory Council on Historic Preservation, BGEPA = Bald and Gold Eagle Protection Act, CEQ = Council on Environmental Quality, CFR = Code of Federal Regulations, EA = Environmental Assessment, EO = Executive Order, EFH= Essential Fish Habitat, ESA = Endangered Species Act, MBTA = Migratory Bird Treaty Act, NEPA = National Environmental Policy Act, NHPA = National Historic Preservation Act, NMFS = National Marine Fisheries Service, RCW = Revised Code of Washington, USFWS = U.S. Fish and Wildlife Service, U.S.C. = United States Code, WA SHPO = Washington State Historic Preservation Office

5.1.1 Coastal Zone Management Act

Through the Coastal Zone Management Act of 1972 (CZMA), Congress established national policy to preserve, protect, develop, restore, or enhance resources in the coastal zone. This Act encourages coastal states to properly manage use of their coasts and coastal resources, prepare and implement coastal management programs, and provide for public and governmental participation in decisions affecting the coastal zone. To this end, CZMA imparts an obligation upon federal agencies whose actions or activities affect any land or water use or natural resource of the coastal zone to be carried out in a manner consistent to the maximum extent practicable with the enforceable policies of federally approved state coastal management programs. However, Federal lands, which are “lands the use of which is by law subject solely to the discretion of the Federal Government, its officers, or agents,” are statutorily excluded from the State's “coastal uses or resources.” If, however, the proposed federal activity affects coastal uses or resources beyond the boundaries of the federal property (i.e., has spillover effects), the CZMA Section 307 federal consistency requirement applies. The Navy submitted a CZMA Consistency Determination to the Washington State Department of Ecology in compliance with the CZMA in August of 2018. In September of 2018, the Washington State Department of Ecology responded with a letter, concurring with the Navy’s determination that the proposed work is consistent with Washington’s Coastal Zone Management Program (See Appendix B, Section B.5, Navy CZMA Determination Correspondence).

5.1.2 American Indian Traditional Resources

On October 21, 1998, the Department of Defense (DoD) promulgated its American Indian and Alaska Native Policy, emphasizing the importance of respecting and consulting with tribal governments on a government-to-government basis (explanatory text was added on November 21, 1999). The policy requires an assessment, through consultation, of the effects of proposed DoD actions that may have the potential to significantly affect protected tribal resources, tribal rights, and Indian Lands before decisions are made by the DoD services.

In 2005, the Navy updated its policy for consultation with federally recognized Indian tribes. Secretary of the Navy Instruction 11010, Department of the Navy Policy for Consultation with Federally Recognized Indian Tribes, implements DoD policy within the Department of the Navy and encourages ongoing consultation. Subsequent updates to Secretary of the Navy Instruction 5090.8a (Policy for Environmental Protection, Natural Resources, and Cultural Resources Programs, 2006) also mandates American Indian and Alaska Native tribal consultation.

In 2009, Commander, Navy Region Northwest issued its Policy for Consultation with Federally Recognized American Indian and Alaska Native Tribes (Instruction 11010.14 of November 10, 2009) which sets forth policy, procedures, and responsibilities for consultations with federally recognized American Indian and Alaska Native tribes in the Navy Region Northwest area of responsibility. The goal of the policy is to establish permanent working relationships built upon respect, trust, and openness with tribal governments.

Under these policies, the Navy is required to consider tribal comments and concerns prior to making a final Navy decision on a proposed action. However, reaching formal agreement with a tribe or obtaining tribal approval prior to a Navy final decision is not required.

In accordance with DoD policy and Navy instructions, the Navy invites government-to-government consultation with federally recognized tribal governments when a proposed action may have the potential to significantly affect tribal rights, protected tribal resources, or Indian lands. The Navy's

analysis is that the Proposed Action would not have the potential to significantly affect tribal rights, protected tribal resources or Indian Lands. The Proposed Action would not have the potential to significantly affect tribal rights, protected tribal resources or Indians lands. The Proposed Action would have no effect on protected tribal resources because it would not impede access to adjudicated treaty usual and accustomed fishing grounds and stations in co-use marine waterways, it would not impede access to tribal hunting rights areas, and it would not reduce or degrade harvestable marine resources. Training activities are localized, infrequent in nature, and brief in duration. Therefore, no significant impacts on American Indian traditional resources would occur with implementation of any of the alternatives.

On April 12, 2017, the Navy, on behalf of the Naval Special Warfare Command, provided early notification and solicited input from 16 federally recognized Tribes that have usual and accustomed fishing grounds and stations in the training study area (see Appendix B, Correspondence for Naval Special Operations Training in Western Washington State, for tribal correspondence to date). The Tribes in alphabetical order are: Jamestown S’Klallam Tribe, Lower Elwha Tribal Community, Muckleshoot Indian Tribe, Nisqually Indian Tribe, Nooksack Indian Tribe, Port Gamble S’Klallam Tribe, Puyallup Tribe of the Puyallup Reservation, Samish Indian Nation, Shoalwater Bay Indian Tribe of the Shoalwater Bay Indian Reservation (Shoalwater Bay Tribe), Skokomish Indian Tribe, Snoqualmie Indian Tribe, Squaxin Island Tribe of the Squaxin Indian Reservation (Squaxin Island Tribe), Stillaguamish Tribe of Indians of Washington, Suquamish Indian Tribe of the Port Madison Reservation (Suquamish Tribe), Swinomish Indian Tribal Community, and the Tulalip Tribes of Washington. On January 22, 2018, the Navy provided the Draft Environmental Assessment to these same tribes. Additionally, the Navy has provided information about the Proposed Action to three Tribal Leaders and staff upon request through the government-to-government process: Jamestown S’Klallam Tribe, Port Gamble S’Klallam Tribe, and the Suquamish Tribe.

On July 25, 2019, the Navy received a government-to-government request from the Jamestown S’Klallam. On August 27, 2019, a staff level meeting occurred. At the conclusion of the meeting, it was mutually determined formal government-to-government consultation was unnecessary.

The Navy had a staff level meeting with the Port Gamble S’Klallam Tribe at their request on January 11, 2018. It was mutually determined at the meeting that formal government-to-government meeting was unnecessary.

The Navy had a staff level meeting with the Suquamish Tribe at their request on July 12, 2017. On February 21, 2018, the tribe requested formal government-to-government consultation, which occurred on March 15, 2018. A follow-up staff level meeting occurred on September 18, 2019. It was mutually determined at the meeting that another formal government-to-government meeting was unnecessary.

5.1.3 National Historic Preservation Act Section 106 Compliance

The Navy initiated the National Historic Preservation Act (NHPA) Section 106 process on April 24, 2017. Letters were sent to the Advisory Council on Historic Preservation (ACHP), Washington State Historic Preservation Officer (WA SHPO), 25 tribes whose traditional territory covered the proposed area of potential effect (APE), and 33 interested parties consisting of historic societies, museums, Certified Local Governments, and governments within or directly adjacent to the proposed APE (Appendix B). In addition to the 16 tribes mentioned in Section 5.1.2 (American Indian Traditional Resources), the following six federally recognized tribes were included in the NHPA Section 106 process: Confederated Tribes and Bands of the Yakama Nation, Confederated Tribes of the Chehalis Reservation, Cowlitz Indian Tribe, Hoh Indian Tribe, Quinault Indian Nation, and Upper Skagit Indian Tribe. Three non-federally

recognized tribes were also included: Chinook Indian Nation, Clatsop-Nehalem Confederated Tribes, and the Confederated Tribes of Grand Ronde Community of Oregon. Below is a summary and chronology of NHPA Section 106 process:

- 9 Nov 2015 Navy call to Deputy WA SHPO to discuss proposed types of training and define which types meet the definition of an undertaking.
- Apr 2016–2017 Navy invites WA SHPO and Department of Archaeology and Historic Preservation staff to attend equipment demonstrations and discuss details of training five times during this period. One meeting was cancelled due to weather. DAHP unable to attend the other offerings.
- 24 Apr 2017 Navy sends letters initiating consultation to WA SHPO, ACHP, tribes, and interested parties. In addition, e-mails and telephone calls to 25 Tribes (whose traditional territory covered the proposed area of potential effect [APE]). Thirty-three interested parties also receiving initiating consultation letters (historic societies, museums, Certified Local Governments, and governments within or directly adjacent to the proposed APE
- 2–4 May 2017 Early outreach meetings were held on May 2, 3, and 4, 2017, in Poulsbo, Port Townsend and Oak Harbor, Washington. These meetings included a NHPA Section 106 Consultation Process poster and the Navy’s historic architect was present to answer any questions from the public on the topic. In the Section 106 Process timeline, the poster indicated the Navy was at initiating Section 106. This was part of the NHPA Section 106 public process.
- 9 May 2017 WA SHPO letter replying they look forward to consultation
- 26 May 2017 ACHP letter replying they will not be actively participating
- Apr/May 2017 Lower Elwha Tribal Community, Nisqually Indian Tribe, and the Skokomish Indian Tribe expressed interest. Nisqually Indian Tribe requested Navy remove McNeil Island from consideration. Upon further discussion with Nisqually Indian Tribe, only the area around the closed prison site was included in APE. One response from interested party unrelated to undertaking.
- 22 Jan 2018 Navy letters defining of APE sent to WA SHPO, tribes, and interested parties and letters, emails, and phone calls to each tribe. No response from Interested Parties.
- 29 Jan 2018 Shoalwater Bay Tribe agrees with APE and requests IDP and Upper Skagit Indian Tribe agree with APE.
- 30 Jan 2018 Snoqualmie Indian Tribe and Squaxin Island Tribe agree with APE.
- 31 Jan 2018 Lower Elwha Tribal Community, Muckleshoot Indian Tribe, and Port Gamble S’Klallam Tribe agree with APE.
- 6–8 Feb 2018 Three public meetings were held from February 6, 2018, through February 8, 2018, in Poulsbo, Port Townsend, WA; and Oak Harbor, Washington. Each public meeting included informational poster stations and a video station staffed by Naval Special Warfare Command staff and Navy representatives. These meetings included a NHPA Section 106 Consultation Process poster and the Navy’s historic architect was present to answer any questions from the public on the topic. In the Section 106 process timeline, the poster indicated the Navy was identifying historic properties. Newspaper

