
3.12 Socioeconomic Resources and Environmental Justice

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

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3.12 Socioeconomic Resources and Environmental Justice

3.12.1 Introduction and Methods

The purpose of this section is to supplement the analysis of impacts on socioeconomic resources presented in the 2015 Northwest Training and Testing (NWTT) Final Environmental Impact Statement (EIS)/Overseas EIS (OEIS) with new information relevant to proposed changes in training and testing activities conducted at sea. Information presented in the 2015 NWTT Final EIS/OEIS that remains valid is noted as such and referenced to the appropriate sections. Any new or updated information describing the affected environment and analysis of impacts on socioeconomic resources associated with the Proposed Action is provided in this section.

The alternatives were also reviewed for any disproportionately high and adverse effects on any minority populations and low-income populations in accordance with Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. This EO requires each federal agency to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions. An analysis of environmental justice should also include an analysis of effects from the proposed action on children as described in EO 13045, *Protection of Children From Environmental Health Risks and Safety Risks*. EO 13045 requires that federal agencies prioritize assessing environmental health risks and safety risks that may disproportionately impact children. The Council on Environmental Quality has emphasized the importance of incorporating environmental justice review in the analyses conducted by federal agencies under NEPA and of developing protective measures, as appropriate for the action, that reduce or avoid disproportionate environmental effects on minority and low-income populations and the health and safety of children.

3.12.2 Affected Environment

The socioeconomic resources analyzed in this Supplemental EIS/OEIS (Supplemental) are the same as the resources identified and analyzed in the 2015 NWTT Final EIS/OEIS. The training and testing activities described in Chapter 2 (Description of Proposed Action and Alternatives) of this Supplemental are generally consistent with the training and testing activities analyzed in the 2015 NWTT Final EIS/OEIS and are representative of activities that the Department of Defense has been conducting in the NWTT Study Area for decades.

The concerns over socioeconomic resources raised by the public and how those resources may be impacted by the proposed training and testing activities are similar to concerns previously raised in the 2015 NWTT Final EIS/OEIS. The United States (U.S.) Navy's operating procedures to avoid or lessen impacts on local socioeconomic resources, as described in the 2015 NWTT Final EIS/OEIS, remain applicable and will continue to be implemented.

As described in detail in the 2015 NWTT Final EIS/OEIS, the socioeconomic analysis evaluated how elements of the human environment might be affected by ongoing and proposed training and testing activities in the Study Area. The Navy identified three broad socioeconomic elements, based on their association with human activities and livelihoods in the Study Area:

- commercial transportation and shipping (Section 3.12.2.1)
- commercial and recreational fishing (Section 3.12.2.2)

- usual and accustomed fishing by Pacific Northwest American Indian tribes and nations and Alaska Natives is analyzed in Section 3.11 (American Indian and Alaska Native Traditional Resources)
- tourism and recreation (Section 3.12.2.3)

Each of these resources is an aspect of the human environment that involves economics (e.g., employment, income, or revenue) and social conditions (e.g., enjoyment and quality of life) in the Study Area. These three elements were chosen as the focus of the analysis in this section because of their importance to the local economy and the way of life in the region, and the potential for these elements to be impacted by the proposed training and testing activities.

The analysis of environmental justice in the 2015 NWTT Final EIS/OEIS was expanded upon in this Supplemental EIS/OEIS to address concerns expressed by the public on the potential for some training and testing activities to disproportionately impact vulnerable populations.

Data and information from government technical documents and reports, scientific journals, and state and federal agency databases were reviewed to assess any changes in the socioeconomic environment from conditions described in the 2015 NWTT Final EIS/OEIS. Based on this review, and as summarized in this section with the support of updated information, socioeconomic resources in the marine environment and adjacent land areas have not changed appreciably since 2015.

A complete description of the extent of the Study Area, including special use airspace, sea space, and pierside and inland facilities, is provided in Section 2.1 (Description of the Northwest Training and Testing Study Area). Briefly, training and testing activities proposed in this Supplemental would occur in one or more of these three Study Area subdivisions:

- Offshore Area (Pacific Northwest Operations Area, including the surf zone at Pacific Beach and the Olympic Military Operations Area [MOA])
- Inland Waters (Washington State inland waters)
- Western Behm Canal (Southeast Alaska Acoustic Measurement Facility [SEAFAC])

There are over 192,000 Sailors, Marines, civil servants, military retirees, and their family members who live and work in the Pacific Northwest. Washington State's second-largest employment sector is defense, with \$12.7 billion in spending each year. The immediate and surrounding communities in which Navy personnel live and work benefit from over \$7.6 billion being added to the economy each year, along with the Navy's life-saving mutual aid for emergency response and search and rescue capabilities.

Navy leadership and the regional environmental team are actively involved in community partnerships in the Pacific Northwest and Alaska in a number of ways. For example, Navy personnel provide support for search and rescue operations, fire protection and response services, medical transportation, and humanitarian assistance and disaster relief. A number of the training and testing activities proposed in this Supplemental support these operations. Strategic engagement efforts within communities allow the Navy to strengthen relationships with federal, state, and local agencies; tribes; and non-governmental organizations.

3.12.2.1 Commercial Transportation and Shipping

The Navy conducts training and testing activities in areas where commercial transportation and shipping also occurs. Notifications of potentially hazardous military activities are communicated to all vessels and

operators by use of Notices to Mariners (NTMs), issued by the United States Coast Guard (USCG), and Notices to Airmen (NOTAMs), issued by the Federal Aviation Administration (FAA).

Following a review of recent literature, including government technical documents, reports, and scientific journals, the information presented on ocean traffic in the Study Area, as described in the 2015 NWT Final EIS/OEIS, has not appreciably changed.

3.12.2.1.1 Ocean Traffic

Commercial shipping is a significant component of the regional economy. Commercial goods are transported through the Offshore Area to the major international ports of Seattle, WA; Tacoma, WA; and Portland, OR, as well to smaller domestic ports in Washington's inland waters. The maritime Port of Seattle-Tacoma (combining the trade at the two ports) was the nation's sixth-highest ranked port (out of 150) by value of internationally traded cargo (imports + exports) in 2017. Goods valued at nearly \$83 billion passed through the combined port (American Association of Port Authorities, 2018). The Port of Seattle-Tacoma was ranked 11th nationally by cargo tonnage (foreign + domestic) in 2017, processing over 48 million metric tons of goods; this amounted to a decrease of 2.4 percent compared to the 2016 total but was 8 percent greater than the 2015 total (American Association of Port Authorities, 2018; U.S. Army Corps of Engineers, 2018b). The Port of Seattle-Tacoma specializes in international trade, but it also contributes significantly to the national economy through domestic trade, handling 10 million tons of goods in 2017 (U.S. Army Corps of Engineers, 2018b). Much of the domestic trade is with Alaska and Hawaii, making the port a key link between the country's two most remote states and the contiguous United States. Separately, the two ports were ranked 29th and 32nd, respectively, for total trade (foreign and domestic) by volume (tons) in 2017. Combined, the two ports ranked 14th in total trade (by volume).

Since 2013, international trade at the ports of Seattle and Tacoma has ranged between 33 and 39 million metric tons per year, and the volume of domestic trade has remained relatively consistent at 10 million tons per year (Figure 3.12-1) (U.S. Army Corps of Engineers, 2018b). Farther to the south, the Port of Portland was ranked 33rd in total trade (foreign and domestic) by volume, handling over 23 million metric tons of goods in 2017. The Port of Portland supports more domestic trade than either of the ports of Seattle or Tacoma (U.S. Army Corps of Engineers, 2018b).

Together, the ports of Tacoma and Seattle had nearly 1,950 port calls in 2017, approximately 95 percent by vessels transporting 20-foot equivalent units (i.e., containers) (The Northwest Seaport Alliance, 2019). Over 3.7 million containers combined passed through the two ports. The Port of Portland received just 11 port calls from container vessels in 2015 but 277 port calls from vessels transporting dry bulk goods. Due to a labor dispute, just 46 containers were handled at the Port of Portland in 2017, down from over 130,000 just three years prior (Wilson, 2017). The active commercial shipping industry at these three major U.S. international ports has a direct economic impact on numerous businesses and jobs that support the shipping industry, from dock workers to trucking companies, and, indirectly, smaller businesses in the food and retail sector. In 2017, the ports of Seattle and Tacoma supported over 58,000 jobs, including over 20,000 direct jobs; and generated over \$12 billion in business revenue (\$5.9 billion direct) and \$1.9 billion in personal income. The average annual wage for direct jobs was \$95,000. In addition, the ports generated over \$136 million in various taxes for the State of Washington (The Northwest Seaport Alliance, 2019).

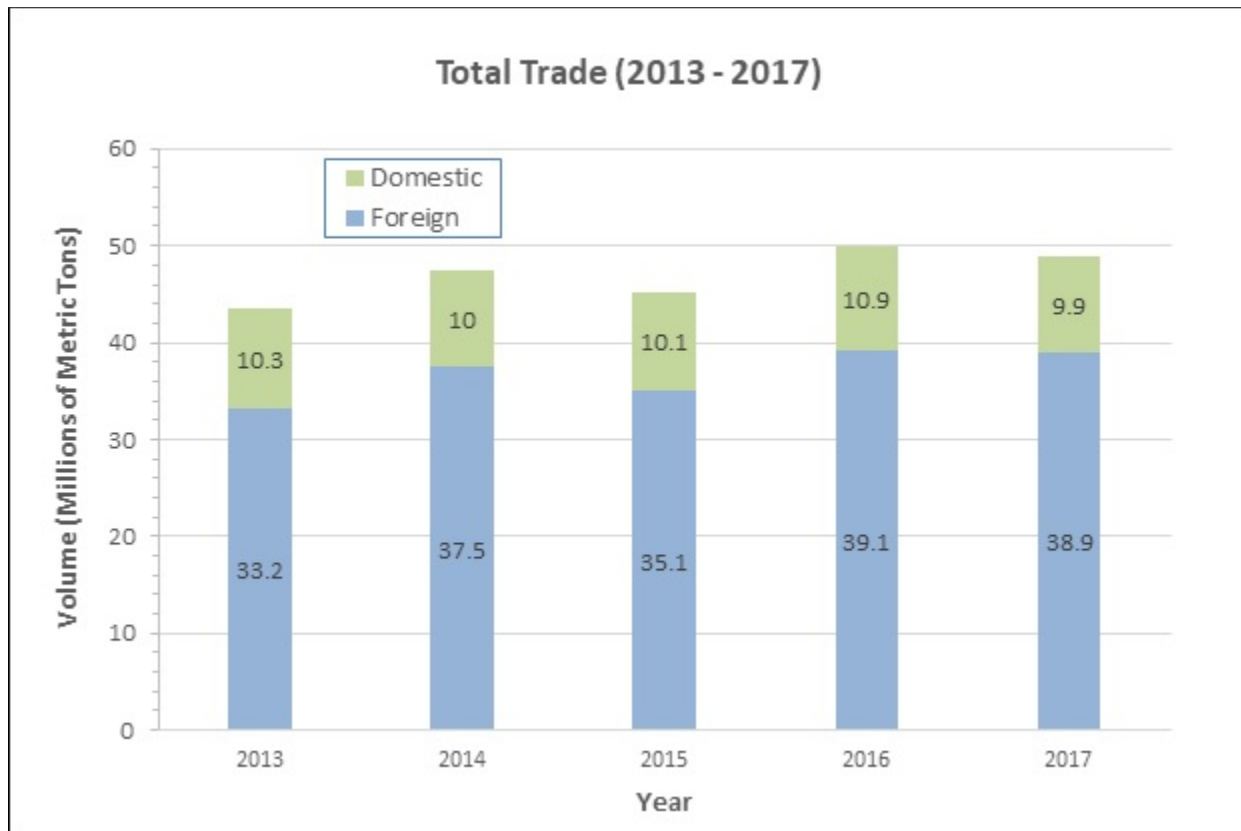


Figure 3.12-1: Total Waterborne Trade (Foreign and Domestic) at the Port of Seattle-Tacoma from 2013 to 2017

A port call, the metric commonly used by commercial ports to evaluate port operations, is equivalent to two vessel transits (one inbound and one outbound). Vessel transits are a more relevant metric for assessing potential interactions between commercial shipping and the proposed training and testing activities. Nearly 1,950 vessels called at the ports of Tacoma and Seattle combined in 2017, and 500 called at the Port of Portland in 2015 (the most recent data available) (The Northwest Seaport Alliance, 2019; U.S. Maritime Administration, 2016). Considering only these three major ports, approximately 4,900 vessels transits of large commercial vessels would be expected annually in the Study Area.

Refer to Section 3.12.2.1.1 (Commercial Shipping) in the 2015 Final NWTT EIS/OEIS for additional information on the economic contributions of commercial shipping at the ports of Seattle, Tacoma, and Portland to the region.

3.12.2.1.1.1 Offshore Area

Most vessels entering or leaving ports in Washington, Oregon, and Northern California travel northwest, southwest, or south through the Study Area without incident or delay. Shipping to and from the south typically follows the coastline. Smaller vessels may travel within 3 or 12 nautical miles (NM) from shore and remain shoreward of the Study Area, but larger commercial shipping vessels typically remain farther from shore (Figure 3.12-2).