	advertisements included information about the NHPA Section 106 consultations regarding potential effects of the Proposed Action on historic properties. This was part of the NHPA Section 106 public process.
8 Feb 2018	WA SHPO letter conveying agreement with APE
28 Feb 2018	Navy letter defining “reasonable and good faith” effort on identifying historic properties sent to WA SHPO and interested parties. Tribal consultation in form of letter followed by email and telephone calls to each tribe.
28 Mar 2018	WA SHPO letter response providing additional interested parties to be included in consultation
3 Apr 2018	Jamestown S’Klallam Tribe provides information on resources of concern in their territory requested development of an IDP.
4 Apr 2018	Shoalwater Bay Tribe also request development of an IDP.
Apr–Jun 2018	Requests from Muckleshoot Indian Tribe and Squaxin Island Tribe to review IDP (dates or if conveyed by email or via phone call undetermined, but both received prior to Navy email transmitting IPD to four tribes who made requests on June 20, 2018).
14 Jun 2018	Navy letter to WA SHPO determining National Register of Historic Places (NRHP) eligibility of previously un-evaluated buildings
5 July 2018	WA SHPO letter concurring with determination building are not eligible for listing in the NRHP
22 Oct 2018	Navy submits letter dated October 18, 2018 to WA SHPO with finding of No Adverse Effect with two conditions (sensitivity training and implementation of an inadvertent discovery plan) and request for concurrence. Letter copied to tribes and interested parties with follow up emails and telephone calls to each tribe. No response from Interested Parties.
29 Oct 2018	The Lower Elwha Tribal Community responds but had no comment on the finding of effect
20 Nov 2018	The Confederated Tribes of the Grand Ronde Community of Oregon responds but also with no comment
20 Nov 2018	WA SHPO response letter requesting further information including (1) maps of proposed training areas, (2) protocols to avoid damaging all cultural resource types, (3) proof of Secretary of the Interior (Sol) Qualifications of NAVFAC NW staff archaeologists, and (4) cultural resources sensitivity training materials.
19 Dec 2018	Navy letter to WA SHPO providing requested information and repeating request for concurrence with the Navy’s finding of effect determination
15 Jan 2019	WA SHPO letter acknowledging Navy’s adequate documentation and request Navy enter into a programmatic agreement to include (1) a process for new locations in future (when a new undertaking/expansion of APE), (2) assurance Sol qualified staff review all proposed training activities/area, and (3) details of a notification process to WA SHPO when review/clearance complete.

- 26 Feb 2019 Navy letter stating position that a ‘concise’ Programmatic Agreement is unnecessary and the Navy is already committing to five measures: (1) new undertakings or expansion of the APE already necessitate reopening consultation, (2) Sol qualified staff review of proposed properties prior to pursuit of real estate agreements for training, (3) implementation of the approved IDP, (4) cultural resources sensitivity training, and (5) periodic affirmation/confirmation to WA SHPOs that the Sol reviews were being completed. Letter included third request for concurrence with Navy’s finding of effect determination.
- 28 Mar 2019 WA SHPO letter requesting Navy enter into a memorandum of agreement (MOA) capturing the five measures.
- 15 Apr 2019 Navy letter reiterating any form of agreement document is unnecessary and requested for the fourth time that WA SHPO respond with agreement or disagreement regarding the Navy’s finding of effect determination in writing
- 25 Apr 2019 WA SHPO letter reiterating an MOA is necessary to codify the agreement and five measures and requesting a draft MOA for review at Navy’s earliest convenience and copies of correspondence received from affected tribes
- 3 July 2019 In accordance with 36 CFR 800.5(c)(2)(i), Navy requested ACHP to review its finding of No Adverse Effect with the following five measures agreed upon by the Navy to ensure no historic properties are adversely affected:
- 1) reopen consultation per 36 CFR 800.5(d) if necessitated by a change in the undertaking;
 - 2) ensure a Secretary of Interior (Sol) qualified archaeologist reviews new and renewed real estate agreements for new information such as the presence of eroding archaeological deposits or features;
 - 3) implement the Inadvertent Discovery Plan;
 - 4) ensure a Sol qualified archaeologist provides sensitivity training prior to the start of each training block; and
 - 5) Navy’s Sol qualified archaeologist would periodically confirm to WA SHPO staff that adverse effects are being avoided.
- The letter included a chronology of consultation and key correspondence. Copies of the letter were sent to WA SHPO and the following 11 tribes that actively consulted with the Navy during the NHPA Section 106 process: Confederated Tribes of the Grand Ronde Community of Oregon, Jamestown S’Klallam Tribe, Lower Elwha Tribal Community, Muckleshoot Indian Tribe, Nisqually Indian Tribe, Port Gamble S’Klallam Tribe, Shoalwater Bay Tribe, Skokomish Indian Tribe, Squaxin Island Tribe, Suquamish Tribe, and Upper Skagit Indian Tribe.
- 8 July 2019 ACHP sent a letter acknowledging receipt of the Navy’s request. Per 36 CFR 800.5(c)(3)(i), ACHP has “15 days of receiving the documented finding from the agency official. The Council at its discretion may extend that time period for 15-days. If the Council does not respond within the applicable time period, the agency official’s responsibilities under Section 106 are fulfilled”.

- 19 July 2019 Jamestown S’Klallam Tribal Historic Preservation Officer (THPO) sent an email to the Navy requesting where in the pre-training event review process will the Tribes be consulted since many sensitive tribal coastal sites not recorded in any database or Washington State’s WISAARD. The email was copied to WA SHPO and other tribes.
- 19 July 2019 WA SHPO forwarded Jamestown S’Klallam email and stated that it does not appear tribal consultations are completed and she cannot concur with the Navy’s determination. Email was copied to tribes, ACHP, and policy advisor to Washington Governor.
- 19 July 2019 Deputy WA SHPO sends email to Navy, ACHP, and tribes with a letter for WA SHPO. Letter stated based on the email from the Jamestown S’Klallam THPO it appeared the tribal consultations remain incomplete and she does not concur with the Navy’s determination of No Adverse Effect. ACHP and the Jamestown S’Klallam THPO were copied on the letter.
- 19 July 2019 Squaxin Island THPO sends email to WA SHPO and the Navy stating she concurs with WA SHPO and she wishes to be involved in future consultation.
- 23 July 2019 ACHP timeframe expires. ACHP did not contact the Navy for clarification regarding the letters received on July 19. ACHP did not ask for an extension of time. Per 36 CFR 800.5(c)(3)(i), the Navy’s responsibilities under Section 106 are fulfilled.

As stated under section 5.1.2 (American Indian Traditional Resources) on July 25, 2019, the Navy received a government-to-government request from the Jamestown S’Klallam. On August 27, 2019, a staff level meeting occurred. At the conclusion of the meeting, it was mutually determined formal government-to-government consultation was unnecessary.

Upon completion of the environmental document and final decision, the Navy will implement the five measures listed above. There would be no significant impacts to NHPA.

5.2 Irreversible or Irretrievable Commitments of Resources

Resources that are irreversibly or irretrievably committed to a project are those that are used on a long-term or permanent basis. This includes the use of non-renewable resources such as metal and fuel, and natural or cultural resources. These resources are irretrievable in that they would be used for this project when they could have been used for other purposes. Human labor is also considered an irretrievable resource. Another impact that falls under this category is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

For the Proposed Action, most resource commitments would be neither irreversible nor irretrievable. Most impacts are short term and temporary, or long lasting but negligible. Since there would be no building or facility construction, the consumption of materials typically associated with construction (e.g., concrete, metal, sand) would not occur. Energy usage typically associated with construction activities would not be expended and irreversibly lost. However, fuel expended by vehicles, vessels, and aircraft during training activities would be irreversibly lost.

The Proposed Action would not result in loss of habitat for plants or animals. The Proposed Action may affect, but is not likely to adversely affect, threatened or endangered species. The intent of the proposed training is to build trainees skills, experience, and confidence by challenging them in a location with dynamic weather and land/cold-water conditions. As part of the rigorous training, the trainees

learn skills needed to avoid detection along with the goal of leaving no trace of their presence during or after training activities, which diminishes the likelihood of any physical disturbance to biological resources. This would also be true for cultural resources. Proposed training activities do not change any tribe's access to Traditional Cultural Properties. Nor do they reduce or degrade harvestable terrestrial or marine resources. Therefore, there would be no significant impacts on protected tribal resources from implementation of the Proposed Action. Moreover, there would be no changes in land use within the training study area.

The amount of materials required for any training-related activities and energy used during the Proposed Action would be small. Although the proposed activities would result in some irreversible or irretrievable commitment of resources such as various metallic materials, minerals, and labor, this commitment of resources is not significantly different from that necessary for many other Navy training activities carried out over the past several years. Proposed activities would not commit natural resources in significant quantities.

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

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

In the short term, effects to the human environment with implementation of the proposed training activities under the Proposed Action would be minimal. Naval special operations training activities under the Proposed Action would be consistent with the existing land use of the area for federal, state, and private lands, with trainees swimming in the water, moving across the beach, and walking on and off trails. The Proposed Action does not include construction on undeveloped lands or permanent ground-disturbing activities over an undisturbed area. In addition, as part of the rigorous training, the trainees learn skills needed to avoid detection along with the goal of leaving no trace of their presence during or after training activities. Implementation of the Proposed Action would result in less than significant impacts on sensitive resources. Thus, the Proposed Action would not significantly impact the short-term and long-term natural resource productivity of the area. The Proposed Action would not result in any impacts that would significantly reduce environmental productivity or permanently narrow the range of beneficial uses of the environment.

6 REFERENCES

1 Purpose and Need for the Proposed Action

There are no references in this chapter.

2 Description of Proposed Action and Alternatives

National Oceanic and Atmospheric Administration. (1993). *Olympic Coast National Marine Sanctuary Final Environmental Impact Statement/Management Plan*. Washington, DC: NOAA, Sanctuaries and Reserves Division.

U.S. Department of the Navy. (2001). *Dabob Bay Range Complex Operations and Management Plan*. Poulsbo, WA: Naval Facilities Engineering Command.

U.S. Department of the Navy. (2002). *Environmental Assessment for Ongoing and Future Operations at U.S. Navy Dabob Bay and Hood Canal Military Operating Areas. NUWC Keyport, Washington*. Poulsbo, WA: Naval Facilities Engineering Command.

U.S. Department of the Navy. (2003). *Environmental Assessment for the Autonomous Underwater Vehicle (AUV) Test at Keyport Range, WA*. Poulsbo, WA: Engineering Field Activity, Northwest, Naval Facilities Engineering Command.

U.S. Department of the Navy. (2011). *Navy Safety and Occupational Health Program Manual*. (OPNAVINST 5100.23G CH-1). Washington, DC: U.S. Department of the Navy.

3 Affected Environment and Environmental Consequences

There are no references in this chapter.

3.1 Socioeconomics

Bassett, C., B. Polagye, M. Holt, and J. Thomson. (2012). A vessel noise budget for Admiralty Inlet, Puget Sound, Washington (USA). *The Journal of the Acoustical Society of America*, 132(6), 3706–3719.

Dean Runyan Associates. (2015). *Washington State County Travel Impacts & Visitor Volume 1991–2014P* (Prepared for Washington Tourism Alliance). Portland, OR: Dean Runyan Associates.

Kraig, E., and S. Smith. (2011). *Washington State Sport Catch Report 2004*. Olympia, WA: Washington Department of Fish and Wildlife, Fish Program Science Division.

National Marine Fisheries Service. (2009). *Fishing Communities of the United States 2006 Economics and Sociocultural Status and Trends Series*. (NOAA Technical Memorandum NMFS-F/SPO-98). Silver Spring, MD: National Oceanic and Atmospheric Administration. Retrieved from <http://www.st.nmfs.noaa.gov/st5/publication/index.html>.

Pacific Fishery Management Council. (2017). *Who We Are and What We Do*. Retrieved from <http://www.pcouncil.org/>.

U.S. Department of the Navy. (2010). *Northwest Training Range Complex Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS)*. Silverdale, WA: Naval Facilities Engineering Command, Northwest.

U.S. Department of the Navy. (2015). *Northwest Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement, Final*. Silverdale, WA: Naval Facilities Engineering Command, Northwest.

- Washington Department of Ecology. (2012). *Puget Sound*. Retrieved from <http://www.ecy.wa.gov/>.
- Washington Department of Fish and Wildlife. (2012). *Fisheries for Puget Sound chum salmon*. Retrieved from <http://wdfw.wa.gov/fishing/salmon/chum/pugetsound/fishery.htm>.
- Washington Department of Fish and Wildlife. (2017). *Fishing & Shellfishing*. Retrieved from http://wdfw.wa.gov/fishing/washington/marine_areas.html.
- Washington State Department of Commerce. (2012). *Marine Technology*. Retrieved from www.choosewashington.com/industries/marine/pages/default.aspx.
- Washington State Department of Transportation. (2017). *Marine Freight*. Retrieved from <https://www.wsdot.wa.gov/Freight/Marine.htm>.
- Washington State Parks. (2017). *Recreation Activities and Pass/Permit Information*. Retrieved from <http://parks.state.wa.us>.
- Washington Tourism Alliance. (2017). *About the Washington Tourism Alliance*. Retrieved from <http://watourismalliance.com/>.
- Washington Water Trail Association. (2017). *Washington Water Trails Association Website and Maps*. Retrieved from <https://www.wwta.org/home/>.

3.2 Cultural Resources

- Caldbrick, J. (2010). *Bremerton – Thumbnail History*. *HistoryLink.org Essay 9583*. Retrieved from <http://historylink.org/File/9583>.
- Caldbrick, J. (2014). *Port Townsend – Thumbnail History*. *HistoryLink.org Essay 10752*. Retrieved from <http://historylink.org/File/10752>.
- Crowley, W., P. Long, and G. Lange. (2001). *Turning Point 16: When Worlds Collide: From Contact to Conquest on Puget Sound*. *HistoryLink.org Essay 9294*. Retrieved from <http://historylink.org/File/9294>.
- Dames & Moore. (1994). *Historic and Archaeological Resources Protection Plan for the Naval Air Station Whidbey Island, Washington*. San Francisco, CA: Naval Facilities Engineering Command.
- De Pastino, B. (2015). *10,000-Year-Old Stone Tool Site Discovered in Suburban Seattle*. Retrieved from <http://westerndigs.org/10000-year-old-stone-tool-site-discovered-in-suburban-seattle/>.
- Hampton, R. A., M. Gissendanner, M. J. Krakovsky, and S. Maughlin. (2010a). *Architectural Inventory and Evaluation of Naval Base Kitsap Bangor*. Silverdale, WA: Hardlines Design Company.
- Hampton, R. A., M. Gissendanner, M. J. Krakovsky, and R. Rose. (2010b). *Architectural Inventory and Evaluation of Naval Supply Station Manchester*. Manchester, WA: Hardlines Design Company.
- Hampton, R. A., and M. Burkett. (2011). *Architectural Inventory and Evaluation of Naval Base Kitsap Keyport* (Submitted to Naval Facilities Engineering Command Atlantic). Keyport, WA: Hardlines Design Company.
- Hampton, R. A., M. Burkett, and M. J. Krakovsky. (2011). *Architectural Inventory and Evaluation of Naval Base Kitsap Bremerton*. Bremerton, WA: Hardlines Design Company.
- Hardlines Design Company. (2010). *Phase 1 Architectural Survey of Naval Air Station Whidbey Island* (Surveys of Seaplane Base, Ault Field, NOLF Coupeville, Lake Hancock Target Range, and Racon Hill). Island County, WA: Hardlines Design Company.

- Houser, M. (2010). *Naval Air Station Whidbey Island - Arch Survey and DOE: Determined Eligible*. Olympia, WA: State of Washington Department of Archaeology & Historic Preservation.
- ICF International, Davis Geoarchaeological Research, and Southeastern Archaeological Research. (2013). *Inventory and Analysis of Coastal and Submerged Archaeological Site Occurrence on the Pacific Outer Continental Shelf*. Camarillo, CA: U.S. Department of the Interior, Bureau of Ocean Energy Management, Pacific OCS Region.
- Matson, R. G., and G. G. Coupland. (1995). *The Prehistory of the Northwest Coast*. San Diego, CA: Academic Press.
- McClary, D. C. (2005a). *Jefferson County – Thumbnail History*. *HistoryLink.org Essay 7472*. Retrieved from <http://historylink.org/File/7472>.
- McClary, D. C. (2005b). *Island County – Thumbnail History*. *HistoryLink.org Essay 7523*. Retrieved from <http://historylink.org/File/7523>.
- National Oceanic and Atmospheric Administration. (2008). *NOAA Automated Wrecks and Obstructions Information System (AWOIS) for Google Earth*. Retrieved from <http://earthnc.com/awois>.
- National Park Service. (1973). *National Register of Historic Places Inventory - Nomination Form for the Central Whidbey Island Historic District*. Whidbey Island, WA: U.S. Department of the Interior.
- National Park Service. (1975). *National Register of Historic Places Property Photograph Forms for Cape Disappointment Historic District*. Ilwaco, WA: U.S. Department of the Interior.
- National Park Service. (1977). *National Register of Historic Places Property Photograph Forms for Grays Harbor Light Station*. West Port, WA: U.S. Department of the Interior.
- National Park Service. (2016). *Ebey's Landing National Historical Reserve Washington: Frequently Asked Questions*. Retrieved from <https://www.nps.gov/ebla/faqs.htm>.
- Oldham, K. (2005). *Clallam County -- Thumbnail History*. *HistoryLink.org Essay 7576*. Retrieved from <http://historylink.org/File/7576>.
- Ott, J. (2007). *Bainbridge Island (Winslow) -- Thumbnail History*. *HistoryLink.org Essay 8274*. Retrieved from <http://historylink.org/File/8274>.
- Riddle, M. (2010). *Coupeville -- Thumbnail History*. *HistoryLink.org Essay 9587*. Retrieved from <http://historylink.org/File/9587>.
- Stilson, M. L., D. Meatte, and R. G. Whitlam. (2003). *A Field Guide to Washington Archaeology*. Olympia, WA: Washington State Department of Transportation, Washington State Parks and Recreation Commission, Office of Archaeology and Historic Preservation and Dalles, OR: Columbia Gorge Discovery Center and Goldendale, WA: MaryHill Museum of Art and Bainbridge Island, WA: Western Shore Heritage Services.
- U.S. Department of the Navy. (1997). *Archaeological resources assessment and protection plan for the Naval Air Station Whidbey Island, Island County, Washington*. Seattle, WA and Poulsbo, WA: Engineering Field Activity Northwest, Naval Facilities Engineering Command.
- U.S. Department of the Navy. (2015). *Northwest Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement, Final*. Silverdale, WA: Naval Facilities Engineering Command, Northwest.
- Washington State Parks. (2017a). *Westport Light State Park*. Retrieved from <http://parks.state.wa.us/284/Westport-Light>.

- Washington State Parks. (2017b). *Twin Harbors*. Retrieved from <https://parks.state.wa.us/292/Twin-Harbors>.
- Washington State Parks. (2017c). *Grayland Beach State Park*. Retrieved from <http://parks.state.wa.us/515/Grayland-Beach>.
- Washington State Parks. (2017d). *Leadbetter Point State Park*. Retrieved from <https://parks.state.wa.us/537/Leadbetter-Point>.
- Washington State Parks. (2017e). *Pacific Pines State Park*. Retrieved from <http://parks.state.wa.us/558/Pacific-Pines>.
- Washington State Parks. (2017f). *Cape Disappointment State Park*. Retrieved from <https://parks.state.wa.us/486/Cape-Disappointment>.
- Washington State Parks. (2017g). *Fort Columbia Historical State Park*. Retrieved from <https://parks.state.wa.us/506/Fort-Columbia>.
- Washington State Parks and Recreation Commission. (2008). *Central Whidbey State Parks Land Classes, Resource Issues and Management Approaches (Fort Casey State Park, Ebey's Landing State Park, Fort Ebey State Park, Joseph Whidbey State Park)*. Olympia, WA: Washington State Parks Classification and Management Planning Project.
- Washington State Parks and Recreation Commission. (2016). *Determination of Non-Significance*. Burlington, WA: Northwest Region Parks Development Services.
- Watson, K. G. (1999). *Native Americans of Puget Sound—A Brief History of the First People and Their Cultures*. Retrieved from http://www.historylink.org/index.cfm?DisplayPage=output.cfm&File_Id=1506.
- Wilma, D. (2007). *Oak Harbor -- Thumbnail History*. *HistoryLink.org Essay 8223*. Retrieved from <http://historylink.org/File/8223>.

3.3 Biological Resources

- Adams, P. B., C. B. Grimes, J. E. Hightower, S. T. Lindley, and M. L. Moser. (2002). *Status review for north American green sturgeon, Acipenser medirostris*. Santa Cruz, CA: Southwest Fisheries Science Center, and Seattle, WA: Northwest Fisheries Science Center.
- Appeltans, W., P. Bouchet, G. A. Boxshall, K. Fauchald, D. P. Gordon, B. W. Hoeksema, G. C. B. Poore, R. W. M. van Soest, S. Stöhr, T. C. Walter, and M. J. Costello. (2010). *World Register of Marine Species*. Retrieved from <http://www.marinespecies.org/index.php>.
- Aston, L., J. Gaeckle, A. Borde, V. Cullinan, R. Thom, and J. Vavrinc. (2017). *The effect of harvest rates on eelgrass (Zostera marina L.) donor sites in Puget Sound: A project overview*. Paper presented at the Salish Sea Ecosystem Conference. Vancouver, Canada.
- Athens, J. S. (2002). *Archaeological Coring and Augering, Halekou Fishpond, Nuupia Ponds Wildlife Management Area, U.S. Marine Corps Base Hawaii, Kaneohe Bay, Oahu Island, Hawaii*. Honolulu, HI: International Archaeological Research Institute, Inc.
- Au, W. W. L., A. N. Popper, and R. R. Fay (Eds.). (2000). *Hearing by Whales and Dolphins*. New York, NY: Springer-Verlag.