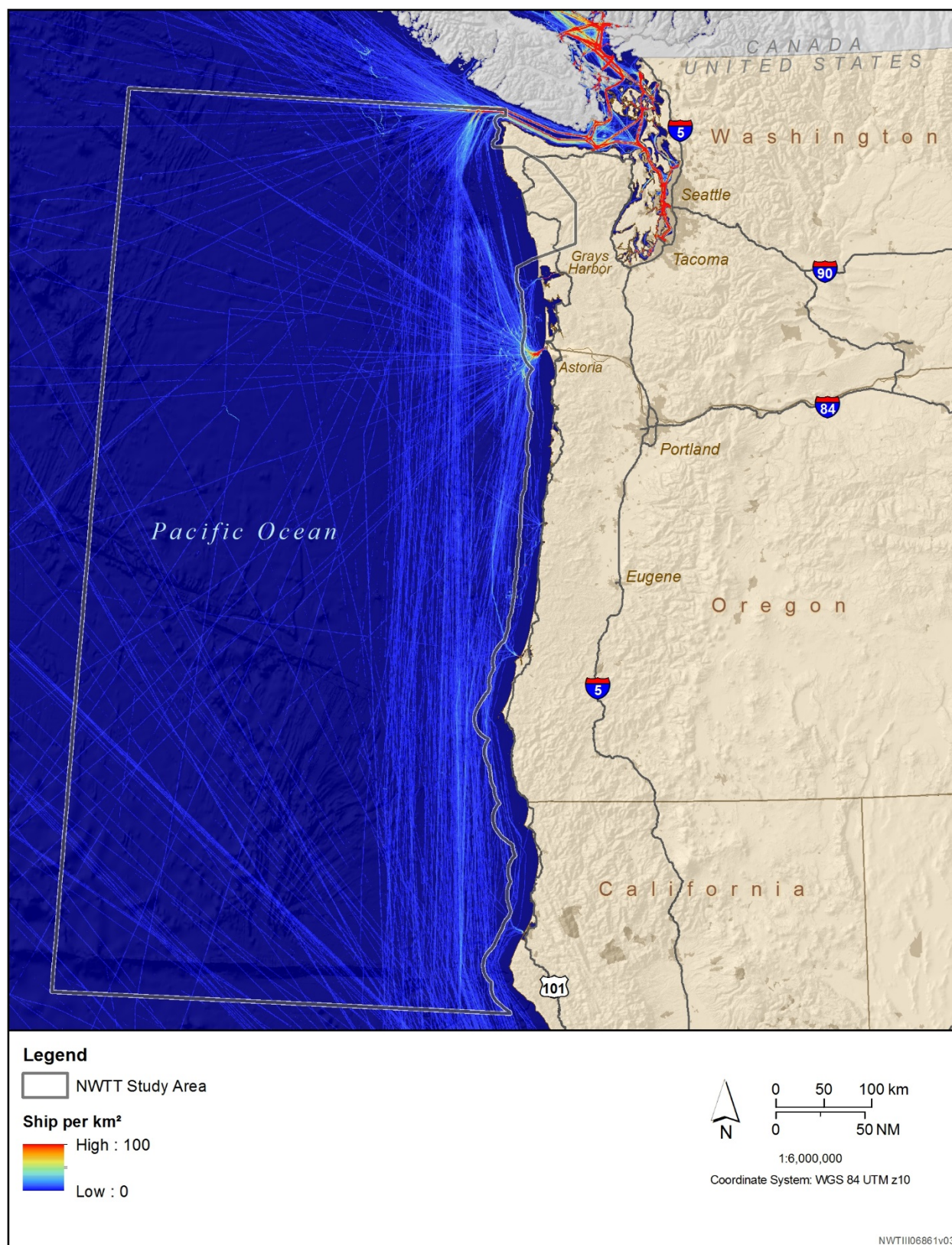


Figure 3.12-2: Relative Density of Vessel Traffic Along Shipping Routes in the Offshore Area

Ships traveling overseas between ports in the Study Area, Hawaii, Alaska, and the Far East typically travel via the most direct route or the great circle route. Vessel tracks depicted in Figure 3.12-2 are primarily from larger commercial vessels (e.g., container ships, oil tankers); however, some tracks may represent smaller vessels that are broadcasting location information via the Automatic Identification System (National Oceanic and Atmospheric Administration, 2015).

3.12.2.1.1.2 Inland Waters

There are six smaller ports in Inland Waters portion of the Study Area, five of which were ranked by the U.S. Army Corps of Engineers in 2017 to be in the top 150 U.S. ports by cargo volume (Table 3.12-1). The Port of Vancouver is not in the Study Area and is not a U.S. port, but data on the port are included to show that the majority of commercial vessel transits through the Strait of Juan de Fuca transit north to Vancouver rather than south into the Inland Waters. In addition to transferring cargo, these smaller ports are used by other commercial vessels, such as ferries that transport people and vehicles across Puget Sound, and whale-watching vessels that take passengers on excursions into Puget Sound and surrounding waters. These activities have been co-occurring with military activities with minimal interactions for years.

Table 3.12-1: Ports in the Inland Waters Portion of the Study Area Ranked by Cargo Volume in 2017

Port	Rank	Cargo Volume (tons)	Vessel Transits ²
Anacortes	51	9,212,192	410
Grays Harbor	105	2,303,154	168
Everett	127	1,590,855	236
Olympia	141	1,089,375	Not Available
Port Angeles	147	773,840	488
Cherry Point	NR	Not Available	518
Vancouver, Canada ¹	NR	138,082,585	6,290

¹If ranked as a U.S. port, Vancouver, Canada would have ranked third in total trade by volume.

²Vessel transit data are for the year 2015.

Source: (U.S. Army Corps of Engineers, 2018a); U.S. Maritime Administration (2016); Vancouver Fraser Port Authority (2017); NR = Not Ranked

Over 1,300 port calls at smaller ports in the Inland Waters portion of the Study Area occurred in 2015 (U.S. Maritime Administration, 2016). Assuming each port call is equivalent to two vessel transits, over 2,600 vessel transits were handled by those ports in 2015 (Table 3.12-1). Vessels accessing the ports of Seattle and Tacoma also transit through the Inland Waters portion of the Study area. As noted in Section 3.12.2.1.1 (Ocean Traffic), approximately 4,900 vessel transits to and from these two major ports would be expected annually based on data from 2017 (Seattle and Tacoma) and 2015 (Portland). Combined with totals from the smaller ports, over 6,000 vessel transits through the Inland Waters portion of the Study Area would be expected annually. The relative density of vessels in the Inland Waters portion of the Study Area is shown in Figure 3.12-3.

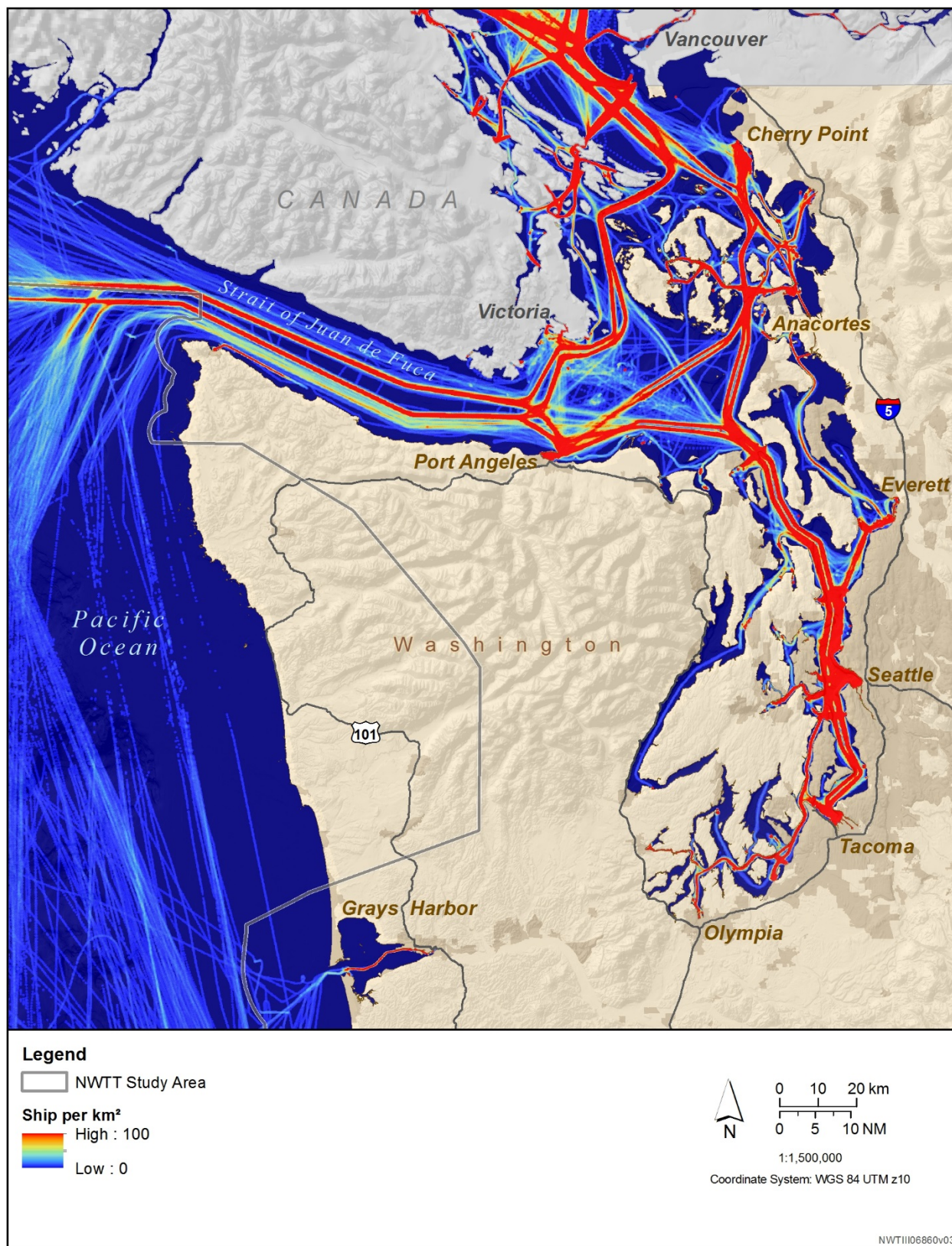


Figure 3.12-3: Relative Density of Vessel Traffic Along Shipping Routes in the Inland Waters Portion of the Study Area

The Port of Vancouver, Canada, is a major international commercial port, handling over 147 million tons of cargo and receiving 3,145 foreign vessels in 2018 (Vancouver Fraser Port Authority, 2019) (Table 3.12-1). Vessels accessing the port transit through the Strait of Juan de Fuca then head north navigating through the Haro Strait between Vancouver Island and the San Juan Islands. The Canadian port city of Victoria, located on the southern tip of Vancouver Island, is a popular cruise ship and tourist destination for international, including U.S., travelers. In 2018, 250 cruise ships carrying over 640,000 passengers visited Victoria (Greater Victoria Harbour Authority, 2019). The port also handles daily ferry traffic from Port Angeles and Seattle. With the exception of ferry transits from Seattle, vessel traffic associated with Canadian ports mainly occurs in the Strait of Juan de Fuca. The Washington State Department of Transportation operated 23 ferries along 10 routes throughout Puget Sound (equivalent to 200 miles of highway) (Washington State Department of Transportation, 2018). Combined, the ferries make nearly 450 transits between terminals daily and can operate 20 or more hours per day. On an annual basis, this equates to over 160,000 vessel transits made by ferries in the Inland Waters portion of the Study Area. The Washington State ferry system is the largest in the United States and fourth-largest in the world, and is valued at \$4.8 billion (Washington State Department of Transportation, 2018).

Ocean Traffic Near Navy Ranges and Navy Vessels

The U.S. Navy makes up less than 1 percent of all vessel traffic in Puget Sound area waters. The USCG Vessel Traffic Service Puget Sound monitors maritime vessel traffic in the Strait of Juan de Fuca, Rosario Strait, Admiralty Inlet, and Puget Sound south to Olympia. In 2018, the USCG recorded 217,951 total vessel transits in these waters. Navy Region Northwest Port Operations collects data on the movements of Navy vessels transiting to and from the four Navy installations in the Inland Waters area as well as civilian ports, including the port of Seattle, used occasionally by Navy vessels. In 2018, there were 749 ship or submarine movements to and from these ports. Smaller Navy vessels are not tracked in the same way. To better estimate the movements of all Navy vessels, the Navy conservatively estimated movements of support or escort vessels that frequently accompany larger ships and submarines. After factoring in the movements of the smaller vessels, the estimate was rounded up to the nearest thousand to arrive at a very conservative estimate of 2,000 total vessel movements in 2018. As noted above, the Navy's 2,000 vessel movements are less than 1 percent of vessel movements recorded by the USCG in 2018.

The Keyport Range site, Dabob Bay Range Complex, Carr Inlet Operations Area, Navy 3 and Navy 7 Operation Areas, and several pierside facilities are all located within the Inland Waters portion of the Study Area (see Figure 2.2-3). The Navy limits or restricts access to certain areas (e.g., Crescent Harbor) to maintain the safety of the public and military personnel when potentially dangerous activities are being conducted (e.g., mine warfare training). Access to pierside locations is restricted at all times as required by security protocols.

Some activities proposed to occur in the Inland Waters would temporarily obstruct navigation through the area. These activities would be similar to activities analyzed in the 2015 NWTT Final EIS/OEIS, and limits on navigation would be of a similar nature. Mariners are notified of these activities in several ways (e.g., an NTM issued by the USCG), and those same notification procedures would continue. In addition, the USCG has published a final rule establishing protection zones extending 500 yards (yd.) around all Navy vessels in navigable waters of the United States and within the boundaries of the Coast Guard Pacific Area (33 Code of Federal Regulations [CFR] 165.2030 - Pacific Area). All vessels must proceed at a no-wake speed when within a protection zone. Non-military vessels are not permitted to enter an area

within 100 yd. of a U.S. naval vessel, whether underway or moored, unless authorized by an official patrol.

Dabob Bay Range Complex and Hood Canal military operating areas are charted on navigational charts. When activities are occurring in Dabob Bay, the Navy will activate yellow, white, and red warning lights positioned at Sylopash Point, Pulali Point, Whitney Point, Zelatched Point, and the southeast end of Bolton Peninsula to notify non-military vessels of the status of the range. Yellow or alternating white and yellow lights indicate the following concerns:

- Non-military vessels should proceed with caution;
- Range activities are in progress, but no noise-sensitive acoustic measurement tests are in progress; or
- Vessels should be prepared to shut down engines when lights change to red.

Red or alternating white and red lights indicate the following concerns:

- Range activities involving critical measurements are in progress;
- Engines should be stopped until red beacons have been shut off, indicating the test is completed; and
- Advice of Navy personnel on guard boats should be followed when in or near the range site. Typically, boat passage is permitted between tests when the yellow beacons are operating.

Pierside sonar maintenance testing within the Study Area is conducted within the Puget Sound at Naval Base Kitsap Bremerton, Naval Base Kitsap Bangor Waterfront, and Naval Station Everett. Activities at these pierside locations are conducted in the established waterfront restricted areas for those installations. Additional information about restricted areas associated with these facilities, including access by the public, is provided in 33 CFR 334.1240 (Sinclair Inlet), 33 CFR 334.1220 (Hood Canal, Bangor), and 33 CFR 334.1215 (Port Gardner, Everett Naval Base).

3.12.2.1.1.3 Western Behm Canal, Alaska

The Port of Ketchikan is located approximately 10 miles south of Western Behm Canal and SEAFAC. Ketchikan is a commercial port and was ranked 145th out of 150 ports in total trade by cargo volume (tons) in 2015 (U.S. Army Corps of Engineers, 2016). The port transferred almost 1 million tons of cargo, over 90 percent in domestic trade, in 2015, indicating its importance to communities in southeast Alaska. Major commodities arriving at the port included oil and fuel, building products (e.g., wood and concrete), and groceries (U.S. Army Corps of Engineers, 2016). While salmon fishing remains an important industry in Ketchikan's economy, tourism and the passenger cruise industry are now the primary economic drivers. Over 1 million cruise ship passengers visited Ketchikan each year in 2017 and 2018. In both years, the port reported over 500 port calls by cruise vessels, all between April and September (Ketchikan Visitors Bureau, 2019). Western Behm Canal is not part of the route used by large vessels, including cruise ships, but small craft tourism traffic (e.g., sight-seeing and charter fishing) in the Canal is directly influenced by cruise ship port calls in Ketchikan. In addition, recreational and commercial fishing boats, as well as private transportation craft, use Western Behm Canal regularly.