- Barbaree, B. A., S. K. Nelson, B. D. Dugger, D. D. Roby, H. R. Carter, D. L. Whitworth, and S. H. Newman. (2014). Nesting ecology of marbled murrelets at a remote mainland fjord in southeast Alaska. *The Condor*, 116(2), 173–184.
- Barlow, J., J. Calambokidis, E. A. Falcone, C. S. Baker, A. M. Burdin, P. J. Clapham, J. K. B. Ford, C. M. Gabriele, R. LeDuc, D. K. Mattila, T. J. Quinn, II, L. Rojas-Bracho, J. M. Straley, B. L. Taylor, J. Urbán R, P. Wade, D. Weller, B. H. Witteveen, and M. Yamaguchi. (2011). Humpback whale abundance in the North Pacific estimated by photographic capture-recapture with bias correction from simulation studies. *Marine Mammal Science*, 27(4), 793–818.
- Barlow, J. (2016). *Cetacean Abundance in the California Current Estimated from Ship-based Line-transect Surveys in 1991–2014*. (NOAA Administrative Report NMFS-SWFSC-LJ-1601). La Jolla, CA: Southwest Fisheries Science Center.
- Bartol, S. M., and D. R. Ketten. (2006). *Turtle and Tuna Hearing* (NOAA Technical Memorandum NMFS-PIFSC-7). Honolulu, HI: Pacific Islands Fisheries Science Center.
- Becker, E. A., K. A. Forney, M. C. Ferguson, D. G. Foley, R. C. Smith, J. Barlow, and J. V. Redfern. (2010). Comparing California Current cetacean–habitat models developed using in situ and remotely sensed sea surface temperature data. *Marine Ecology Progress Series*, 413, 163–183.
- Becker, E. A., K. A. Forney, M. C. Ferguson, J. Barlow, and J. V. Redfern. (2012). *Predictive Modeling of Cetacean Densities in the California Current Ecosystem based on Summer/Fall Ship Surveys in 1991–2008* (NOAA Technical Memorandum NMFS-SWFSC-499). La Jolla, CA: Southwest Fisheries Science Center.
- Becker, E. A., K. A. Forney, P. C. Fiedler, J. Barlow, S. J. Chivers, C. A. Edwards, A. M. Moore, and J. V. Redfern. (2016). Moving Towards Dynamic Ocean Management: How Well Do Modeled Ocean Products Predict Species Distributions? *Remote Sensing*, 8(2), 149.
- Belleveau, L. J., J. Y. Takekawa, I. Woo, K. L. Turner, J. B. Barham, J. E. Takekawa, C. S. Ellings, and G. Chin-Leo. (2015). Vegetation community response to tidal marsh restoration of a large river estuary. *Northwest Science*, 89(2), 136–147.
- Benson, S. R., T. Eguchi, D. G. Foley, K. A. Forney, H. Bailey, C. Hitipeuw, B. P. Samber, R. F. Tapilatu, V. Rei, P. Ramohia, J. Pita, and P. H. Dutton. (2011). Large-scale movements and high-use areas of western Pacific leatherback turtles, *Dermochelys coriacea*. *Ecosphere*, 2(7).
- Black, N. A. (2011). *Fish-eating (Resident) Killer Whales Sighted in Monterey Bay on Feb. 10, 2011*. Retrieved from <http://www.montereybaywhalewatch.com/Features/PugetSoundKillerWhales1102.htm>.
- Brennan, J. S. (2007). *Marine Riparian Vegetation Communities of Puget Sound* (Technical Report 2007-02). Seattle, WA: U.S. Army Corps of Engineers, Seattle District.
- Burger, A. E., C. L. Hitchcock, and G. K. Davoren. (2004). Spatial aggregations of seabirds and their prey on the continental shelf off SW Vancouver Island. *Marine Ecology Progress Series*, 283, 279–292.
- Calabria, L. M., A. Arnold, E. Charatz, G. Eide, L. M. Hynson, G. Jackmond, J. Nannes, D. Stone, and J. Vilella. (2015). A checklist of soil-dwelling bryophytes and lichens of the South Puget Sound prairies of western Washington. *Evansia*, 32(1), 30–41.
- Calambokidis, J., G. H. Steiger, J. M. Straley, L. M. Herman, S. Cerchio, D. R. Salden, J. Urban R., J. K. Jacobsen, O. von Ziegesar, K. C. Balcomb, C. M. Gabriele, M. E. Dahlheim, S. Uchida, G. Ellis, Y. Miyamura, P. Ladron De Guevara, M. Yamaguchi, F. Sato, S. A. Mizroch, L. Schlender, K.

- Rasmussen, J. Barlow, and T. J. Quinn, II. (2001). Movements and population structure of humpback whales in the North Pacific. *Marine Mammal Science*, 17(4), 769–794.
- Calambokidis, J., E. A. Falcone, T. J. Quinn, A. M. Burdin, P. J. Clapham, J. K. B. Ford, C. M. Gabriele, R. LeDuc, D. Mattila, L. Rojas-Bracho, J. M. Straley, B. L. Taylor, J. Urbán R., D. Weller, B. H. Witteveen, M. Yamaguchi, A. Bendlin, D. Camacho, K. Flynn, A. Havron, J. Huggins, and N. Maloney. (2008). *SPLASH: Structure of Populations, Levels of Abundance and Status of Humpback Whales in the North Pacific*. Olympia, WA: Cascadia Research.
- Camp, P., J. Gamon, and J. Arnett. (2011a). *Field guide to the rare plants of Washington: Large-awned sedge (Carex macrochaeta)*. Seattle, WA: University of Washington Press.
- Camp, P., J. Gamon, and J. Arnett. (2011b). *Field guide to the rare plants of Washington: Roll's golden log moss (Brotherella roellii)*. Seattle, WA: University of Washington Press.
- Camp, P., J. Gamon, and J. Arnett. (2011c). *Field guide to the rare plants of Washington: Baccharis pilularis ssp. consanguinea*. Seattle, WA: University of Washington Press.
- Camp, P., J. Gamon, and J. Arnett. (2011d). *Field guide to the rare plants of Washington: Threeleaf goldenthrad (Coptis trifolia)*. Seattle, WA: University of Washington Press.
- Camp, P., J. Gamon, and J. Arnett. (2011e). *Field guide to the rare plants of Washington: Ocean bluff bluegrass (Poa unilateralis ssp. pachypholis)*. Seattle, WA: University of Washington Press.
- Camp, P., J. Gamon, and J. Arnett. (2011f). *Field guide to the rare plants of Washington: Pink sand verbena (Abronia umbellata var. acutalata)*. Seattle, WA: University of Washington Press.
- Camp, P., J. Gamon, and J. Arnett. (2011g). *Field guide to the rare plants of Washington: Western yellow oxalis (Oxalis suksdorfii)*. Seattle, WA: University of Washington Press.
- Camp, P., J. Gamon, and J. Arnett. (2011h). *Field guide to the rare plants of Washington: White meconella (Meconella oregana)*. Seattle, WA: University of Washington Press.
- Camp, P., J. Gamon, and J. Arnett. (2011i). *Field guide to the rare plants of Washington: Hairy-stemmed checkermallow (Sidalcea hirtipes)*. Seattle, WA: University of Washington Press.
- Camp, P., J. Gamon, and J. Arnett. (2011j). *Field guide to the rare plants of Washington: Black lily (Fritillaria camschatcensis)*. Seattle, WA: University of Washington Press.
- Camp, P., J. Gamon, and J. Arnett. (2011k). *Field guide to the rare plants of Washington: Pacific lanceleaved springbeauty (Claytonia multiscapa ssp. Pacifica)*. Seattle, WA: University of Washington Press.
- Camp, P., J. Gamon, and J. Arnett. (2011l). *Field guide to the rare plants of Washington: Bear's-foot sanicle (Sanicula arctopoides)*. Seattle, WA: University of Washington Press.
- Camp, P., J. Gamon, and J. Arnett. (2011m). *Field guide to the rare plants of Washington: Pacific pea (Lathyrus vestitus var. ochropetalus)*. Seattle, WA: University of Washington Press.
- Camp, P., J. Gamon, and J. Arnett. (2011n). *Field guide to the rare plants of Washington: Water burweed (Sparganium fluctans)*. Seattle, WA: University of Washington Press.
- Camp, P., J. Gamon, and J. Arnett. (2011o). *Field guide to the rare plants of Washington: Hall's aster (Symphyotrichum hallii)*. Seattle, WA: University of Washington Press.
- Camp, P., J. Gamon, and J. Arnett. (2011p). *Field guide to the rare plants of Washington: Rush aster (Symphyotrichum boreale)*. Seattle, WA: University of Washington Press.

- Camp, P., J. Gamon, and J. Arnett. (2011q). *Field guide to the rare plants of Washington: Great polemonium (Polemonium carneum)*. Seattle, WA: University of Washington Press.
- Camp, P., J. Gamon, and J. Arnett. (2011r). *Field guide to the rare plants of Washington: Water howellia (Howellia aquatilis)*. Seattle, WA: University of Washington Press.
- Caplow, F. (2004). *Reintroduction plan for golden paintbrush (Castilleja levisecta)*. Olympia, WA: Washington Natural Heritage Program, Department of Natural Resources.
- Caplow, F. (2005). *South Puget Sound Prairie Site Evaluations for Reintroduction of Golden Paintbrush (Castilleja levisecta)*. Olympia, WA: Washington Natural Heritage Program, Dept. of Natural Resources.
- Carretta, J. V., E. Oleson, D. W. Weller, A. R. Lang, K. A. Forney, J. Baker, B. Hanson, K. Martien, M. M. Muto, A. J. Orr, H. Huber, M. S. Lowry, J. Barlow, D. Lynch, L. Carswell, R. L. B. Jr., and D. K. Mattila. (2014). *U.S. Pacific Marine Mammal Stock Assessments: 2013*. La Jolla, CA: Southwest Fisheries Science Center.
- Carretta, J. V., J. E. Moore, and K. A. Forney. (2017a). *Regression Tree and Ratio Estimates of Marine Mammal, Sea Turtle, and Seabird Bycatch in the California Drift Gillnet Fishery: 1990–2015*. La Jolla, CA: Southwest Fisheries Science Center.
- Carretta, J. V., E. M. Oleson, J. Baker, D. W. Weller, A. R. Lang, K. A. Forney, M. M. Muto, B. Hanson, A. J. Orr, H. Huber, M. S. Lowry, J. Barlow, J. E. Moore, D. Lynch, L. Carswell, and R. L. Brownell, Jr. (2017b). *U.S. Pacific Marine Mammal Stock Assessments: 2016* (NOAA Technical Memorandum NMFS-SWFSC-561). La Jolla, CA: Southwest Fisheries Science Center.
- Chasco, B., I. C. Kaplan, A. Thomas, A. Acevedo-Gutiérrez, D. Noren, M. J. Ford, M. B. Hanson, J. Scordino, S. Jeffries, S. Pearson, K. N. Marshall, and E. J. Ward. (2017). Estimates of Chinook salmon consumption in Washington State inland waters by four marine mammal predators from 1970 to 2015. *Canadian Journal of Fisheries and Aquatic Sciences*, 74(8), 1173–1194.
- Cheung, W. W. L., R. Watson, T. Morato, T. J. Pitcher, and D. Pauly. (2007). Intrinsic vulnerability in the global fish catch. *Marine Ecology-Progress Series*, 333, 1–12.
- Christiansen, F., L. Rojano-Doñate, P. T. Madsen, and L. Bejder. (2016). Noise levels of multi-rotor unmanned aerial vehicles with implications for potential underwater impacts on marine mammals. *Frontiers in Marine Science*, 3(277), 1–9.
- Clapham, P. J., and D. K. Mattila. (1990). Humpback whale songs as indicators of migration routes. *Marine Mammal Science*, 6(2), 155–160.
- Clapham, P. J. (2000). The humpback whale: Seasonal feeding and breeding in a baleen whale. In J. Mann, R. C. Connor, P. L. Tyack, & H. Whitehead (Eds.), *Cetacean Societies: Field Studies of Dolphins and Whales* (pp. 173–196). Chicago, IL: University of Chicago Press.
- Clarke, M. E., C. E. Whitmire, and M. M. Yoklavich. (2015). *State of Deep-Sea Coral and Sponge Ecosystems of the U.S. West Coast: 2015* (Vol. X NOAA Technical Memorandum). Silver Spring, MD: National Oceanic and Atmospheric Administration.
- Cohen, A. L., D. C. McCorkle, S. de Putron, G. A. Gaetani, and K. A. Rose. (2009). Morphological and compositional changes in the skeletons of new coral recruits reared in acidified seawater: Insights into the biomineralization response to ocean acidification. *Geochemistry Geophysics Geosystems*, 10(7), 1–12.

- Cooke, S. S., and A. L. Azous. (1997). Characterization of Puget Sound Basin Palustrine Wetland Vegetation. In A. L. Azous & R. R. Horner (Eds.), *Wetlands and Urbanization* (pp. 59). Olympia, WA: Washington State Department of Ecology, and Seattle, WA: University of Washington.
- Crain, C. M., B. S. Halpern, M. W. Beck, and C. V. Kappel. (2009). Understanding and Managing Human Threats to the Coastal Marine Environment. In R. S. Ostfeld & W. H. Schlesinger (Eds.), *The Year in Ecology and Conservation Biology, 2009* (pp. 39–62). Oxford, United Kingdom: Blackwell Publishing.
- Derr, C., and M. Stein. (2005). Conservation Assessment for *Erioderma soledatum* Conservation Assessments for 11 species of Coastal Lichens (pp. 51). Washington, DC: Bureau of Land Management.
- Dinsmore, S. J., E. P. Gaines, S. F. Pearson, D. J. Lauten, and K. A. Castelein. (2017). Factors affecting Snowy Plover chick survival in a managed population. *The Condor*, 119, 34–33.
- Dornfeld, E. J. (1980). *Butterflies of Oregon*. Chicago, IL: International Specialized Book Service Incorporated.
- Drake, J. S., E. A. Berntson, R. G. Gustafson, E. E. Holmes, and P. S. Levin. (2010). *Status Review of Five Rockfish Species in Puget Sound, Washington: Bocaccio (Sebastes paucispinis), Canary rockfish (S. pinniger), Yelloweye rockfish (S. ruberrimus), Greenstriped rockfish (S. elongatus), and Redstripe rockfish (S. proriger)* (NOAA Technical Memorandum NMFS). Silver Spring, MD: National Marine Fisheries Service.
- Dunwiddie, P. W., E. R. Alverson, R. A. Martin, and R. Gilbert. (2014). Annual species in native prairies of South Puget Sound, Washington. *Northwest Science*, 88(2), 94–115.
- Elvin, M. (2008). *Arenaria paludicola (Marsh sandwort) 5-Year Review: Summary and Evaluation*. Washington, DC: U.S. Fish and Wildlife Service.
- Ericson, P. G. P., I. Envall, M. Irestedt, and J. A. Norman. (2003). Inter-familial relationships of the shorebirds (Aves: Charadriiformes) based on nuclear DNA sequence data. *BMC Evolutionary Biology*, 3(16), 1–14.
- Etnoyer, P., and L. E. Morgan. (2005). Habitat-forming deep-sea corals in the Northeast Pacific Ocean. In A. Freiwald & J. M. Roberts (Eds.), *Cold-water Corals and Ecosystems* (pp. 331–343). Berlin, Germany: Springer-Verlag.
- Etnoyer, P. J., L. N. Wickes, M. Silva, J. D. Dubick, L. Balthis, E. Salgado, and I. R. MacDonald. (2016). Decline in condition of gorgonian octocorals on mesophotic reefs in the northern Gulf of Mexico: Before and after the Deepwater Horizon oil spill. *Coral Reefs*, 35, 77–90.
- Evans, R. M., and F. L. Knopf. (1993). American white pelican (*Pelecanus erythrorhynchos*). In A. Poole & F. Gill (Eds.), *The Birds of North America*. Philadelphia, PA: Academy of Natural Sciences.
- Falxa, G. A., and M. G. Raphael. (2016). *Northwest Forest Plan—The First 20 Years (1994–2013): Status and Trend of Marbled Murrelet Populations and Nesting Habitat*. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.
- Ford, J. K. B., G. M. Ellis, and K. C. I. Balcomb. (2000). *Killer Whales: The Natural History and Genealogy of Orcinus Orca in British Columbia and Washington State (Updated Edition)*. Seattle, WA: University of Washington Press.

- Forney, K. A., M. C. Ferguson, E. A. Becker, P. C. Fiedler, J. V. Redfern, J. Barlow, I. L. Vilchis, and L. T. Ballance. (2012). Habitat-based spatial models of cetacean density in the eastern Pacific Ocean. *Endangered Species Research*, 16(2), 113–133.
- Gabrielson, P. W., T. B. Widdowson, and S. C. Lindstrom. (2006). *Keys to the Seaweeds and Seagrasses of Southeast Alaska, British Columbia, Washington, and Oregon*. Vancouver, Canada: PhycolD.
- Galbraith, H., R. Jones, R. Park, J. Clough, S. Herrod-Julius, B. Harrington, and G. Page. (2005). *Global Climate Change and Sea Level Rise: Potential Losses of Intertidal Habitat for Shorebirds*. Newfane, VT: U.S. Department of Agriculture, Forest Service.
- Galloway, S. B., A. W. Bruckner, and C. M. Woodley. (2009). *Coral Health and Disease in the Pacific: Vision for Action*. Silver Spring, MD: National Oceanic and Atmospheric Administration.
- Gamble, M. M. (2016). *Size-selective mortality and environmental factors affecting early marine growth during early marine life stages of sub-yearling Chinook salmon in Puget Sound, Washington*. (Master of Science Thesis). University of Washington, Seattle, WA.
- Gaydos, J. K., and Z. Zier. (2014). *Species of Concern within the Salish Sea nearly double between 2002 and 2013*. Paper presented at the Proceedings of the Salish Sea Conference. Seattle, WA.
- Gelfenbaum, G., T. Mumford, J. Brennan, H. Case, M. Dethier, K. Fresh, F. A. Goetz, M. van Heeswijk, T. M. Leschine, M. Logsdon, D. Myers, J. Newton, H. Shipman, C. A. Simenstad, C. Tanner, and D. Woodson. (2006). *Coastal Habitats in Puget Sound: A Research Plan in Support of the Puget Sound Nearshore Partnership* (Puget Sound Nearshore Partnership Report No, 2006-1). Seattle, WA: U.S. Geological Survey.
- Greene, C., L. Kuehne, C. Rice, K. Fresh, and D. Penttila. (2015). Forty years of change in forage fish and jellyfish abundance across greater Puget Sound, Washington (USA): Anthropogenic and climate associations. *Marine Ecology Progress Series*, 525, 153–170.
- Groot, C., and L. Margolis. (1991). *Pacific Salmon Life Histories*. Vancouver, Canada: University of British Columbia Press.
- Gustafson, R. G., M. J. Ford, D. Teel, and J. S. Drake. (2010). *Status review of eulachon (Thaleichthys pacificus) in Washington, Oregon, and California* (National Oceanic and Atmospheric Administration Technical Memorandum NMFS-NWFSC-105). Seattle, WA and Port Orchard, WA: Northwest Fisheries Science Center Conservation Biology Division.
- Gustafson, R. G., M. J. Ford, P. B. Adams, J. S. Drake, R. L. Emmett, K. L. Fresh, M. Rowse, E. A. K. Spangler, R. E. Spangler, D. J. Teel, and M. T. Wilson. (2012). Conservation status of eulachon in the California Current. *Fish and Fisheries*, 13(2), 121–138.
- Hallock, L. A., A. McMillan, and G. J. Wiles. (2017). *Periodic Status Review for the Western Pond Turtle*. Olympia, WA: Washington Department of Fish and Wildlife.
- Hansen, L. (2017). *Breeding Ecology of Golden Eagles in Western Washington*. (Unpublished master's thesis). University of Washington, Seattle, WA. Retrieved from <https://digital.lib.washington.edu/researchworks/handle/1773/38628>.
- Hanson, M. B., E. J. Ward, C. K. Emmons, M. M. Holt, and D. M. Holzer. (2017). *Assessing the Movements and Occurrence of Southern Resident Killer Whales Relative to the U.S. Navy's Northwest Training Range Complex in the Pacific Northwest*. Seattle, WA: Northwest Fisheries Science Center.