Western Behm Canal includes five restricted areas (see Figure 2.2-4); the largest, Area 5, spans the width of the Canal and encompasses Areas 1, 2, and 3. During operations, the Navy can close the restricted areas to all vessel traffic. Typically, such closures do not exceed 20 minutes. Notices to

Mariners announcing restricted access have been issued on average 10 times per year; about 8–12 events occur annually that require restrictions on vessel traffic to ensure that the participant vessel (usually a submarine, which is out of the visual observation of small boat operators) has a clear sea space to navigate safely. Notices to Mariners usually extend for a period of four or five days, but limitations on vessel traffic typically last for 20 minutes and occur up to twice per hour. During these times, small vessels (30 feet [ft.] or less) transiting through Western Behm Canal are required to stay within 1,000 yds. of the shoreline, maintain a maximum speed of 5 knots, and be in radio contact with SEAFAC. The Navy uses the radio contact to ensure that all vessels comply with the navigation rules during these critical periods. On occasion, the engine of a transiting vessel may create noise that interferes with data collection during a test. When this occurs, SEAFAC may request that the vessel operator voluntarily turn off the engine during the period of data collection. Alternatively, SEAFAC may delay data collection until the vessel has cleared the area. When testing is not being conducted, vessel traffic is not restricted, but permanent restrictions on anchors, nets, towing, and dumping remain in force. Additional information on transiting the restricted areas in Western Behm Canal are provided in 33 CFR 334.1275 (West Arm Behm Canal, Ketchikan, Alaska, restricted areas) and summarized in Section 3.13 (Public Health and Safety).

The Navy conducts tests in the Western Behm Canal throughout the year. However, during the peak tourism and fishing season of May 1 through September 15, the Navy conducts acoustic measurement tests that require only transitory restrictions in Area 5 (see Figure 2.2-4) for a total of no more than 15 days. This timeframe is within the popular cruise ship season when visitation and recreational use of Western Behm Canal is highest. This is also the time when vessel traffic associated with commercial fishing is highest.

Public notification (e.g., NTMs) that the Navy will conduct operations in Western Behm Canal is given at least 72 hours in advance to the following Ketchikan contacts: USCG, Ketchikan Gateway Borough Planning Department, Harbor Master, Alaska Department of Fish and Game, KRBD radio, KTKN radio, and the Ketchikan Daily News.

3.12.2.1.2 Air Traffic

Air traffic refers to movements of aircraft through airspace. Safety and security factors dictate that use of airspace and control of air traffic be closely regulated. Accordingly, regulations applicable to all aircraft are promulgated by the FAA to define permissible uses of designated airspace and to control that use. These regulations are intended to accommodate the various categories of aviation, whether military, commercial, or general.

To better define and administer this process, the Federal Aviation Agency (the precursor to the FAA) was created in 1958 with the signing of the Federal Aviation Act and was given regulatory authority over all U.S. navigable airspace. The Federal Aviation Agency was renamed the FAA in 1967 with the establishment of the Department of Transportation. The FAA's primary responsibility is to issue and enforce regulations that ensure safe and efficient air transit throughout U.S. navigable airspace. The FAA has the regulatory authority to assign the use of airspace, including airspace used by military aircraft, and may revoke or otherwise modify airspace in the public interest (49 U.S.C. 40103 Sovereignty and Use of Airspace). The FAA defines the dimensions of controlled airspace (e.g., altitude range) and, in coordination with the Department of Defense, the FAA identifies and designates special use airspace needed by the military to safely conduct activities that may be hazardous to non-participating aircraft. The FAA's requirements for implementing environmental regulations under NEPA are outlined in FAA

Order 1050.1F (Environmental Impacts: Policies and Procedures). Significance thresholds for noise impacts are defined in the Order.

Common airways over the Study Area are depicted in Figure 3.12-4. A detailed description of special use airspace (military operating areas, restricted airspace, and warning areas) used by the military is provided in Chapter 2 (Description of Proposed Action and Alternatives).

3.12.2.1.2.1 Offshore Area

Air routes and airways in the Study Area are primarily managed by the Seattle Air Route Traffic Control Center located near the Seattle-Tacoma International Airport, the largest commercial airport in the region. The Seattle Terminal Radar Approach Control coordinates approach services for the Seattle-Tacoma International Airport and has over 450,000 operations per year for southern and central Puget Sound. Based on the available information, air traffic in the Offshore Area, as described in the 2015 Final NWTT EIS/OEIS, has not appreciably changed.

3.12.2.1.2.2 Inland Waters

The U.S. Navy makes up approximately 6.2 percent of all aircraft traffic in Washington State. The FAA Operations Network reported approximately 1.4 million flights in Washington State in 2018. In that same year, the Navy recorded approximately 88,000 flights at Naval Air Station (NAS) Whidbey Island, which equates to 6.2 percent of flights in Washington State. The FAA's data do not include the flights to and from British Columbia that also pass through airspace above Washington State, such that total air traffic traversing Washington State is likely higher, and the Navy's percent contribution to that total is lower. The Navy's flight data also include the dozens of search and rescue missions flown each year in support of the community.

The special use airspace in the Puget Sound portion of the Study Area consists of Restricted Area 6701 (R-6701) and Chinook MOAs (Figure 3.12-5). NAS Whidbey Approach Control, an FAA-certified control facility, not only provides service to military aircraft operating out of NAS Whidbey Island, it also provides approach control service for 18 outlying civilian and USCG airfields and 12 locations for the ambulance service Airlift Northwest. Prior to potentially hazardous training and testing activities involving aircraft, air traffic access restrictions are released to the aviation community through a NOTAM and broadcast on their Automated Terminal Information System. Based on the available information, air traffic in the Inland Waters portion of the Study Area (Figure 3.12-5), as described in the 2015 Final NWTT EIS/OEIS, has not appreciably changed.

3.12.2.1.2.3 Western Behm Canal, Alaska

Controlled airspace (Figure 3.12-4) similar to a temporary flight restriction exists over the SEAFAC area in Western Behm Canal during acoustic tests. SEAFAC currently issues an informal request to aircraft flying below 3,000 ft. above mean sea level (MSL) to divert around Restricted Area 5 during testing events. At this time, SEAFAC is not using a formal NOTAM to alert aircraft of upcoming testing events. The temporary flight restriction extends up to 3,000 ft. and has a radius of 1 NM. It is intended to keep floatplanes with tourists or fishermen at a distance when SEAFAC is conducting acoustic tests.

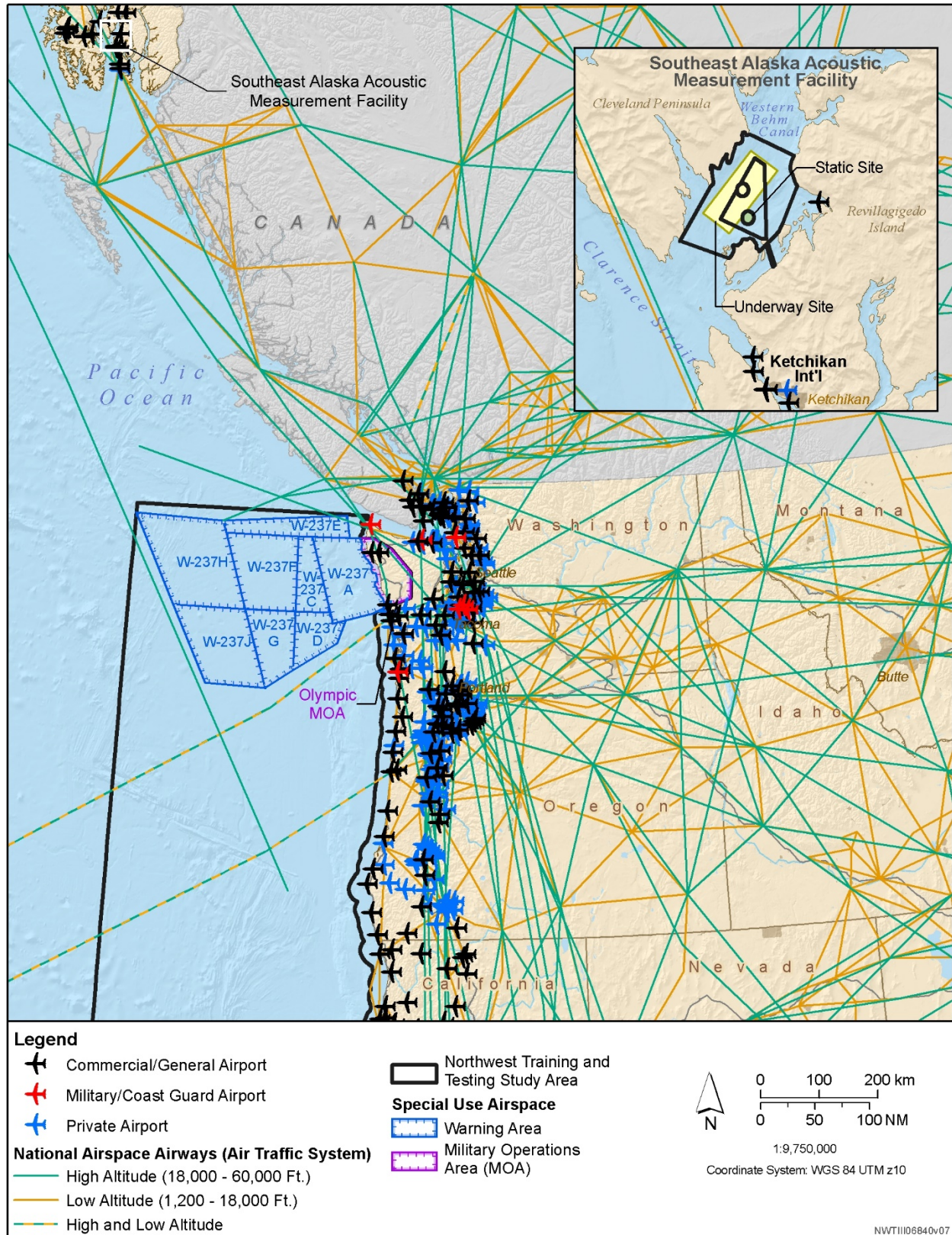


Figure 3.12-4: Airspace and Air Traffic Airways in the Northwest United States

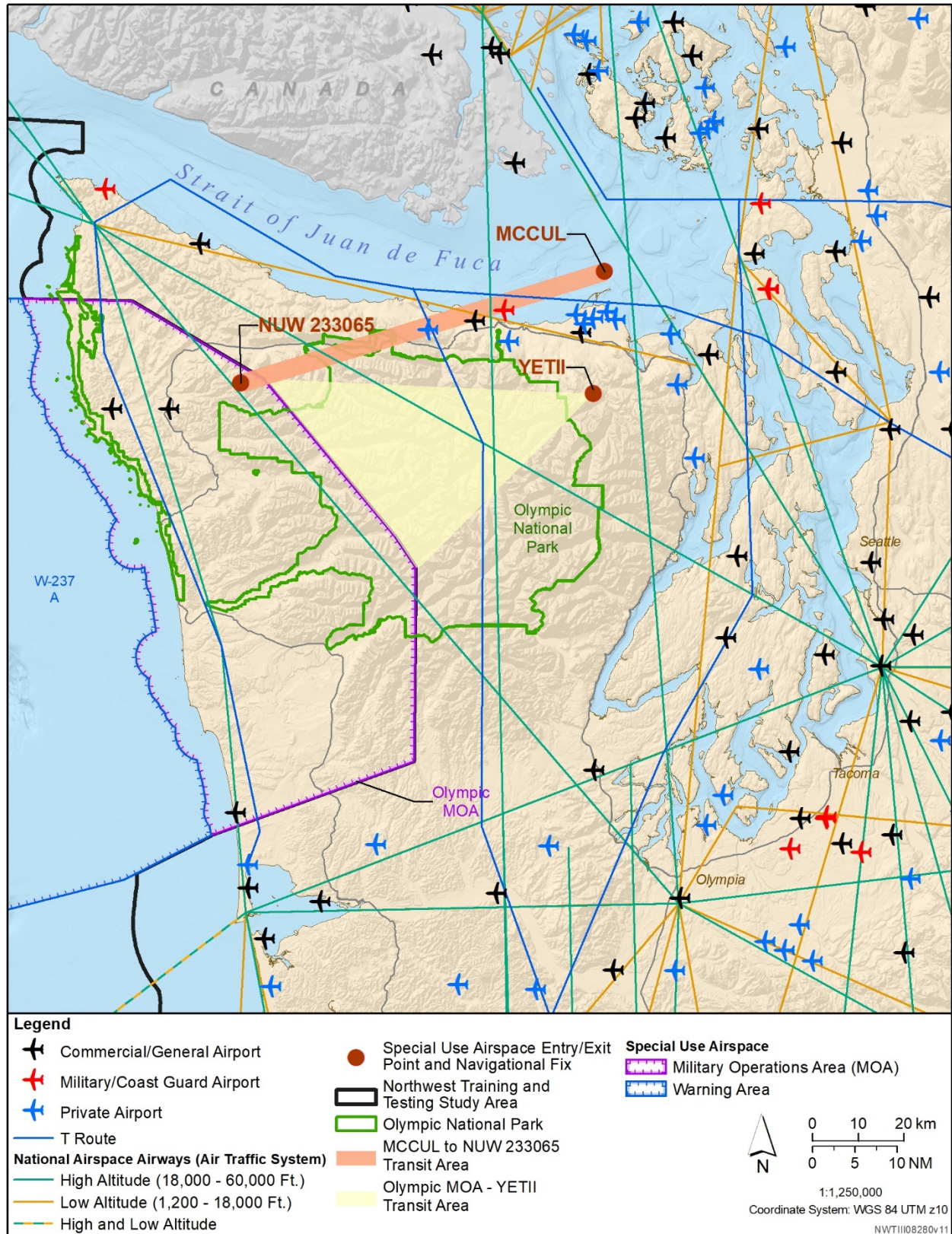


Figure 3.12-5: Airspace and Air Traffic Airways in Inland Waters Area

3.12.2.1.3 Vehicle Traffic

3.12.2.1.3.1 Inland Waters

The only portion of the Study Area with vehicular traffic that could be impacted by military activities is in the Inland Waters area, specifically that portion of State Route 104 in northern Kitsap County and eastern Jefferson County around the Hood Canal Floating Bridge¹. The route extends across the Hood Canal Floating Bridge, a drawbridge with two 300-ft. spans that can open to allow marine traffic to pass. During openings, vehicle traffic on State Route 104 queues and back-ups occur. In 2016, an average of 18,000 vehicles crossed the bridge each day, and there were 394 bridge openings (in 2015) (Hughes, 2017). The previous three years of data (2013 through 2015) indicate an increasing trend in vehicle traffic over the bridge (16,000 vehicles in 2013 and 2014, 17,000 vehicles in 2015) (Hughes, 2017). Vehicle traffic is typically higher in summer than during other times of the year, partly due to increased tourism activities in the area, including visits to the Olympic National Park. There is no projected seasonal variation in the number of training and testing activities that require transit past the Hood Canal Bridge.