- Hanson, T., and G. J. Wiles. (2015). *Washington State Status Report for the Tufted Puffin*. Olympia, WA: Washington Department of Fish and Wildlife, Wildlife Program.
- Hays, D. W., K. R. McAllister, S. A. Richardson, and D. W. Stinson. (1999). *Washington State recovery plan for the western pond turtle*. Olympia, WA: Washington Department of Fish and Wildlife.
- Helfman, G. S., B. B. Collette, D. E. Facey, and B. W. Bowen. (2009). *The Diversity of Fishes: Biology, Evolution, and Ecology* (2nd ed.). Malden, MA: Wiley-Blackwell.
- Hertz, E., M. Trudel, S. Tucker, T. D. Beacham, and A. Mazumder. (2016). Overwinter shifts in the feeding ecology of juvenile Chinook salmon. *ICES Journal of Marine Science: Journal du Conseil*, 74(1), 226–233.
- Hodge, R. P., and B. L. Wing. (2000). Occurrences of marine turtles in Alaska waters: 1960–1998. *Herpetological Review*, 31(3), 148–151.
- Houghton, J., M. M. Holt, D. A. Giles, M. B. Hanson, C. K. Emmons, J. T. Hogan, T. A. Branch, and G. R. VanBlaricom. (2015). The relationship between vessel traffic and noise levels received by killer whales (*Orcinus orca*). *PLoS ONE*, 10(12), e0140119.
- International Union for Conservation of Nature and Natural Resources. (2010). *Phoebastria albatrus*. *International Union for Conservation of Nature 2010. International Union for Conservation of Nature Red List of Threatened Species. Version 2010.3*. Retrieved from <http://www.iucnredlist.org>.
- Jackson, J. B. C., M. X. Kirby, W. H. Berger, K. A. Bjorndal, L. W. Botsford, B. J. Bourque, R. H. Bradbury, R. Cooke, J. M. Erlandson, J. A. Estes, T. P. Hughes, S. Kidwell, C. B. Lange, H. S. Lenihan, J. M. Pandolfi, C. H. Peterson, R. S. Steneck, M. J. Tegner, and R. R. Warner. (2001). Historical overfishing and the recent collapse of coastal ecosystems. *Science*, 293, 629–638.
- Jefferson, T. A. (2009). Rough-toothed dolphin, *Steno bredanensis*. In W. F. Perrin, B. Wursig, & J. G. M. Thewissen (Eds.), *Encyclopedia of Marine Mammals* (2nd ed., pp. 990–992). Cambridge, MA: Academic Press.
- Jørgensen, R., N. O. Handegard, H. Gjørseter, and A. Slotte. (2004). Possible vessel avoidance behaviour of capelin in a feeding area and on a spawning ground. *Fisheries Research*, 69(2), 251–261.
- Kalasz, K. S., and J. B. Buchanan. (2016). *Periodic Status Review for the Bald Eagle in Washington*. Olympia, WA: Washington Department of Fish and Wildlife.
- Knopf, F. L., and R. M. Evans. (2004). American White Pelican (*Pelecanus erythrorhynchos*). *The Birds of North America Online*, 57, 6.
- Kobayashi, N., H. Okabe, I. Kawazu, N. Higashi, H. Miyahara, H. Kato, and S. Uchida. (2016). Spatial distribution and habitat use patterns of humpback whales in Okinawa, Japan. *Mammal Study*, 41, 207–214.
- Kociert, M. N., and K. Steenhof. (2002). Golden Eagles in the US and Canada: Status, trends, and conservation challenges. *Journal of Raptor Research*, 36, 32–40.
- Kriete, B. (2007). *Orcas in Puget Sound* (Technical Report 2007-01). Seattle, WA: Puget Sound Nearshore Partnership.
- Lascelles, B., P. R. Taylor, M. Miller, M. P. Dias, and S. Opper. (2016). Applying global criteria to tracking data to define important areas for marine conservation. *Diversity and Distributions*, 22(4), 1–47.

- Love, M. S., M. Yoklavich, L. Thorsteinson, and J. Butler. (2002). *The Rockfishes of the Northeast Pacific*. Berkeley, CA, Los Angeles, CA, and London, United Kingdom: University of California Press.
- Lowery, E. D., and D. A. Beauchamp. (2015). Trophic ontogeny of flubial bull trout and seasonal predation on Pacific salmon in a riverine food web. *Transactions of the American Fisheries Society*, 144(4), 724–741.
- Magalhães, S., R. Prieto, M. A. Silva, J. Gonçalves, M. Afonso-Dias, and R. S. Santos. (2002). Short-term reactions of sperm whales (*Physeter macrocephalus*) to whale-watching vessels in the Azores. *Aquatic Mammals*, 28(3), 267–274.
- McAllister, K. R., W. P. Leonard, D. W. Hays, and R. C. Friesz. (1999). *Washington State status report for the northern leopard frog*. Olympia, WA: Washington Department of Fish and Wildlife, Wildlife Management Program.
- Mikhail, A. (2014). *Hearing in Butterflies: Neurophysiological Characterization of the Auditory Afferents in Morpho peleides (Nymphalidae)*. (Masters Thesis). Carleton University, Ottawa, Canada.
- Miller, B. S., and S. F. Borton. (1980). *Geographical Distribution of Puget Sound Fishes: Maps and Data Source Sheets - Family Percichthyidae (Temperate Basses) 32.1 through Family Hexagrammidae (Greenhings) 54.6*. Seattle, WA: University of Washington.
- Miloslavich, P., E. Klein, J. M. Díaz, C. E. Hernández, G. Bigatti, L. Campos, F. Artigas, J. Castillo, P. E. Penchaszadeh, P. E. Neill, A. Carranza, M. V. Retana, J. M. Díaz de Astarloa, M. Lewis, P. Yorio, M. L. Piriz, D. Rodríguez, Y. Yoneshigue-Valentin, L. Gamboa, and A. Martín. (2011). Marine Biodiversity in the Atlantic and Pacific Coasts of South America: Knowledge and Gaps. *PLoS ONE*, 6(1), e14631.
- Mintz, J. D. (2012). *Vessel Traffic in the Hawaii-Southern California and Atlantic Fleet Testing and Training Study Areas*. Alexandria, VA: Center for Naval Analyses.
- Moody, M. F., and T. J. Pitcher. (2010). *Eulachon (Thaleichthys pacificus): Past and Present* (Fisheries Centre Research Reports). Vancouver, Canada: University of British Columbia.
- Moore, J. E., B. P. Wallace, R. L. Lewison, R. Zydalis, T. M. Cox, and L. B. Crowder. (2009). A review of marine mammal, sea turtle and seabird bycatch in USA fisheries and the role of policy in shaping management. *Marine Policy*, 33(3), 435–451.
- Mumford, T. F., Jr. (2007). *Kelp and Eelgrass in Puget Sound*. (Technical Report 2007-05). Seattle, WA: U.S. Army Corps of Engineers, Seattle District.
- Nachtigall, P. E., A. Y. Supin, A. F. Pacini, and R. A. Kastelein. (2016). Conditioned hearing sensitivity change in the harbor porpoise (*Phocoena phocoena*). *The Journal of the Acoustical Society of America*, 140(2), 960–967.
- National Marine Fisheries Service, and U.S. Fish and Wildlife Service. (1998). *Recovery Plan for U.S. Pacific Populations of the Leatherback Turtle (Dermochelys coriacea)*. Silver Spring, MD: National Marine Fisheries Service.
- National Marine Fisheries Service. (2009). *Designation of Critical Habitat for the Southern Distinct Population Segment of Green Sturgeon: Final ESA Section 4(b)(2) Report*. Long Beach, CA: National Marine Fisheries Service.
- National Marine Fisheries Service. (2010a). *Steelhead Trout (Oncorhynchus mykiss)*. Silver Spring, MD: National Oceanic and Atmospheric Administration Fisheries Office of Protected Resources. Retrieved from <http://www.nmfs.noaa.gov/pr/species/fish/steelhead-trout.htm>.

- National Marine Fisheries Service. (2010b). *Biological Opinion on U.S. Navy Training Activities on the Northwest Training Range and Research, Development, Test, and Evaluation Activities at the Naval Undersea Warfare Center Keyport Range Complex and Associated Letters of Authorization to Take Marine Mammals*. Silver Spring, MD: Endangered Species Division, Office of Protected Resources.
- National Marine Fisheries Service, and U.S. Fish and Wildlife Service. (2013). *Leatherback Turtle (Dermochelys coriacea) 5-Year Review: Summary and Evaluation*. Silver Spring, MD: National Marine Fisheries Service Office of Protected Resources and U.S. Fish and Wildlife Service Southeast Region.
- National Marine Fisheries Service. (2014a). *Designation of Critical Habitat for the Distinct Population Segments of Yelloweye Rockfish, Canary Rockfish, and Bocaccio* (Biological Report). Silver Spring, MD: National Oceanic and Atmospheric Administration.
- National Marine Fisheries Service. (2014b). *Reinitiated Biological Opinion on Navy Activities on the Northwest Training Range Complex and NMFS's Issuance of an MMPA Letter of Authorization*. (FPR-2014-9069). Washington, DC: The United States Navy and National Oceanic and Atmospheric Administration's National Marine Fisheries Service.
- National Marine Fisheries Service. (2015a). *Southern Distinct Population Segment of the North American Green Sturgeon (Acipenser medirostris). 5-Year Review: Summary and Evaluation*. Long Beach, CA: National Marine Fisheries Service.
- National Marine Fisheries Service. (2015b). *Biological Opinion and Conference Report on Navy NWTT Activities and NMFS' MMPA Incidental Take Authorization*. (PCTS FPR-2015-9110). Silver Spring, MD: Office of Protected Resources.
- National Marine Fisheries Service. (2015c). *Status Review Update for Pacific Salmon and Steelhead Listed Under the Endangered Species Act: Pacific Northwest*. Seattle, WA: Northwest Fisheries Science Center.
- National Marine Fisheries Service. (2016a). *5-Year Review: Summary & Evaluation of Puget Sound Chinook, Hood Canal Summer Chum, Puget Sound Steelhead*. Portland, OR: National Marine Fisheries Service, Northwest Region.
- National Marine Fisheries Service. (2016b). *Species in the Spotlight Priority Actions: 2016-2020 Pacific Leatherback Turtle, Dermochelys coriacea*. Silver Spring, MD: National Oceanic and Atmospheric Administration.
- National Marine Fisheries Service. (2016c). *South-Central/Southern California Coast Steelhead Recovery Planning Domain: 5-Year Review: Summary and Evaluation of Southern California Coast Steelhead Distinct Population Segment*. Long Beach, CA: West Coast Region, California Coastal Office.
- National Marine Fisheries Service. (2016d). *Endangered and Threatened Species; Identification of 14 Distinct Population Segments of the Humpback Whale (Megaptera novaeangliae) and Revision of Species-Wide Listing*. *Federal Register*, 81(174), 62260–62320.
- National Marine Fisheries Service. (2017a). *Eulachon (Thaleichthys pacificus)*. Retrieved from <https://www.fisheries.noaa.gov/species/eulachon>.