Commercial or recreational vessels intending to pass through will contact the bridge crew at least one hour before the opening (Washington State Department of Transportation, 2011). The Washington Department of Transportation uses a variety of electronic notification systems, including highway signage, web site notices, and subscriber alerts, to notify the public of upcoming openings. Vehicle traffic is held at the traffic control gates located on the bridge during openings for commercial or recreational vessels. These openings last for 10–45 minutes, though clearance of the traffic queue will take longer, particularly in summer months when tourism traffic is at its peak (Washington Department of Transportation, 2017).

Bridge openings to accommodate Navy vessels (e.g., submarines) may take longer, lasting for up to 60 minutes, because multiple large vessels must often pass the bridge in close formation, requiring that both spans are retracted to their maximum extent. Traffic can queue for up to 4 miles on either side, depending on the time of day and season. These longer bridge openings also receive advance notice via notification boards on approaching highways; however, the lead-time can be less than the state mandated minimum of one hour due to security protocols (non-military openings require a minimum lead time of one hour).

3.12.2.2 Commercial and Recreational Fishing

This section describes the importance of commercial and recreational fisheries to the local and national economy. Transits of fishing vessel are accounted for under Section 3.12.2.1.1 (Ocean Traffic).

Commercial fishing, defined as the selling of the catch for commercial gain, takes place throughout the Offshore Area, from nearshore waters adjacent to the mainland to the offshore fishing grounds. For the entire United States, approximately 35 percent of commercial fisheries landings (by volume) are caught between 0 and 3 NM from shore, and 60 percent are caught between 3 and 200 NM from shore. The remaining 5 percent are caught on the high seas (beyond 200 NM from shore) or in foreign waters (National Marine Fisheries Service, 2016b).

¹ While Washington State ferries are part of the state highway system, the impacts to vehicles transiting on the ferries is accounted for under vessel traffic, not vehicle traffic.

3.12.2.2.1 Offshore Area

The Pacific Fishery Management Council is one of eight regional fishery management councils established by the Magnuson Fishery Conservation and Management Act of 1976 and is responsible for managing fishery resources along the coasts of California, Oregon, and Washington. The council has defined five main fisheries for the region: groundfish (e.g., rock fish species, flounder, sole), highly migratory species (e.g., tuna), coastal pelagic species (i.e., northern anchovy, Pacific mackerel, jack mackerel, Pacific sardine, market squid, and krill), Pacific halibut, and salmon (Pacific Fishery Management Council, 2017, 2019a).

The National Marine Fisheries Service (NMFS) maintains a database of commercial fisheries landings by state and species or species group. In 2017, commercial landings for Washington State totaled nearly 216 million pounds and were valued at over \$277 million (fifth-highest in the nation) (National Marine Fisheries Service, 2018b). While the volume of commercial landings has increased substantially over the 2015 total of 155 million pounds, the total value has decreased from the 2015 total of \$300 million (National Marine Fisheries Service, 2016a). Shrimp landings, specifically brine, penaeid, spot, and ocean shrimp were the highest by volume in 2015 at over 42 million pounds, but totaled only 7 million pounds in 2017. The catch of Pacific Hake, which exceeded 128 million pounds, was the highest by volume in 2017 (Figure 3.12-6). Landings of Dungeness crab and chum salmon were the second- and third-highest by volume, respectively. Species are listed from highest to lowest volume in the figure legend (Figure 3.12-6).

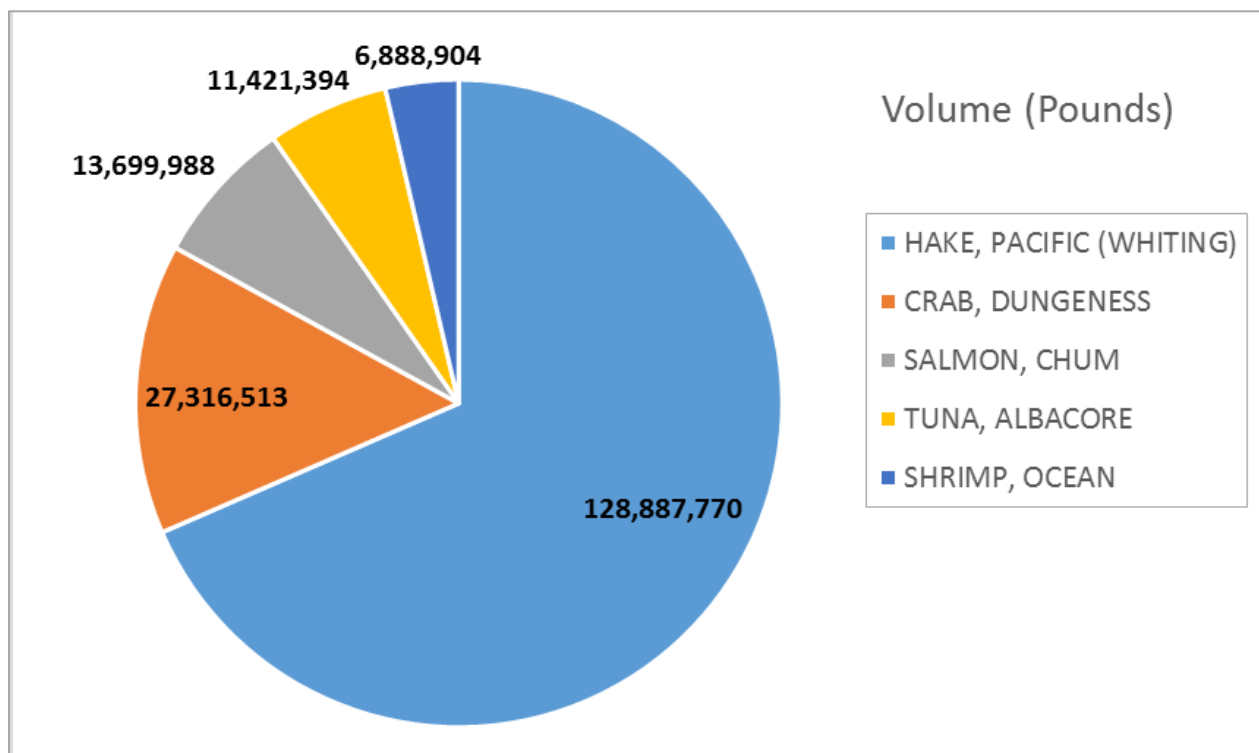


Figure 3.12-6: Volume of Commercial Landings by Species Group in Washington State Waters in 2017

The highest volume did not necessarily correspond with the most economically valuable species. Dungeness crab landings had the highest value among species at over \$100 million (Figure 3.12-7) and

made up over one-third of the total value of all commercial landings in 2017 (species are listed from highest to lowest value in the figure legend). Albacore tuna, valued at over \$23 million, was the only other species that ranked in the top five by volume and value. As reported in the 2015 Final NWTT EIS/OEIS, in 2011, the total value of commercial landings was approximately \$290 million. In 2015, the value of commercial landings had increased by approximately 3 percent (to \$300 million), but in 2017, the value decreased from the 2015 total by about 7.6 percent despite a nearly 40 percent increase in volume (pounds) of commercial landings. The disparity between the increase in volume and the decrease in value can largely be attributed to the catch of Pacific hake, which increased from nearly 33 million pounds in 2015 to over 128 million pounds in 2017; however, the value of Pacific hake only increased from \$2.6 million to \$8 million.

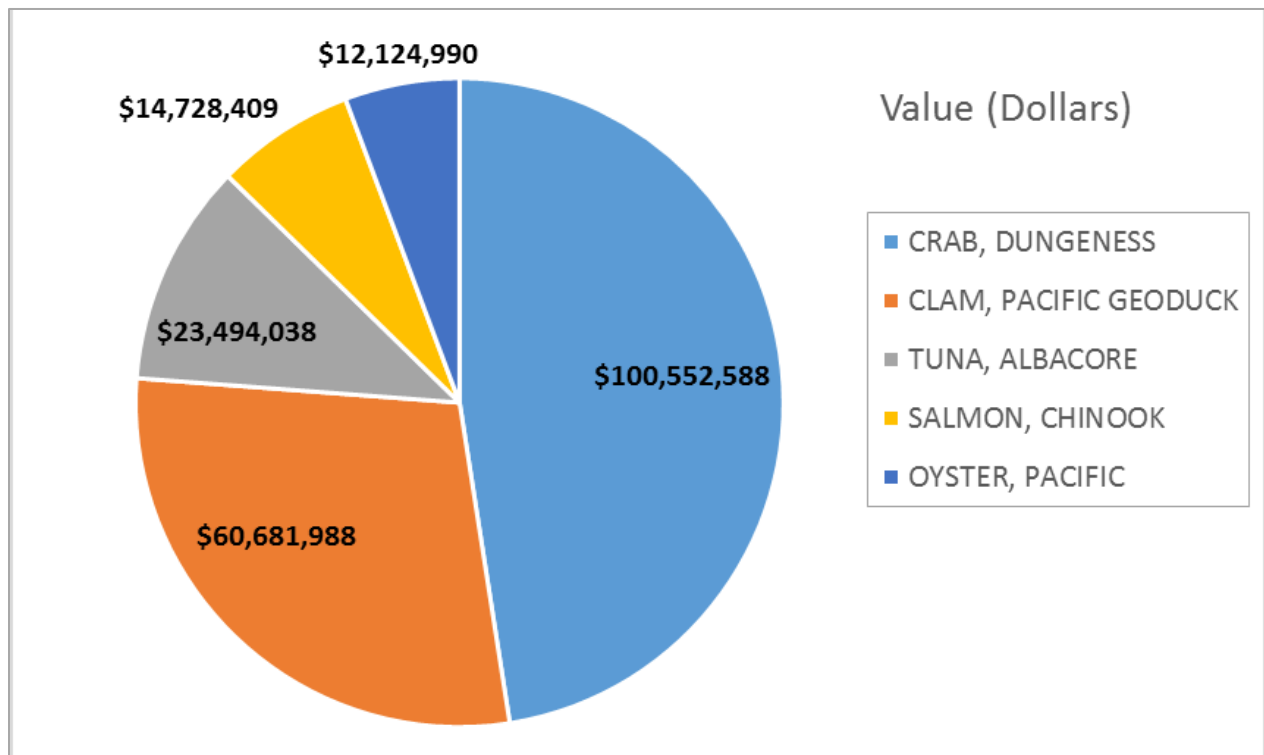


Figure 3.12-7: Value of Commercial Landings by Species Group in Washington State Waters in 2017

In 2015, commercial landings in Oregon exceeded 194 million pounds and were valued at just under \$114 million (11th-highest value in the nation) (National Marine Fisheries Service, 2016a). Two years later, commercial landings in Oregon totaled more than 296 million pounds and \$147 million (National Marine Fisheries Service, 2018b). In 2015, over 86 percent of landings by volume (pounds) were from groundfish species and shrimp (National Marine Fisheries Service, 2016a). However, in 2017, similar to the catch in Washington, landings of Pacific hake topped all other species by volume, making up 67 percent of total commercial landings in Oregon waters (Figure 3.12-8) (species are listed from highest to lowest volume in the figure legend). The species with the highest value in 2017 was Dungeness crab, which made up nearly 40 percent of the total value of all landings (Figure 3.12-9) (species are listed from highest to lowest value in the figure legend). The four other species that made up the top five most valued in 2017, Pacific hake, sablefish, ocean shrimp, and albacore tuna, were relatively close in total value.

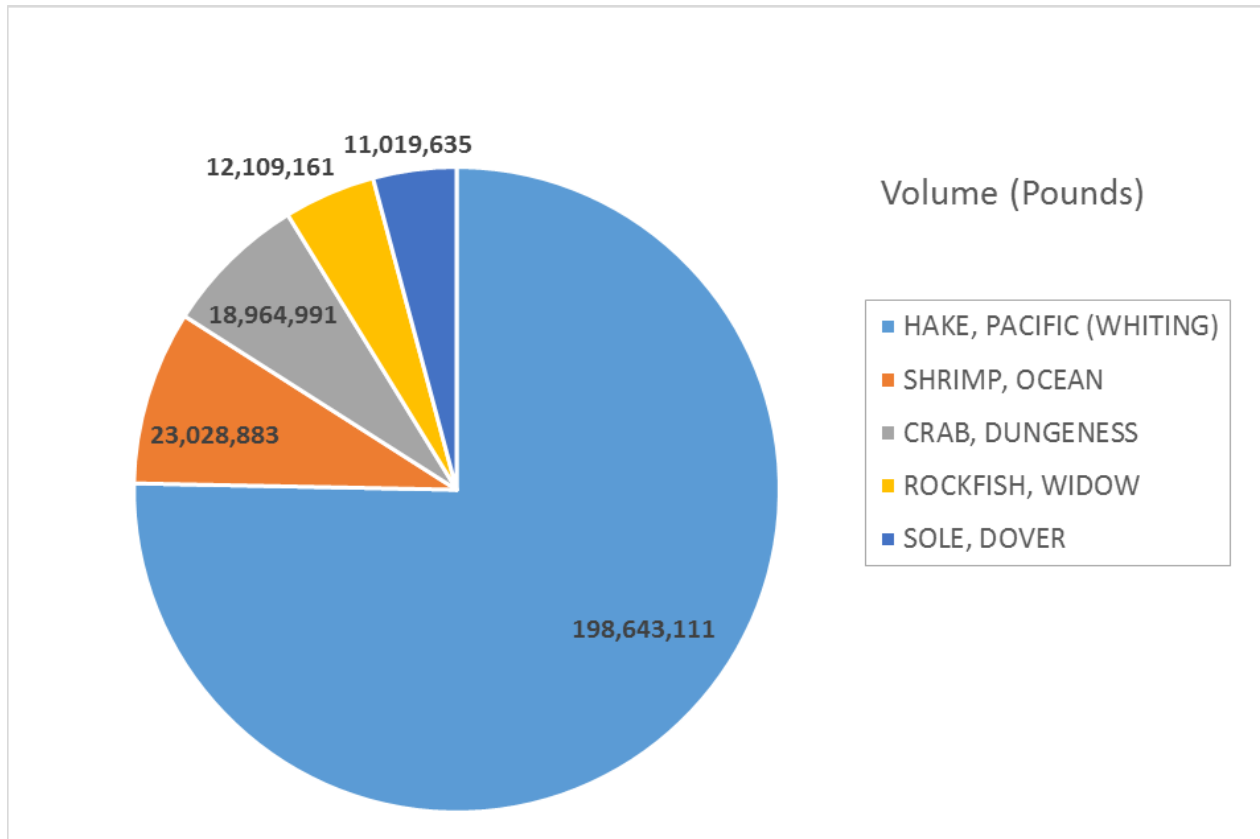


Figure 3.12-8: Volume of Commercial Landings by Species Group in Oregon Waters in 2017