- National Marine Fisheries Service. (2017b). *National Stranding Database Level A files for 2000–2016, Washington and Oregon*. Seattle, WA: National Oceanic and Atmospheric Administration Fisheries, Protected Resources Division West Coast Region.
- National Marine Fisheries Service: Northwest Region. (2006). *Designation of Critical Habitat for Southern Resident Killer Whales. Biological Report*. Silver Spring, MD: National Marine Fisheries Service.
- National Oceanic and Atmospheric Administration. (1993). *Olympic Coast National Marine Sanctuary Final Environmental Impact Statement/Management Plan*. Washington, DC: NOAA, Sanctuaries and Reserves Division.
- National Oceanic and Atmospheric Administration. (2017). *Olympic Coast National Marine Sanctuary: Welcome*. Retrieved from <http://olympiccoast.noaa.gov/>.
- Nowacek, D. P., F. Christiansen, L. Bejder, J. A. Goldbogen, and A. S. Friedlaender. (2016). Studying cetacean behaviour: New technological approaches and conservation applications. *Animal Behaviour*, 120, 235–244.
- Nysewander, D. R., J. R. Evenson, B. L. Murphie, and T. A. Cyra. (2005). *Report of marine bird and marine mammal component, Puget Sound Ambient Monitoring Program, for July 1992 to December 1999 period*. Olympia, WA: Washington Department of Fish and Wildlife.
- Oleson, E. M., J. Calambokidis, E. Falcone, G. Schorr, and J. A. Hildebrand. (2009). *Acoustic and visual monitoring for cetaceans along the outer Washington coast*. San Diego, CA: University of California San Diego Scripps Institution of Oceanography and Cascadia Research Collective.
- Onley, D., and P. Scofield. (2007). *Albatrosses, Petrels and Shearwaters of the World*. Princeton, NJ: Princeton University Press.
- Orca Network. (2017). *Southern Resident Orca Community Demographics, Composition of Pods, Births and Deaths since 1998*. Retrieved from https://www.orcanetwork.org/Main/Index.php?categories_file=Births%20and%20Deaths.
- Pacific Fishery Management Council. (2011a). *Coastal Pelagic Species Fishery Management Plan*. Portland, OR: National Oceanic and Atmospheric Administration.
- Pacific Fishery Management Council. (2011b). *Fishery Management Plan for U. S. West Coast Fisheries for Highly Migratory Species, as Amended by Amendment 2*. Portland, OR: Pacific Fishery Management Council.
- Pacific Fishery Management Council. (2014a). *Pacific Coast Salmon Fishery Management Plan*. Portland, OR: Pacific Fishery Management Council.
- Pacific Fishery Management Council. (2014b). *Pacific Coast Groundfish Fishery Management Plan for the California, Oregon and Washington Groundfish Fishery*. Portland, OR: Pacific Fishery Management Council.
- Palsson, W. A., T.-S. Tsou, G. G. Bargmann, R. M. Buckley, J. E. West, M. L. Mills, Y. W. Cheng, and R. E. Pacunski. (2009). *The Biology and Assessment of Rockfishes in Puget Sound*. Olympia, WA: Washington Department of Fish and Wildlife.
- Pandolfi, J. M., J. B. C. Jackson, N. Baron, R. H. Bradbury, H. M. Guzman, T. P. Hughes, C. V. Kappel, F. Micheli, J. C. Ogden, H. P. Possingham, and E. Sala. (2005). Are U.S. coral reefs on the slippery slope to slime? *Science*, 307(5716), 1725–1726.

- Pauly, D., and M. L. Palomares. (2005). Fishing down marine food web: It is far more pervasive than we thought. *Bulletin of Marine Science*, 76(2), 197–211.
- Pearson, S. F., and B. Altman. (2005). *Range-wide streaked horned lark (Eremophila alpestris strigata) assessment and preliminary conservation strategy*. Olympia, WA: Washington Department of Fish and Wildlife, Wildlife Program, Wildlife Science Division.
- Pearson, S. F., S. M. Knapp, and C. Sundstrom. (2014). Evaluating the ecological and behavioural factors influencing Snowy Plover *Charadrius nivosus* egg hatching and the potential benefits of predator exclosures. *Bird Conservation International*, 2014, 1–19.
- Piatt, J. F., and A. S. Kitaysk. (2002). *Tufted Puffin, Fratercula cirrhata*. *Birds of North America*. Retrieved from <https://birdsna.org/Species-Account/bna/species/tufpuf/introduction>.
- Piatt, J. F., K. J. Kuletz, A. E. Burger, S. A. Hatch, V. L. Friesen, T. P. Birt, M. L. Arimitsu, G. S. Drew, A. M. A. Harding, and K. S. Bixler. (2007). *Status Review of the Marbled Murrelet (Brachyramphus marmoratus) in Alaska and British Columbia*. Reston, VA: U.S. Geological Survey.
- Polasek, L., J. Bering, H. Kim, P. Neitlich, B. Pister, M. Terwilliger, K. Nicolato, C. Turner, and T. Jones. (2017). Marine debris in five national parks in Alaska. *Marine Pollution Bulletin*, 117(1–2), 371–379.
- Popper, A. N., T. J. Carlson, J. A. Gross, A. D. Hawkins, D. Zeddies, L. Powell, and J. Young. (2016). Effects of Seismic Air Guns on Pallid Sturgeon and Paddlefish. *Advances in Experimental Medicine and Biology*, 875, 871–878.
- Popper, A. N., and A. Hawkins. (2016). *The Effects of Noise on Aquatic Life II*. New York, NY: Spring Science+Business Media.
- Preikshot, D., B. Hudson, and D. Cheney. (2016). *An ecosystem model simulating historic changes and forecasting future long-term upper trophic level species dynamics in South Puget Sound*. Paper presented at the Salish Sea Ecosystem Conference. Vancouver, Canada.
- Proctor, C. M., J. C. Garcia, D. V. Galvin, T. Joyner, G. B. Lewis, L. C. Loehr, and A. M. Massa. (1980). *An ecological characterization of the Pacific Northwest coastal region* (U.S. Fish and Wildlife Service, Biological Services Program). Washington, DC.
- Quinn, T. P., and K. W. Myers. (2004). Anadromy and the marine migrations of Pacific salmon and trout: Rounsefell revisited. *Reviews in Fish Biology and Fisheries*, 14, 421–442.
- Raphael, M. G., J. Baldwin, G. A. Falxa, M. H. Huff, M. Lance, S. L. Miller, S. F. Pearson, C. J. Ralph, C. Strong, and C. Thompson. (2007). *Regional Population Monitoring of the Marbled Murrelet: Field and analytical methods*. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.
- Redfern, J. V., M. F. McKenna, T. J. Moore, J. Calambokidis, M. L. Deangelis, E. A. Becker, J. Barlow, K. A. Forney, P. C. Fiedler, and S. J. Chivers. (2013). Assessing the risk of ships striking large whales in marine spatial planning. *Conservation Biology*, 27(2), 292–302.
- Rice, D. W. (1998). *Marine Mammals of the World: Systematics and Distribution* (Society for Marine Mammalogy Special Publication). Lawrence, KS: Society for Marine Mammalogy.
- Richardson, K., D. Haynes, A. Talouli, and M. Donoghue. (2016). Marine pollution originating from purse seine and longline fishing vessel operations in the Western and Central Pacific Ocean, 2003–2015. *Ambio*, 46(2), 190–200.

- Schierenbeck, K. A., and F. Phipps. (2010). Population genetics of *Howellia aquatilis* (*Campanulaceae*) in disjunct locations throughout the Pacific Northwest. *Genetica*, 138(11-12), 1161–1169.
- Senigaglia, V., F. Christiansen, L. Bejder, D. Gendron, D. Lundquist, D. P. Noren, A. Schaffar, J. C. Smith, R. Williams, E. Martinez, K. Stockin, and D. Lusseau. (2016). Meta-analyses of whale-watching impact studies: Comparisons of cetacean responses to disturbance. *Marine Ecology Progress Series*, 542, 251–263.
- Seymour, A. C., J. Dale, M. Hammill, P. N. Halpin, and D. W. Johnston. (2017). Automated detection and enumeration of marine wildlife using unmanned aircraft systems (UAS) and thermal imagery. *Scientific Reports*, 7(45127), 1–10.
- Short, F., P. Dowty, H. Berry, L. Ferrier, and J. Gaeckle. (2014). *Is Nitrogen a Major Stressor of Eelgrass (Zostera marina) in Puget Sound?* Paper presented at the Salish Sea Ecosystem Conference. Seattle, WA.
- Slabbekoorn, H., N. Bouton, I. van Opzeeland, A. Coers, C. ten Cate, and A. N. Popper. (2010). A noisy spring: The impact of globally rising underwater sound levels on fish. *Trends in Ecology and Evolution*, 25(7), 419–427.
- Smultea, M. (2014). Changes in Relative Occurrence of Cetaceans in the Southern California Bight: A Comparison of Recent Aerial Survey Results with Historical Data Sources. *Aquatic Mammals*, 40(1), 32–43.
- Stinson, D. W. (2005). *Washington State Status Report for the Mazama pocket Gopher, Streaked horned Lark, and Taylor's Checkerspot*. Olympia, WA: Washington Department of Fish and Wildlife.
- Stinson, D. W. (2016). *Periodic Status Review for the American White Pelican*. Olympia, WA: Washington Department of Fish and Wildlife.
- Thayer, G. W., and R. C. Phillips. (1977). Importance of Eelgrass Beds in Puget Sound. *Marine Fisheries Review*, 39(11), 18–22.
- Thom, R., J. Gaeckle, L. Aston, A. Borde, and K. Beunau. (2014). *20% More Eelgrass in Puget Sound by 2020: Restoration Site Selection*. Paper presented at the Salish Sea Ecosystem Conference. Seattle, WA.
- Todd, L., and D. Elbert. (2014). Western snowy plover in Oregon: Community creates recovery. *Northwest Science*, 88(1), 58–60.
- Tsao, C.-F., L. E. Morgan, and S. Maxwell. (2005). *The Puget Sound/Georgia Basin Region Selected as a Priority Conservation Area in the Baja California to Bering Sea Initiative*. Paper presented at the Proceedings of the 2005 Puget Sound Georgia Basin Research Conference. Marine Conservation Biology Institute. Seattle, WA.
- U.S. Department of Defense, and U.S. Fish and Wildlife Service. (2014). *Memorandum of Understanding Between the U.S. Department of Defense and the U.S. Fish and Wildlife Service To Promote the Conservation of Migratory Birds*. Washington, DC: U.S. Department of Defense.
- U.S. Department of the Navy. (2012). *Integrated Natural Resources Management plan (INRMP) Naval Air Station Whidbey Island*. Oak Harbor, WA: NAS Whidbey Island.
- U.S. Department of the Navy. (2017). *Integrated Natural Resources Management Plan Naval Base Kitsap*. Bremerton, WA: Naval Base Kitsap.