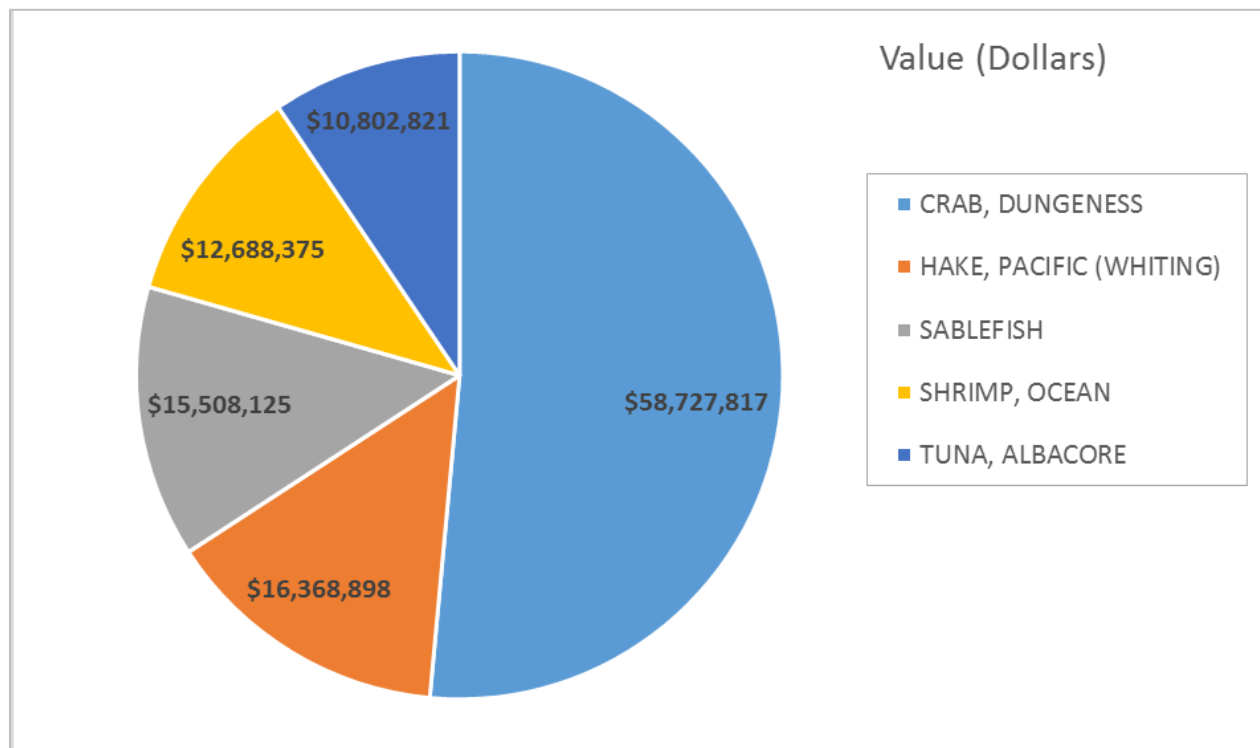


Figure 3.12-9: Value of Commercial Landings by Species Group in Oregon Waters in 2017

The information on training and testing activities in Chapter 2 (Description of Proposed Action and Alternatives) and Appendix A (Navy Activities Descriptions) shows that most activities occur in federal waters beyond 3 NM from shore. The distance from shore at which commercial species are caught is also available (National Marine Fisheries Service, 2018a). In 2017, all Pacific Hake landed off California, Oregon, and Washington were caught between 3 and 200 NM from shore, and 95 percent of albacore tuna was caught in that same region. By contrast, 85 percent of Dungeness crab was caught within 3 NM from shore (National Marine Fisheries Service, 2018a).

Commercial fishing is important to the economies of several communities that fish in the Offshore Area, as described in Section 3.12.2.2.1 (Offshore Area) of the 2015 Final NWTT EIS/OEIS and identified in Pacific Fishery Management Council (2015). The communities include Astoria, Oregon; Bellingham, Washington; Brookings, Oregon; Coos Bay, Oregon; Newport, Oregon; and Port Orford, Oregon. These communities tend to have small populations, are geographically isolated, and are heavily dependent on commercial and recreational fishing and on tourism. Changes in the regional and national economy since NMFS's 2006 community assessment have certainly affected many if not all of these communities to some degree; however, the dependency of these communities on commercial and recreational fishing is unlikely to have changed appreciably. These communities continue to be dependent on income from fisheries and would be vulnerable to substantial changes in their ability to access fishery resources and to fluctuations in the value of commercial landings.

Recreational fishing is defined for the purposes of this discussion as charter fishing and fishing for purposes other than commercial benefit or subsistence. Recreational fishing in the Offshore Area is concentrated in nearshore areas due to the smaller size and limited capabilities of typical recreational fishing vessels and the time required to complete a trip farther offshore if the vessel plans to return to port the same day. However, some recreational fishers travel up to 100 miles from shore seeking pelagic species like albacore tuna (Washington Department of Fish and Wildlife, 2018). Consequently, only approximately 10 percent of recreational fishing trips nationwide are in federal waters (beyond 3 NM from shore). Nationally, most of the recreational catch in 2015 came from inland waters (55 percent in numbers of fish), with 33 percent from state waters (0–3 NM from shore for all Pacific states) and almost 10 percent from beyond 3 NM. The majority of trips in the Pacific region fished primarily in inland waters (National Marine Fisheries Service, 2016b).

The economies of some small coastal communities are dependent on income from recreational fishing in the Offshore Area. The Oregon ports of Newport, Garibaldi, Brookings, and Charleston are the most heavily engaged Northwest ports in chartered recreational fishing, and these communities (as well as others) would be affected by substantial changes to the abundance or accessibility of species targeted by recreational fishers (Pacific Fishery Management Council & National Marine Fisheries Service, 2015).

Commercial fishing has historically been important to the economy of Northern California, including in Mendocino, Humboldt, and Del Norte counties, and remains an integral socioeconomic resource for the region (Pomeroy et al., 2011). Challenges that have impacted the commercial fishing industry in Northern California include increased costs, stagnant prices for the catch, and changes in government regulations affecting the fishing industry (Pomeroy et al., 2011). While the Study Area extends past the Oregon-California border, it is located more than 12 NM of the California coastline, and the majority of the proposed training and testing activities are conducted off the Washington State coast far from Northern California counties and nearshore waters.

Fisheries are also managed by regulating when commercial and recreational fishing can occur (i.e., the fishing season) and catch limits (e.g., limits based on the number of individual fish harvested, total weight of the catch, sizes of fish, etc.) for fisheries or, in many cases, for specific species within a fishery. These regulations vary from year to year and are set by the managing authority for each specific fishery prior to the start of the fishing season. For the salmon fishery off the west coast, which is regulated by species, the season generally occurs from June through September, with slight variations between species and dependent on a number of factors including an estimate of allowable harvest, anticipated fishing effort, allocation between commercial and recreational fisheries, and size and value of the catch (Pacific Fishery Management Council, 2016b).

The commercial Dungeness crab fishery is one of the most lucrative and competitive fisheries in Washington State and off the coast of Oregon. The Dungeness crab fishery typically opens on December 1 and runs through September 15 (Washington Department of Fish and Wildlife, 2020a). The crabs are found from the intertidal zone to a depth of 170 meters. Dungeness crabs are also fished for by recreational fishers. In Washington State, the recreational season varies by crab area with some areas open year-round; however, the most popular time to fish for Dungeness crabs is in summer (Washington Department of Fish and Wildlife, 2020b). The states of Washington, Oregon, and California jointly manage the Dungeness crab fishery along the west coast out to 200 NM from shore; typically, fishery management councils manage fisheries in federal waters. As noted above, the Pacific Fishery Management Council manages the other major fisheries in the Offshore Area (i.e., coastal pelagic species, salmon, groundfish, highly migratory species, and halibut) (Pacific Fishery Management Council, 2017, 2019a). Each fishery has its own separate regulations limiting where and when fishing (commercial and recreational) can occur, and these regulations may change annually or even during the fishing season depending on the status of the fishery (Pacific Fishery Management Council, 2018, 2019a, 2019b, 2020).

3.12.2.2.2 Inland Waters

Washington State is one of the largest producers of farmed shellfish in the nation and is a leading producer of naturally grown shellfish, most of which come from Puget Sound. Wild salmon species support a variety of fisheries in the Puget Sound region, including sport, commercial, and tribal fisheries (Pacific Fishery Management Council, 2016a). Puget Sound had a growing salmon aquaculture industry, however, a “spill” of approximately 250,000 farmed Atlantic salmon into Puget Sound in August 2017 brought the controversial industry to the forefront (Mapes, 2017). While a preliminary investigation indicated that the escaped salmon were not able to feed and died from starvation, subsequent findings contradicted that assertion and reported that Atlantic salmon continued to be caught by tribal fishermen through December 2017 (Cauvel, 2017; Mapes, 2018). The results of an investigation conducted by the State concluded that negligence by the owner was the cause of the release (Mapes, 2018). In February 2018, it was reported that 19 captured Atlantic salmon all tested positive for piscine orthoreovirus, a highly contagious and debilitating virus that could affect native salmon species (Wild Fish Conservancy, 2018). The incident and its consequences for native salmon led Governor Jay Inslee to sign a bill banning the farming of Atlantic salmon in Washington State waters (Ryan, 2018).

The Penn Cove Mussel Farm in Coupeville Washington exports large quantities of its highly renowned Penn Cove Mussels annually (Penn Cove Shellfish, 2017). Commercial and tribal traditional 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). American Indian and Alaska Native tribal and subsistence fishing is analyzed in Section 3.11 (American Indian and Alaska Native Traditional

Resources). Commercial landings at ports serving fisheries in the Inland Waters portion of the Study Area for 2017 are shown in Table 3.12-2.

Table 3.12-2: Commercial Landings at Ports in the Inland Waters Portion of the Study Area in 2017

Washington Inland Waters Port	Volume (Millions of Pounds)	Value (Millions of Dollars)
Seattle	6.3	29.0
Bellingham	8.9	22.7
Anacortes	5.5	21.3
Shelton	5.6	15.5
Olympia	2.3	15.1
Neah Bay	4.6	8.7
Blaine	1.9	6.8
Tacoma	1.8	5.4
Port Townsend	1.5	4.7
Everett	2.1	2.9

Source: (National Marine Fisheries Service, 2018b)

In 2017, marine recreational anglers took 4 million trips and caught a total of over 14 million fish in Washington, Oregon, and California waters. About 91 percent of the trips were made in California, 5 percent were in Oregon waters, and approximately 4 percent (160,000) were in Washington State waters (National Marine Fisheries Service, 2016b). As noted in Section 3.12.2.2.1 (Offshore Area), most recreational fishing trips in the Pacific region occurred primarily in inland waters (National Marine Fisheries Service, 2016b), suggesting that most of the 160,000 trips in Washington State occurred in inland waters. Recreational fishing, crabbing, and clamming typically occurs throughout the inlets of Puget Sound and Hood Canal. Recreational sportfishing in public waterways in Washington State, which consists largely of waters in the Inland Waters portion of the Study Area, contributed an estimated \$805 million in 2014 to the regional economy and recorded over 19.5 million participant days (Briceno & Schundler, 2015). Motorized boating and sailing expenditures contributed an additional \$1.6 billion to the economy, and expenditures on non-motorized paddle sports totaled over \$578 million and recorded 7.7 million participant days. Daily expenditures on motorized and non-motorized boating and related activities ranged from \$75 to \$88 per person (Briceno & Schundler, 2015). These and other recreational activities that rely on access to inland waters make a valuable contribution to the Washington State economy.

3.12.2.2.3 Western Behm Canal, Alaska

Commercial landings at the port of Ketchikan in 2017 totaled 77 million pounds and had a value of nearly \$46 million (National Marine Fisheries Service, 2018a). Salmon in the state waters near Ketchikan represents a large portion of the harvest for Ketchikan residents and visitors. As of the week of July 29, 2019, the Alaska Department of Fish and Game reported 40,500 chum salmon had been harvested for the year in the Western Behm Canal and Neets Bay area. In the traditional Native Alaskan fishery 32,000 chum salmon were harvested by purse seine gear, and 7,000 chum salmon were harvested by drift gillnet gear (Alaska Department of Fish and Game, 2019). Because the return of chum salmon to the Neets Bay area has been unexpectedly low, the Neets Bay Terminal Harvest Area was closed on July 30, 2019. Other important commercial fisheries in the area include sea cucumber, sea urchin, herring spawn, and shrimp.

Commercial fishing and seafood processing at the port of Ketchikan is a vital part of the local economy. Income by Ketchikan based fishers in 2015 was estimated to be \$22.3 million (United Fishermen of Alaska, 2017). These earnings contributed to the local economy through property and sales taxes, purchases of homes, use of rental and hotel properties, entertainment, fuel, vehicles, food, repair and maintenance parts, transportation, medical, and other services. Virtually every business in Ketchikan benefits financially from commercial fishing and the associated industries of seafood processing and transportation (United Fishermen of Alaska, 2017).

Several open water areas near SEAFAC are considered as heavy or moderate recreational fishing areas. These waters include portions of Western Behm Canal around Betton and Back Islands, Clover Passage, Clover Pass, Smuggler's Cove, and Helm Bay (Ketchikan Gateway Borough, 2007).

3.12.2.3 Tourism and Recreation

The status and projected trends of socioeconomic resources described in this section represent the affected environment prior to the global coronavirus pandemic and subsequent dramatic declines in economies around the world, including in the United States. State and local governments either limited business operations or mandated the closure of certain businesses across multiple economic sectors. The travel and tourism industry, which many people in the NWT Study Area are dependent on for employment and income, has been particularly hard hit. The analysis in this section shows that training and testing activities would not significantly impact tourism and related recreational activities in the Study Area. Tourism in the Pacific Northwest has grown consistently in recent years, adapting to fluctuations in domestic and international travel, and in concert with ongoing training and testing activities.

Coastal tourism and recreation can be defined as the full range of tourism, leisure, and recreation activities that take place in the coastal zone and the offshore coastal waters. These activities include coastal tourism development (e.g., hotels, resorts, restaurants, food industry, vacation homes, second homes) and the infrastructure supporting coastal development (e.g., retail businesses, marinas, fishing tackle stores, dive shops, fishing piers, recreational boating harbors, beaches, recreational fishing facilities). Also included is ecotourism (e.g., whale watching) and recreational activities such as boating, cruises, swimming, fishing, surfing, snorkeling, and self-contained underwater breathing apparatus (SCUBA) diving. Both tourists and locals also enjoy visiting the Olympic National Park and Olympic National Forest and other areas on the Olympic Peninsula to participate in activities such as hiking, camping, observing nature (e.g., bird watching), photography, and simply being outdoors (Go Northwest!, 2017).

Water sports are popular among residents of and visitors to Washington. Many communities and individual residences have piers or private docks located adjacent to the Inland Waters area and along the coastline and participate in a variety of recreational activities, including recreational fishing, which is discussed in Section 3.12.2.2 (Commercial and Recreational Fishing). Other popular water sports include motorized and non-motorized boating, kayaking, swimming, and SCUBA diving. In 2014, Washington State recorded over 28 million participant days of motorized and non-motorized boating activities and over 40 million participant days for swimming, SCUBA diving, and related activities (Briceno & Schundler, 2015), although not all of these boating and other activities would occur in the Study Area. In 2018, there were over 244,000 recreational vessels registered in the state, a 2.2 percent increase over the number of vessels registered in 2017 (U.S. Coast Guard, 2019). Registered vessels included most motorized boats, watercraft, and sailboats more than 16 ft. in length. Smaller sailboats and other unregistered vessels not counted in the data, such as kayaks and canoes, are popular in the region as

well and would also be expected to be used in the Inland Waters. Based on the increase in vessel registration, it is reasonable to assume that the participation and economic data reported for 2014 has at least remained consistent or more likely trended upward since then. Swimming and related activities like tubing are the most popular water sports, but are not likely to occur in the Study Area, because the vast majority of swimmers remain close to shore and far from areas used for at-sea training and testing, which in many cases occur more than 12 NM from shore. Expenditures on motorized and non-motorized boating activities, which could occur in the same locations as some training and testing activities, totaled over \$2.3 billion in 2014, averaging between \$75 and \$88 per person per day. The per-person, per-day expenditures on boating activities were exceeded only by SCUBA diving, for which individuals spent an average of \$119 per day and total expenditures were over \$130 million. In comparison, per-person, per-day expenditures on swimming averaged just \$20 and on tubing were \$44 (Briceno & Schundler, 2015).

Other than swimming, the most popular water sport activity in 2014 was fishing, which recorded 19.5 million participant days with average expenditures of \$41 per person per day (Briceno & Schundler, 2015). Recreational fishing is discussed in Section 3.12.2.2 (Commercial and Recreational Fishing).

3.12.2.3.1 Offshore Area

Tourism and recreation within the Study Area occurs primarily within Puget Sound; however, a variety of tourism and recreational activities also occur in the Offshore Area. These activities include whale watching, which occurs March through November with peak tourism activity in the summer, and charter boat fishing. Whale watching by boat primarily occurs along the Oregon coast (Newport and Depoe Bay) and Northern California (Fort Bragg). Gray whales are the most commonly observed species, found about 5 miles off the coast during their southward migration in December and January and as close as one-half mile during their northward migration, which extends from March through June (Oregon Coast Visitors Association, 2018). Whale watching off the Washington coast occurs from boat- and land-based operations (O'Connor et al., 2009).

Portions of the Olympic National Park and Olympic National Forest underlie airspace that is part of the Study Area (Figure 3.12-5), and both of these natural areas attract tourists and locals into the state. Visitation at the park increased each year from 2013 through 2017, reaching a peak of over 3.4 million in 2017. In 2018, annual visitation declined by approximately 300,000 to 3.1 million, but, in 2019, visitation increased to 3.25 million. Summer is the most popular time to visit the park and, in nearly every year since 1979, August has had the highest number of recreational visitors to the park with nearly 738,000 in 2019. Visitation has consistently been lowest in winter and early spring. Average visitation during each month from November through March over the 40 years from 1979 through 2019 ranged between 85,000 and 113,000 people (National Park Service, 2020). While far fewer people visit the park in winter and early spring, over 100,000 people can be expected to visit the park in most months. A number of visitors stay in or nearby the Olympic National Park each year for a week or more, either camping or lodging nearby and spending the day in the park. In 2019, over 35,000 tent campers stayed in the park in August, which is historically the most popular month to camp in the park. In addition, over 28,000 backcountry campers and over 15,000 RV campers stayed in the park in August. Camping is also very popular in June, July, and September with visitation in 2019 during those three months ranging between 21,000 and 34,000 tent campers, 9,000 and 15,000 RV campers, and 8,000 and 27,000 backcountry campers. Even though summer is the most popular time to stay in the park and nearby areas, camping and lodging in the park and wilderness areas occurs year round (National Park Service, 2020). The vast majority of these camp areas and trails are located east of the Olympic MOA; however, several areas are located beneath the exit and entry points to the MOA. Most of the camp

areas situated along the coastline in the Washington Islands Wilderness Area are located under the MOA (O'Brien, 2019).

The Olympic MOA partially overlaps the Olympic National Park, Olympic National Forest, Colonel Bob Wilderness Area, and Pacific Beach as well as other sites popular with locals and tourists (Figure 3.12-10). Approximately 27 percent of the Olympic National Park and 24 percent of the Olympic National Forest lies beneath the Olympic MOA. All of the Colonel Bob Wilderness Area and Pacific Beach State Park underlie the Olympic MOA as do several other points of interest and recreation areas located on the peninsula.

The Navy, along with other U.S. military forces, have trained over and off the Olympic Peninsula since World War II. The Olympic MOA, one of about 460 MOAs across the United States, was established in 1977. The military averages about 2,300 flights per year over the Olympic MOA; approximately 6.3 flights per day averaged over a full year. To estimate the number of flights that would occur on the busiest days of the year, the Navy reviewed flight data from fiscal years 2015 through 2017 and identified the busiest single day for each month over the three-year period. On average, 17 EA-18G aircraft flights would occur over the Olympic Peninsula on the busiest days.

Most Navy flights in the Olympic MOA occur on weekdays and during daylight hours. Over 95 percent of total military aircraft flight time in the Olympic MOA occurs at altitudes above 10,000 ft. MSL. Most of that flight time occurs at altitudes much higher than 10,000 ft.; about 70 percent of flight time is above 20,000 ft. Based on an analysis that included weekdays and weekends, the FAA determined that the military flies less than 25 percent of all flights that occur over the Olympic National Park per year. In the past, when the Navy had over 200 tactical aircraft assigned to NAS Whidbey Island, the Navy conducted up to three times as many flights compared to the number of flights conducted today. That comparison accounts for the training flights proposed in this Supplemental EIS/OEIS for the current number of EA-18G aircraft and the projected increase in EA-18Gs in the coming years. In the past, the Navy conducted far more training events involving low-level maneuvers than it does today due to evolving training requirements and the types of aircraft involved in training events.

The Olympic Coast National Marine Sanctuary, located offshore of the Olympic Peninsula, also attracts tourists and is analyzed in Chapter 6 (Additional Regulatory Considerations). A substantial number of tourists accessing locations on the Olympic Peninsula come by car across the Hood Canal Bridge, which is located in the Inland Waters portion of the Study Area and discussed in Section 3.12.2.1.3 (Vehicle Traffic).

Data reported by the National Ocean Economics Program show that the tourism and recreation industry in Washington coastal counties increased steadily from 2013 to 2016 (National Ocean Economics Program, 2018d). The number of businesses specializing in ocean-related activities increased by 4 percent from 5,007 in 2013 to 5,222 in 2016. Even though the increase in the number of establishments was modest, the number of jobs in the industry rose by 11 percent over the four-year time span. Wages paid out in the industry increased by 23 percent, and the industry contribution to Gross Domestic Product grew by 27 percent (National Ocean Economics Program, 2018d).

Ocean related activities and industries in Oregon showed similar economic growth from 2013 through 2016. Businesses increased by 4 over the four-year period, jobs increased by 14 percent, wages grew by 26 percent, and the contribution of ocean associated tourism and recreation to state Gross Domestic Product grew by 38 percent (National Ocean Economics Program, 2018a).

3.12.2.3.2 Inland Waters

The Inland Waters portion of the Study Area, including Puget Sound and Hood Canal, offer a wide variety of recreational activities for tourists and residents both on the water and along the shoreline.

Recreational boating and other ocean-related activities contribute millions of dollars to the regional economy (U.S. Department of Commerce & Bureau of Economic Analysis, 2019). Boating and fishing activities (including canoeing, kayaking, and sailing) increased each year from 2012 to 2017, adding over \$662 million to the state economy in 2017 (U.S. Department of Commerce & Bureau of Economic Analysis, 2019). Expenditures in 2014 were highest for recreational activities associated with public waters, highlighting their importance to businesses supporting those activities. Water recreation includes a number of activities with high trip and equipment expenditures, especially activities involving motorized boating (Briceno & Schundler, 2015). The broader Travel and Tourism economic sector, including food and beverages, lodging, shopping and souvenirs, and transportation, added over \$3.7 billion to the Washington economy in support of outdoor recreational activities (only expenditures for travel at least 50 mi. from home were counted) (U.S. Department of Commerce & Bureau of Economic Analysis, 2019).

Tourism is especially important to the economies in the towns of Coupeville and Langley, both waterfront towns on Whidbey Island that cater to tourists.

Vendors along the shoreline of Dabob Bay in Hood Canal offer a wide variety of boats to rent for recreational activities; services include recreational tours and group events. State parks on the shores of Hood Canal include Belfair, Twanoh, Potlatch, Triton Cove, Scenic Beach, Dosewallips, Kitsap Memorial, and Shine Tidelands (Figure 3.12-10). There are also a number of public marinas located along Hood Canal.

Puget Sound's good underwater visibility, rich sea life, and largely pristine diving conditions make it a popular destination for divers visiting the northwest. Charter dive trips to specific sites (Figure 3.12-10) are often published and booked as many as six months in advance. Diving occurs year-round, though the number of trips to popular dive sites peaks during the summer, and most dive charters are scheduled for weekends. The tourism industry is linked to multiple sectors of the Washington State economy and relies on access to public waterways, including Puget Sound, to continue attracting visitors and tourism related businesses to the state (Briceno & Schundler, 2015). In addition to adding to the state's economy through expenditures associated with tourism, the outdoor recreation industry employs millions of state residents. In 2017, the Arts, Entertainment, and Recreation sector supported over 23 million jobs and \$711 million in total compensation (U.S. Department of Commerce & Bureau of Economic Analysis, 2019).

3.12.2.3.3 Western Behm Canal, Alaska

There are no protected recreational areas within the Western Behm Canal portion of the Study Area, but Behm Canal is near the Misty Fjords National Monument and approximately 10 miles south of the major cruise ship stopover in Ketchikan, Alaska. From 2008 through 2018, between 828,000 and 1,073,000 passengers visited Ketchikan annually, with the total increasing every year since 2014 and peaking in 2018 (Ketchikan Visitors Bureau, 2019). In 2018, the port reported over 500 port calls by 40 cruise vessels, which only visit Ketchikan between April and September (Ketchikan Visitors Bureau, 2019). Visitors to Ketchikan can charter a fishing vessel or a float plane to access more remote marine areas.

Areas of Western Behm Canal near the SEAFAC are used for water-based recreation, and at least some of those participants are likely to be tourists. As noted above, several open-water areas near the SEAFAC

are considered to be heavy or moderate recreational boating and fishing areas. Clover Pass, which is immediately west of the SEAFAC, is one of the area's main boating and sport fishing areas and is highly regarded for its scenic value.

With its three marinas and three resorts, the area is also very popular with sport fishers for nearshore and open water fishing, as well as for diving (Ketchikan Gateway Borough, 2007). Some of the popular recreational areas in the immediate vicinity of the SEAFAC include

- Betton Island State Marine Park: Uses include kayaking, boating, beachcombing, SCUBA diving, camping, fishing, hunting, wildlife viewing, and commercial guide activity (Ketchikan Gateway Borough, 2007).
- Grant and Joe Islands State Marine Park: The park is well known as a kayak resting area and for picnicking and camping. This park is accessible by boat and float plane only, which makes it less accessible to visitors (Ketchikan Gateway Borough, 2007).

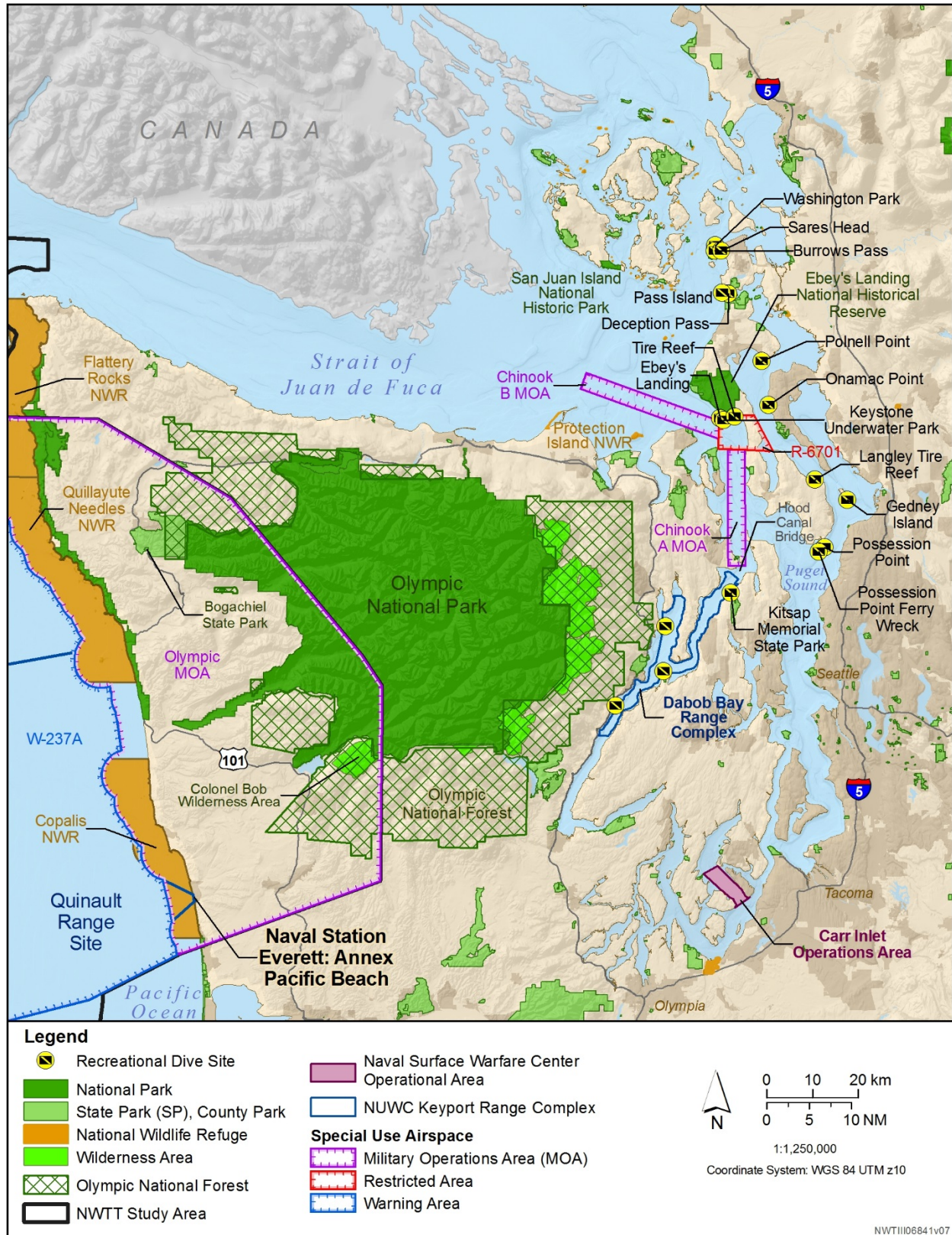


Figure 3.12-10: Recreational Areas in the Inland Waters Portion of the Study Area

3.12.3 Environmental Consequences

The 2015 NWTT Final EIS/OEIS analyzed training and testing activities currently occurring in the Study Area and considered all potential stressors related to socioeconomic resources. Stressors applicable to socioeconomic resources in the Study Area are the same stressors analyzed in the 2015 NWTT Final EIS/OEIS:

- **Accessibility** (to the ocean and the airspace)
- **Airborne acoustics**
- **Physical disturbance and strike** (aircraft, vessels and in-water devices, military expended materials)
- **Secondary** (availability of resources)

This section evaluates how and to what degree potential impacts on socioeconomic resources from stressors described in Section 3.0.1 (General Approach to Analysis) may have changed since the analysis presented in the 2015 NWTT Final EIS/OEIS was completed. Tables 2.5-1 through 2.5-3 list the proposed training and testing activities and include the number of times each activity would be conducted annually and the locations within the Study Area where the activity would typically occur under each alternative. The tables also present the same information for activities proposed in the 2015 NWTT Final EIS/OEIS so that the incremental changes in the proposed levels of training and testing can be easily identified. The annual number and location of activities that include various types of stressors that could impact socioeconomic resources are shown in Tables 3.0-9 through 3.0-22. Activities involving vessel movements (Table 3.0-12), for example, have the potential to impact accessibility.