- U.S. Fish and Wildlife Service. (1992). Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Washington, Oregon, and California Population of the Marbled Murrelet. *Federal Register*, 57(191), 45328–45337.
- U.S. Fish and Wildlife Service. (2005). *Regional Seabird Conservation Plan, Pacific Region*. Portland, OR: U.S. Fish and Wildlife Service, Migratory Birds and Habitat Programs, Pacific Region.
- U.S. Fish and Wildlife Service. (2007a). *National Bald Eagle Management Guidelines*. Washington, DC: U.S. Fish and Wildlife Service. Retrieved from <https://www.fws.gov/southdakotafieldoffice/NationalBaldEagleManagementGuidelines.pdf>.
- U.S. Fish and Wildlife Service. (2007b). *Recovery plan for the Pacific Coast population of the Western Snowy Plover (Charadrius alexandrinus nivosus)*. Sacramento, CA: U.S. Fish and Wildlife Service.
- U.S. Fish and Wildlife Service. (2010). *Recovery Plan for the prairie species of western Oregon and southwestern Washington*. Portland, OR: U.S. Fish and Wildlife Service.
- U.S. Fish and Wildlife Service. (2015). *Coastal Recovery Unit Implementation Plan for Bull Trout (Salvelinus confluentus)*. Lacey, WA: Washington Fish and Wildlife Office.
- U.S. Fish and Wildlife Service. (2016). *Biological Opinion on the U.S. Navy's Proposed Northwest Training and Testing Program that Occurs in the Offshore Waters of Northern California, Oregon, and Washington, the Inland Waters of Puget Sound, and Portions of the Olympic Peninsula*. Washington, DC: U.S. Department of the Interior.
- U.S. Fish and Wildlife Service. (2017). *Pink Sandverbena, Abronia umbellata*. Retrieved from https://www.fws.gov/refuge/willapa/wildlife_and_habitat/pink_sandverbena.html.
- Vanselow, K. H., K. Ricklefs, and F. Colijn. (2009). Solar Driven Geomagnetic Anomalies and Sperm Whale (*Physeter macrocephalus*) Strandings Around the North Sea: An Analysis of Long Term Datasets. *The Open Marine Biology Journal*, 3, 89–94.
- Wallace, B. P., P. H. Dutton, M. A. Marcovaldi, V. Lukoschek, and J. Rice. (2016). Chapter 39. Marine Reptiles. In L. Inniss & A. Simcock (Eds.), *The First Global Integrated Marine Assessment World Ocean Assessment*. New York, NY: United Nations, Division for Ocean Affairs and Law of the Sea.
- Washington Department of Fish and Wildlife. (2012a). *Washington Department of Fish and Wildlife 2012 Annual Report: Northern Leopard Frog (Lithobates pipiens)*. Olympia, WA: Washington Department of Fish and Wildlife.
- Washington Department of Fish and Wildlife. (2012b). *Washington Department of Fish and Wildlife 2012 Annual Report: Oregon silverspot butterfly (Speyeria zerene hippolyta)*. Olympia, WA: Washington Department of Fish and Wildlife.
- Washington Department of Fish and Wildlife. (2012c). *Washington Department of Fish and Wildlife 2012 Annual Report: Taylor's Checkerspot (Euphydryas editha taylori)*. Olympia, WA: Washington Department of Fish and Wildlife.
- Washington Department of Fish and Wildlife. (2013). *Washington Department of Fish and Wildlife 2012 Annual Report: Streaked Horned Lark (Eremophila alpestris strigata)*. Olympia, WA: Washington Department of Fish and Wildlife.
- Washington Department of Fish and Wildlife. (2017). *Raptor Ecology*. Retrieved from <http://wdfw.wa.gov/conservation/research/projects/raptor/>.

- Washington State Parks and Recreation Commission. (1997). *Hope Island State Park Management Plan*. Olympia, WA: Washington State Park and Recreation Commission, Washington State Parks Classification and Management Planning Project.
- Washington State Parks and Recreation Commission. (2006a). *Dosewallips State Park Area Management Plan*. Olympia, WA: Washington State Park and Recreation Commission, Washington State Parks Classification and Management Planning Project.
- Washington State Parks and Recreation Commission. (2006b). *Fort Worden State Park Long Range Plan Phase III, Task 2 Opportunities & Constraints*. Olympia, WA: Washington State Park and Recreation Commission, Washington State Parks Classification and Management Planning Project.
- Washington State Parks and Recreation Commission. (2008a). *Central Whidbey State Parks Land Classes, Resource Issues and Management Approaches (Fort Casey State Park, Ebey's Landing State Park, Fort Ebey State Park, Joseph Whidbey State Park)*. Olympia, WA: Washington State Parks Classification and Management Planning Project.
- Washington State Parks and Recreation Commission. (2008b). *Sequim Bay State Park Management Plan*. Olympia, WA: Washington State Park and Recreation Commission, Washington State Parks Classification and Management Planning Project.
- Washington State Parks and Recreation Commission. (2008c). *Fort Flager State Park Management Plan*. Olympia, WA: Washington State Park and Recreation Commission, Washington State Parks Classification and Management Planning Project.
- Washington State Parks and Recreation Commission. (2009). *Central Kitsap State Parks Management Plan (Fort Casey State Park, Ebey's Landing State Park, Fort Ebey State Park, Joseph Whidbey State Park)*. Olympia, WA: Washington State Park and Recreation Commission, Washington State Parks Classification and Management Planning Project.
- Washington State Parks and Recreation Commission. (2013). *Camano Island State Park Stage Four Final Land Classification and Management Plan*. Olympia, WA: Washington State Park and Recreation Commission, Washington State Parks Classification and Management Planning Project.
- West Coast Salmon Biological Review Team, Northwest Fisheries Science Center, and Southwest Fisheries Science Center. (2003). *Updated Status of Federally Listed ESUs of West Coast Salmon and Steelhead*. Retrieved from <http://www.nwfsc.noaa.gov/trt/brtrpt.htm>.
- Willson, M. F., R. H. Armstrong, M. C. Hermans, and K. Koski. (2006). *Eulachon: A Review of biology and an Annotated Bibliography*. Juneau, AK: Alaska Fisheries Science Center, National Marine Fisheries Service.
- Witteveen, B. H., and K. M. Wynne. (2017). Site fidelity and movement of humpback whales (*Megaptera novaeangliae*) in the western Gulf of Alaska as revealed by photo-identification. *Canadian Journal of Zoology*, 95, 169–175.
- Wright, A. J., N. A. Soto, A. L. Baldwin, M. Bateson, C. M. Beale, C. Clark, T. Deak, E. F. Edwards, A. Fernandez, A. Godinho, L. T. Hatch, A. Kakuschke, D. Lusseau, D. Martineau, M. L. Romero, L. S. Weilgart, B. A. Wintle, G. Notarbartolo-di-Sciara, and V. Martin. (2007). Anthropogenic noise as a stressor in animals: A multidisciplinary perspective. *International Journal of Comparative Psychology*, 20, 250–273.

Yack, J. E., L. D. Otero, J. W. Dawson, A. Surlykke, and J. H. Fullard. (2000). Sound production and hearing in the blue cracker butterfly *Hamadryas feronia* (Lepidoptera, Nymphalidae) from Venezuela. *The Journal of Experimental Biology*, 203(24), 3689–3702.

Yates, M. (1999). Satellite and conventional telemetry study of American White Pelicans in northern Nevada. *Great Basin Birds*, 2(4), 9.

3.4 Public Health and Safety

U.S. Department of Defense, and Federal Aviation Administration. (2013). *Memorandum of Agreement Concerning the Operation of Department of Defense Unmanned Aircraft Systems in the National Airspace System*. Washington, DC: U.S. Department of Defense.

U.S. Department of the Navy. (2011). *Navy Safety and Occupational Health Program Manual*. (OPNAVINST 5100.23G CH-1). Washington, DC: U.S. Department of the Navy.

U.S. Department of the Navy. (2016). *Oil and Hazardous Substance Integrated Contingency Plan*. (Commander Navy Region Northwest Instruction 5090.1D). Seattle, WA: Commander, Navy Region Northwest.

3.5 Noise

Badino, A., D. Borelli, T. Gaggero, E. Rizzuto, and C. Schenone. (2012). *Modeling the outdoor noise propagation for different ship types*. Paper presented at the 17th International Conference on Ships and Shipping Research. Naples, Italy.

Cavanaugh, W. J., and G. C. Tocci. (1998). Environmental Noise. *E.S.C., USC. Journal of Public Affairs*, 1(1), 11.

Cowan, J. P. (1994). *Handbook of Environmental Acoustics*. New York, NY: John Wiley & Sons.

Komanoff, C., and H. Shaw. (2000). *Drowning in Noise: Noise Costs of Jet Skis in America*. Montpelier, VT: Noise Pollution Clearinghouse.

National Guard Bureau, and U.S. Army Corps of Engineers. (2008). *Final Programmatic Environmental Assessment for Army National Guard Transformation Equipment Fielding*. Fairfax, VA: Tetra Tech, Inc.

U.S. Department of Transportation. (2006). *Construction Noise Handbook*. Retrieved from https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook09.cfm

Washington Department of Transportation. (2013). *Biological Assessment Preparation for Transportation Projects - Advanced Training Manual*. Seattle, WA: Washington Department of Transportation.

3.6 Summary of Potential Impacts on Resources

There are no references in this section.

4 Cumulative Impacts

American Association of Port Authorities. (2012). *North American Container Traffic: 2011 Port Rankings*. Retrieved from www.aapa-ports.org/Industry/content/cfm.

Connolly, N., C. Buchanan, M. O'Connell, M. Cronin, C. O'Mahony, and H. Sealy. (2001). *Assessment of Human Activity in the Coastal Zone: A research project linking Ireland and Wales* (Maritime

- INTERREG Series). Dublin, Ireland: Coastal Resources Centre, Centre for Research Into Environment and Health.
- Council on Environmental Quality. (1997). *Considering Cumulative Effects Under the National Environmental Policy Act*. Washington, DC: The Council on Environmental Quality.
- Council on Environmental Quality. (2005). *Guidance on the Consideration of Past Actions in Cumulative Effects Analysis*. Washington, DC: Executive Office of the President.
- Harriott, V. J. (2002). *Marine Tourism Impacts and Their Management on the Great Barrier Reef*. Townsville, Australia: James Cook University.
- Jefferson County Department of Community Development. (2015). *Staff Report to Jefferson County Planning Commission and Board of County Commissioners: Master Planned Resort Development Regulations Development Agreement*. Port Townsend, WA: Jefferson County.
- Labor, P. (1999). *Marketing Cultural Heritage on Water Trails*. Retrieved from http://nsgl.gso.uri.edu/washu/washuw99003/washuw99003_full.pdf.
- Puget Soundkeeper. (2018). *Our Priorities*. Retrieved from <https://pugetsoundkeeper.org/programs/current-priorities/>.
- Skewgar, E., and S. F. Pearson. (2011). *State of the Washington Coast: Ecology, Management, and Research Priorities*. Olympia, WA: Washington Department of Fish and Wildlife.
- Sullivan, J. (2017). The cleanup of Port Gamble Bay is now complete. *Kitsap Daily News*. Retrieved from <http://www.kitsapdailynews.com/news/the-cleanup-of-port-gamble-bay-is-now-complete/>.
- U.S. Department of the Navy. (2011). *Navy Safety and Occupational Health Program Manual*. (OPNAVINST 5100.23G CH-1). Washington, DC: U.S. Department of the Navy.
- U.S. Environmental Protection Agency. (1999). *Consideration of Cumulative Impacts in EPA Review of NEPA Documents*. Washington, DC: Office of Federal Activities.
- Washington Tourism Alliance. (2016). *New Research Indicates Modest State Tourism Growth*. Retrieved from <http://watourismalliance.com/new-research-indicates-modest-state-tourism-growth/>.

5 Other Considerations Required by NEPA

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