3.12.3.1 Accessibility (to the Ocean and the Airspace)

Navy training and testing activities have the potential to temporarily limit access to areas of the ocean and airspace for a variety of human activities associated with transportation and shipping, commercial and recreational fishing, and tourism and other recreational activities in the Study Area. Access is most often affected when the Navy establishes a temporary, localized, safety zone or buffer zone around certain activities and actively restricts non-military activities within the zone. Training and testing activities involving the use of vessels and other in-water devices and aircraft have the greatest potential to impact accessibility to areas of the ocean or airspace.

The Navy searched for and reviewed publicly available resources, including government documents and reports, scientific journals, and on-line databases for new socioeconomic data and information on activities occurring in the Study Area and published since 2015. New information on commercial fisheries and tourism was added to Section 3.12.2.2 (Commercial and Recreational Fishing) and Section 3.12.2.3 (Tourism and Recreation). Limiting access to areas that are popular for fishing and other activities conducted by the public is a factor potentially impacting recreational fishing, and tourism and related recreational activities. The data and supporting information presented in Section 3.12.2.2 (Commercial and Recreational Fishing) and Section 3.12.2.3 (Tourism and Recreation) describing economic indicators for ocean-related recreation and tourism show that trends for the industry have been positive in recent years and are likely to continue to show growth.

3.12.3.1.1 Impacts on Accessibility Under Alternative 1

3.12.3.1.1.1 Impacts on Accessibility Under Alternative 1 for Training Activities

Under Alternative 1, the number of proposed training activities involving the movement of vessels or the use of in-water devices would decrease compared with totals in the 2015 NWTT Final EIS/OEIS

(Table 3.0-12 and Table 3.0-13). Activities that include vessel movements would decrease by 1 percent in the Offshore Area and 11 percent in the Inland Waters compared with ongoing activities. As described in Section 3.12.2.1.1.2 (Inland Waters), Navy vessel movements made up less than 1 percent of all vessel movements in the Inland Waters in 2018. The change in the number of vessel movements under Alternative 1 would not appreciably change that percentage. There would also be an increase of 9 percent in the use of in-water devices in the Offshore Area and an increase from 1 to 59 events in the Inland Waters compared ongoing activities (Table 3.0-13). The activities would occur in the same locations and in a similar manner as analyzed previously.

The increase in the use of in-water devices is associated with unmanned underwater vehicle training and would not substantially increase potential impacts on accessibility. The vast majority of activities using in-water devices occur in the Offshore Area, and the level of activity offshore would not change substantially compared with ongoing activities. The increase in the number of training activities in the Inland Waters is a substantial change from the ongoing level of training. However, a very similar activity was analyzed as a testing activity in the 2015 NWTT Final EIS/OEIS, and the increase is more representative of a progression of the activity from a testing phase to a training phase rather than an increase in the overall number of events. Since potential limits on accessibility are not dependent on whether the activity is conducted as a training or testing activity, the impact on accessibility is expected to be approximately the same as with ongoing activities.

The number of annual events with aircraft movements in the Offshore Area (Table 3.0-11) would increase by 12 percent (from 6,311 to 7,047) and would increase from 100 to 143 events in the Inland Waters area. Training activities using aircraft are primarily conducted in offshore warning areas and in the Olympic MOA. The offshore warning areas do not overlap with commercial airways; however, the Olympic MOA overlaps airway route T257 and the Olympic ATCAA overlaps airway routes J54 and J501 (Figure 3.12-4). As described in Section 3.12.2.1.2.2 (Inland Waters), Navy air traffic made up 6.2 percent of all air traffic in Washington State in 2018. The change in the number of aircraft movements under Alternative 1 would not appreciably change that percentage. Relatively few events involving aircraft movements would occur in the Inland Waters area, consistent with the ongoing level of activity. Impacts on accessibility, if any were to occur, would likely temporarily affect general aviation and other small aircraft flying over the Inland Waters and Olympic Peninsula (Figure 3.12-5).

No impacts on commercial transportation and shipping are anticipated, because major shipping routes and airways are well defined, and training activities would avoid those areas. Potential impacts on commercial and recreational fishing and tourism and recreation are reduced by alerting the public of upcoming activities. When training activities are scheduled that require specific areas to be free of non-participating vessels and aircraft, the military requests that the USCG issues NTMs and the FAA issues NOTAM to allow the public to plan accordingly and ultimately to ensure the safety of military personnel and the public. Notifications are provided on a weekly basis of upcoming closures, often forecasting several weeks in advance, for the Quinault Range site. At least a two-week notice is given for a planned activity. When necessary, ocean areas and airspace used by the military are restricted for short periods of time (typically on the order of hours) to allow a training activity to be conducted with minimal potential for interruptions and risks to public safety. Once the activity is complete, the ocean or airspace is available for use by the public, except for areas where a permanent danger zone or restricted area has previously been designated (e.g., Dabob Bay restricted area; see 33 CFR 334.1260)

Furthermore, the military follows standard operating procedures to visually scan an area to ensure that non-participants (i.e., civilian vessels and aircraft) are not present. If non-participants are present, the

military delays, moves, or postpones the activity. Refer to Section 2.3.3 (Standard Operating Procedures) for additional information on standard operating procedures. Appendix A (Navy Activities Descriptions) lists standard operating procedures that are implemented for each activity.

There has been no appreciable change to the existing environmental conditions as described in the 2015 NWTT Final EIS/OEIS, and the results of the analysis of impacts from limitations on accessibility to the ocean and airspace on transportation and shipping, commercial and recreational fishing, and tourism and related forms of recreation, as summarized in this section, would remain negligible.

As stated in the 2015 NWTT Final EIS/OEIS and summarized in this section, because the potential impacts on accessibility from the proposed training activities under Alternative 1 would remain negligible, there would be no disproportionately high and adverse human health or environmental effects on any minority populations and low-income populations or disproportionately high environmental health risks or safety risks to children.

3.12.3.1.1.2 Impacts on Accessibility Under Alternative 1 for Testing Activities

Under Alternative 1, the number of proposed testing activities involving the movement of vessels or the use of in-water devices would increase compared with totals in the 2015 NWTT Final EIS/OEIS (Table 3.0-12 and Table 3.0-13). Activities that include vessel movements would increase by 56 percent (from 181 to 295) in the Offshore Area, remain about the same in the Inland Waters, and increase 5 percent in Western Behm Canal compared with totals the 2015 NWTT Final EIS/OEIS (Table 3.0-12). As described in Section 3.12.2.1.1.2 (Inland Waters), Navy vessel movements made up less than 1 percent of all vessel movements in the Inland Waters in 2018. The change in the number of vessel movements under Alternative 1 would not appreciably change that percentage.

There would also be a slight increase of 4 percent in the use of in-water devices in the Offshore Area and also in the Inland Waters (no increase in Western Behm Canal) compared with Alternative 1 (Table 3.0-13). Nearly all activities would occur in the same locations and in a similar manner as analyzed previously. One exception is the Mine Countermeasure and Neutralization activity, which was not analyzed in the 2015 NWTT Final EIS/OEIS. This activity would use explosives two times per year and last between 1 and 10 days each time the activity is conducted. The activity would occur no closer than 3 NM from shore (all other activities using explosives would occur more than 50 NM from shore). While other activities using explosives are unlikely to impact fisheries, a Mine Countermeasure and Neutralization event has the potential to disrupt commercial and recreation fishing activities and offshore tourism (e.g., charter fishing) given that it would require a temporary closure closer to shore. The USCG would issue an NTM in advance of the closure to alert fishers and other boaters of the upcoming event, as is done with other activities. The Mine Countermeasure and Neutralization activity would not occur over hard bottom substrate, reducing or eliminating potential impacts on fisheries that target species which rely on hard bottom habitat.

Testing activities using aircraft are primarily conducted in offshore warning areas, which do not overlap with commercial airways (Figure 3.12-4). Testing activities involving aircraft movements in the Offshore Area would increase from 113 to 260, decrease in the Inland Waters from 456 to 61, and would remain at 4 annual events in Western Behm Canal (Table 3.0-11). Aircraft movements in the Offshore Area are primarily conducted in warning areas, which do not overlap with commercial or general aviation airways. The Olympic MOA overlaps airway route T257 and the Olympic ATCAA overlaps airway routes J54 and J501 (Figure 3.12-4). The majority of aircraft movements over the Inland Waters area are from aircraft transiting to the Offshore Area and inland airfields (see Tables 2.5-1, 2.5-2, and 2.5-3). The

reduction in aircraft movements in the Inland Waters area would reduce the potential impacts on general aviation and other small aircraft flying over the Inland Waters and Olympic Peninsula (Figure 3.12-5). As described in Section 3.12.2.1.2.2 (Inland Waters), Navy air traffic made up 6.2 percent of all air traffic in Washington State in 2018. The change in the number of aircraft movements under Alternative 1 would not appreciably change that percentage. Overall, the changes in the use of vessels, in-water devices, and aircraft as described in Chapter 2 (Description of Proposed Action and Alternatives) and in the 2015 NWTT Final EIS/OEIS would not substantially change potential impacts on accessibility.

In Western Behm Canal, the Navy limits vessel traffic only when essential to the success of test events. Under Alternative 1, there would be a small increase of approximately 4 events annually compared to the 2015 Final EIS/OEIS (Table 2.5-2 in Chapter 2 [Description of Proposed Action and Alternatives]). Historically, the Navy has ensured that 89 percent of the peak tourism and fishing season is unaffected by restrictions, and the remaining 11 percent is only affected by requirements that transiting vessels reduce speed when testing is occurring, resulting in only brief delays. Navy activities that have the potential to conflict with other uses of Western Behm Canal, including commercial and recreational fishing, are minimized through specific provisions in 33 CFR Section 334, including short-duration closures and advanced public notification through NTMs. Navy activities have occurred in Western Behm Canal for approximately 20 years while minimizing impacts on other users.

No impacts on commercial transportation and shipping are anticipated, because major shipping routes and airways are well defined, and testing activities would avoid those areas. As noted in Section 3.12.2.2.1 (Offshore Area), commercial and recreational fisheries occur in the Offshore Area within defined areas along the coastline and typically during specific times of the year, depending on the fishery. Testing activities using explosives that occur within a fishery area and during a fishing season would require exclusive use of an area to safely conduct the activity. If the activity is scheduled to occur where target species are typically found and during a short fishing season, then significant impacts could occur.

Potential impacts on commercial and recreational fishing, and tourism and related forms of recreation are reduced by alerting the public of upcoming activities. When testing activities are scheduled that require specific areas to be free of non-participating vessels and aircraft, the military requests that the USCG issues NTMs and the FAA issues NOTAM to allow the public to plan accordingly and ultimately to ensure the safety of military personnel and the public. Notifications are provided on a weekly basis of upcoming closures, often forecasting several weeks in advance, in Dabob Bay and the Keyport Range site. A daily alert is also issued when an activity is planned. Advance notice of testing activities should allow fishers and other boaters to plan ahead of time to visit another area during the closure. Restrictions on access to certain areas due to planned testing activities may inconvenience fishers and other boaters or may result in a loss of revenue for businesses that are not able to access a popular area during a closure. When necessary, water space and airspace used by the military are restricted for short periods of time (typically on the order of hours) to allow a testing activity to be conducted with minimal potential for interruptions and risks to public safety. Once the activity is complete, the ocean or airspace is available for use by the public, except for areas where a permanent danger zone or restricted area has previously been designated (e.g., Dabob Bay restricted area; see 33 CFR 334.1260).

Furthermore, the military follows standard operating procedures to visually scan an area to ensure that non-participants (i.e., civilian vessels and aircraft) are not present. If non-participants are present, the military delays, moves, or postpones the activity. Refer to Section 2.3.3 (Standard Operating Procedures)

for additional information on standard operating procedures. Appendix A (Navy Activities Descriptions) lists standard operating procedures that are implemented for each activity.

There has been no appreciable change to the existing environmental conditions as described in the 2015 NWTT Final EIS/OEIS, and the results of the analysis of impacts from limitations on accessibility to the ocean and airspace on transportation and shipping, commercial and recreational fishing, and tourism and related forms of recreation, as summarized in this section, would remain negligible. As stated in the 2015 NWTT Final EIS/OEIS and summarized in this section, because the potential impacts on accessibility from the proposed testing activities under Alternative 1 would remain negligible, there would be no disproportionately high and adverse human health or environmental effects on any minority populations and low-income populations or disproportionately high environmental health risks or safety risks to children.

3.12.3.1.2 Impacts on Accessibility Under Alternative 2

3.12.3.1.2.1 Impacts on Accessibility Under Alternative 2 for Training Activities

Under Alternative 2, the number of proposed training activities involving the movement of vessels or the use of in-water devices would increase compared with Alternative 1 and in the 2015 NWTT Final EIS/OEIS (Table 3.0-12 and Table 3.0-13). Activities that include vessel movements would increase by 9 percent in the Offshore Area and 25 percent in the Inland Waters compared with totals under Alternative 1. As described in Section 3.12.2.1.1.2 (Inland Waters), Navy vessel movements made up less than 1 percent of all vessel movements in the Inland Waters in 2018. The change in the number of vessel movements under Alternative 2 would not appreciably change that percentage.

There would also be a slight increase of 1 percent in the use of in-water devices in the Offshore Area and 24 percent in the Inland Waters compared with Alternative 1 (Table 3.0 13). The increases are similar compared with ongoing activities, given that the number of activities that involve vessel movement and in-water devices is only slightly less under Alternative 1 than it is in ongoing activities. The activities would occur in the same locations and in a similar manner as analyzed previously.

Activities with aircraft movements in the Offshore Area would increase by 13 percent (from about 6,300 to 7,100 annually) under Alternative 2 compared with the number of events proposed in the 2015 NWTT Final EIS/OEIS (Table 3.0-11). Activities with aircraft movements would increase by about 100 events annually compared with the number of events under Alternative 1. Training activities using aircraft are primarily conducted in offshore warning areas, which do not overlap with commercial airways (Figure 3.12-4), with the exception of aircraft activities occurring in the Olympic MOA. The Olympic MOA overlaps airway route T257 and the Olympic ATCAA overlaps airway routes J54 and J501. Activities with aircraft movements in the Inland Waters area would increase to 165 compared with 100 ongoing events and 143 events under Alternative 1. Relatively few events involving aircraft movements would occur in the Inland Waters area, consistent with the ongoing level of activity. Impacts on accessibility, if any were to occur, would likely temporarily affect general aviation and other small aircraft flying over the Inland Waters and Olympic Peninsula (Figure 3.12-5). Given the limited increase, potential impacts on general aviation and other small aircraft flying over the Inland Waters and Olympic Peninsula would be consistent with the analysis and conclusions presented in the 2015 NWTT Final EIS/OEIS. As described in Section 3.12.2.1.2.2 (Inland Waters), Navy air traffic made up 6.2 percent of all air traffic in Washington State in 2018. The change in the number of aircraft movements under Alternative 2 would not appreciably change that percentage. The slight increases in training events

including vessel movements, aircraft movements, and in-water devices would have the same or similar impacts on socioeconomic resources described in Section 3.12.3.1.1.1 for Alternative 1.

No impacts on commercial transportation and shipping are anticipated, because major shipping routes and airways are well defined, and training activities would avoid those areas. Potential impacts on commercial and recreational fishing, and tourism and related forms of recreation are reduced by alerting the public of upcoming activities, as described in Section 3.12.3.1.1.1 for Alternative 1. The results of the analysis of impacts from limitations on accessibility to the ocean and airspace on transportation and shipping, commercial and recreational fishing, and tourism and related forms of recreation are the same as described in Section 3.12.3.1.1.1 for Alternative 1.

As stated in the 2015 NWTT Final EIS/OEIS and summarized in this section, because the potential impacts on accessibility from the proposed training activities under Alternative 2 would remain negligible, there would be no disproportionately high and adverse human health or environmental effects on any minority populations and low-income populations or disproportionately high environmental health risks or safety risks to children.

3.12.3.1.2.2 Impacts on Accessibility Under Alternative 2 for Testing Activities

Under Alternative 2, the number of proposed testing activities involving the movement of vessels or the use of in-water devices would increase compared with Alternative 1 and totals in the 2015 NWTT Final EIS/OEIS (Table 3.0-12 and Table 3.0-13). Activities that include vessel movements would increase by 4 percent in the Offshore Area, 12 percent in the Inland Waters, and 22 percent in Western Behm Canal compared with totals under Alternative 1. As described in Section 3.12.2.1.1.2 (Inland Waters), Navy vessel movements made up less than 1 percent of all vessel movements in the Inland Waters in 2018. The change in the number of vessel movements under Alternative 2 would not appreciably change that percentage.

There would also be a slight increase of 4 percent in the use of in-water devices in the Offshore Area and also in the Inland Waters (no increase in Western Behm Canal) compared with Alternative 1 (Table 3.0-13). The increases are even greater compared with ongoing activities, given that the number of activities that involve vessel movement and in-water devices is greater under Alternative 1 than it is in ongoing activities. Nearly all activities would occur in the same locations and in a similar manner as analyzed previously. One exception is the Mine Countermeasure and Neutralization activity, which was not analyzed in the 2015 NWTT Final EIS/OEIS. As under Alternative 1, this activity would use explosives two times per year and last between 1 and 10 days each time the activity is conducted. The use of explosives would occur no closer than 3 NM from shore (all other activities using explosives would occur more than 50 NM from shore). While other activities using explosives are unlikely to impact fisheries, a Mine Countermeasure and Neutralization event has the potential to disrupt commercial and recreation fishing activities and offshore tourism (e.g., charter fishing) given that it would require a temporary closure closer to shore. The USCG would issue an NTM in advance of the closure to alert fishers and other boaters of the upcoming event, as is done with other activities. The Mine Countermeasure and Neutralization activity would not occur over hard bottom substrate, reducing or eliminating potential impacts on fisheries that target species which rely on hard bottom habitat.

Testing activities using aircraft are primarily conducted in offshore warning areas, which do not overlap with commercial airways (Figure 3.12-4). Testing activities involving aircraft movements in the Offshore Area would increase from 113 to 260 compared with the number of events proposed in the 2015 NWTT Final EIS/OEIS and would be about the same as under Alternative 1 (Table 3.0-11). Testing activities with

aircraft would decrease in the Inland Waters from 456 ongoing events to 61 events under Alternative 2, and would remain the same in Western Behm Canal (4 annual events). Potential impacts on general aviation and other small aircraft flying over the Inland Waters area and Olympic Peninsula would be consistent with analysis and conclusions under Alternative 1 and less likely to occur than during ongoing activities given the decrease in the number of annual events. As described in Section 3.12.2.1.2.2 (Inland Waters), Navy air traffic made up 6.2 percent of all air traffic in Washington State in 2018. The change in the number of aircraft movements under Alternative 2 would not appreciably change that percentage. The slight increases in testing activities including vessel movements, aircraft movements, and in-water devices would have the same impacts on socioeconomic resources described in Section 3.12.3.1.1.2 for Alternative 1.

No impacts on commercial transportation and shipping are anticipated, because major shipping routes and airways are well defined, and testing activities would avoid those areas. As noted in Section 3.12.2.2.1 (Offshore Area), commercial and recreational fisheries occur in the Offshore Area within specific areas along the coastline and typically during specific times of the year, depending on the fishery. Testing activities using explosives that occur within a fishery area and during a fishing season would require exclusive use of an area to safely conduct the activity. If the activity is scheduled to occur where target species are typically found and during a short fishing season, then significant impacts could occur.

Potential impacts on commercial and recreational fishing, and tourism and related forms of recreation are reduced by alerting the public of upcoming activities, as described in Section 3.12.3.1.1.2 for Alternative 1. The results of the analysis of impacts from limitations on accessibility to the ocean and airspace on transportation and shipping, commercial and recreational fishing, and tourism and related forms of recreation are the same as described in Section 3.12.3.1.1.2 for Alternative 1.

As stated in the 2015 NWTT Final EIS/OEIS and summarized in this section, because the potential impacts on accessibility from the proposed testing activities under Alternative 2 would remain negligible, there would be no disproportionately high and adverse human health or environmental effects on any minority populations and low-income populations or disproportionately high environmental health risks or safety risks to children.

3.12.3.1.3 Impacts on Accessibility Under the No Action Alternative

Under the No Action Alternative, the proposed training and testing activities would not occur. Limits on accessibility to the ocean and airspace as listed above would not be introduced into the marine environment. Therefore, existing environmental conditions would either remain unchanged or would improve slightly after cessation of ongoing training and testing activities.

Discontinuing training and testing activities would result in fewer limits on accessibility within the marine environment where training and testing activities have historically been conducted. Therefore, discontinuing training and testing activities under the No Action Alternative would lessen the potential for limiting accessibility by the public, but would not measurably improve accessibility to the ocean and airspace in the Study Area.

The same limitations on accessing portions of the Study Area designated as danger zones, restricted areas, and warning areas as described in the 2015 NWTT Final EIS/OEIS and in the CFR would still apply. Refer to 33 CFR (Navigation and Navigable Waters) Part 334 (Danger Zone and Restricted Area Regulations), 33 CFR 165.1401 (Safety Zones), 14 CFR 73.1 (Special Use Airspace) for specific regulations regarding these ocean areas and airspace.

Not conducting the proposed at-sea training and testing activities may have negative impacts on the socioeconomic resources of coastal areas in Washington State, Oregon, and Northern California. Communities located along inland waters in Washington State and southeast Alaska may also be impacted. The number of jobs and types of jobs, particularly in coastal communities, that depend on the support of Navy personnel residing or transiting through those communities may be impacted (see the beginning of Section 3.12.2 [Affected Environment] for a brief summary on the Navy's contribution to the economy). The Navy and Navy personnel are an important and often stabilizing contributor to the local and regional economies, and a reduced Navy presence could negatively impact certain businesses. For example, vessels and associated equipment used specifically for training and testing activities would no longer be needed if all training and testing ceased. Consequently, the civilian and Navy personnel supporting those activities may be relocated, reassigned, or have to find other employment. The secondary effects from reducing the number of personnel who support at-sea training and testing activities could include a decline in revenue for local businesses frequented by Navy personnel and their families, such as businesses in the food services, retail, and housing sectors. While more complex studies at the local level would need to be conducted to quantify potential socioeconomic impacts from ceasing training and testing activities, it is likely that many coastal communities with a Navy presence would be impacted.

3.12.3.2 Airborne Acoustics

Loud noises generated from military training and testing activities such as weapons firing, in-air explosions, and transiting aircraft have the potential to disrupt recreational activities such as wildlife viewing, boating, fishing, and scuba diving. In addition to local residents, tourists participate in these activities in the Study Area. Encountering loud noises, particularly those that occur suddenly and nearby, could interfere with the enjoyment of several types of recreational activities. Weapons firing and explosives use would only occur in offshore warning areas (i.e., W-237) far from the coast and far from activities occurring along the coast. Disturbance from continuous albeit less intense noises could also affect the enjoyment of an activity.

Airborne acoustics from military activities would occur over short periods of time (hours) and only when weapons firing and in-air explosions occur (offshore) or as aircraft transit through an area, including in the Olympic MOA, which overlies the western portion of the Olympic Peninsula. Military training and testing activities involving weapons firing and in-air explosions would only occur when the military can confirm the area is clear of non-participants (e.g., a recreational vessel). This procedure further reduces the likelihood that noise from these activities, which are taking place far from non-participants, would disturb residents or tourists engaged in recreational activities on the water. Activities involving weapons firing and explosives are not conducted in the Olympic MOA. Furthermore, with the exception of Air Combat Maneuver and Electronic Warfare Training – Aircraft activities occurring in the Olympic MOA, most naval training and testing activities involving aircraft occur more than 12 NM from shore and those that occur closer to shore are typically at least 3 NM offshore. Recreational activities are largely conducted within a few miles of shore, which would minimize any overlap and disturbance from noises generated far offshore. Refer to Tables 2.5-1, 2.5-2, and 2.5-3 for information on the locations of Navy activities that use aircraft or munitions. Detailed information on each training and testing activity, including location and the types of stressors associated with the activity (e.g., airborne acoustics), is presented in Appendix A (Navy Activities Descriptions).

The analysis presented in the 2015 NWTT Final EIS/OEIS concluded that training and testing activities could have moderate, intermittent impacts from airborne noise (referred to as airborne acoustics in this

Supplemental) on socioeconomic resources, depending on the proximity of the Navy activity to the resource participant. Explosive munitions and large-caliber, non-explosive munitions are the primary sources of weapons-related noise. All training and testing activities using explosives in the Offshore area would occur at least 50 NM from shore with the exception of the Mine Countermeasure and Neutralization testing activity, which would only occur up to two times per year and at least 3 NM from shore. Training and testing activities using large-caliber, non-explosive munitions would take place at least 20 NM from shore. Since the most intense concentration of offshore socioeconomic activities is within 3 NM of the coast, airborne acoustics from training and testing activities using large-caliber weapons and explosive munitions would not have a significant potential to impact socioeconomic resources. Refer to Section 3.0.3.1.4 (Weapons Noise) for a detailed discussion of the types of airborne acoustics generated by weapons use.

Airborne acoustics generated by aircraft overflights are the type of acoustic disturbance most likely to be encountered by those participating in activities related to socioeconomic resources, because military aircraft transiting to and from training and testing airspace areas often need to fly near populated areas, including the Olympic Peninsula, or need to conduct activities in the Olympic MOA. The two activities mentioned above, Air Combat Maneuver and Electronic Warfare Training – Aircraft, are the most frequently conducted activities in the Olympic MOA. In general, airborne acoustics from aircraft overflights only generate an acoustic disturbance at the moment it is heard, and noise from an overflight disturbance would only accumulate for the duration of a specific event. For example, as described in Appendix J (Airspace Noise Analysis for the Olympic Military Operations Area), multiple aircraft flying above the Olympic Peninsula would generate, on average, relatively low day-night average sound levels (37 dBA)² noise, because more than 95 percent of flight time would occur more than 10,000 ft. above MSL, placing the source of the noise, an aircraft, and the receptor, a person on the ground, thousands of feet apart. In a worst case scenario based on airspace restrictions with an individual located at an elevation of 4,000–4,500 ft. (approximately 0.09 percent of the land area under the Olympic MOA) and an EA-18G flying directly over that individual at an altitude of 6,000 MSL, the analysis shows that the maximum noise level would be 100.6 dBA, and noise at this level would last for an average of 0.12 second per flight. Experiencing aircraft noise even briefly at this level is unlikely to occur for a number of reasons. Most of the terrain beneath the Olympic MOA (more than 77 percent) is at an elevation of 1,000 ft. or less, thereby creating a buffer of at least 5,000 ft. between an individual on the ground and an aircraft at the lowest permissible altitude (6,000 ft. MSL). Additionally, the highest terrain areas on the Olympic peninsula are extremely remote, where few people are likely to be present. For more than 77 percent of the area, the maximum noise level anticipated would be 84.4 dBA. Aircraft flying at higher altitudes or not directly over an individual on the ground would generate less intense sound at ground level (i.e., the distance between the aircraft and the individual would be greater allowing for greater dissipation or spreading of sound). An aircraft entering or exiting the Olympic MOA does so at specific points (see Figure 3.12-5) and at a minimum altitude of 15,000 ft. MSL for entry and 14,000 ft. MSL for exit. At a ground elevation of 4,500 ft. MSL, the maximum anticipated noise level at the entry and exit points for any aircraft would be approximately 58.2 dBA. At sea level (i.e., 0 ft. MSL)

² dBA or A-weighted decibels is a measure of sound level (in decibels) that emphasizes the range of frequencies that human hearing is most sensitive to. A-weighting best replicates human hearing and is the most appropriate metric for the assessment of annoyance from aircraft noise. A-weighted sound levels form the basis of the day-night average sound level (DNL) metric, which is the best available metric to relate aircraft noise to long-term annoyance. Refer to Appendix J (Airspace Noise Analysis for the Olympic Military Operations Area) for a more detailed description of sound level metrics.

the maximum anticipated noise level would be approximately 51.1 dBA. See Appendix J (Airspace Noise Analysis for the Olympic Military Operations Area) for more details.

The disturbance from a single aircraft transiting over land or nearshore areas to conduct a training or testing activity in the Offshore Area would be brief, lasting only seconds. Individuals on the ground may be disturbed depending on a number of factors that can be variable or somewhat subjective (e.g., sensitivity to disturbance, proximity to other sources of noise) and difficult to quantify. Nevertheless, occasional disturbances from military aircraft have been occurring in this area for several decades and are not expected to have lasting impacts on broader socioeconomic resources (i.e., commercial transportation and shipping, air traffic, commercial and recreational fishing, and tourism and recreation). Aircraft movements that occur more than 3 NM from the coast are less likely to impact socioeconomic resources, and aircraft that fly at higher altitudes while over land and nearshore areas are also less likely to cause a significant impact on socioeconomic resources. Section 3.0.3.1.3 (Aircraft Noise) in this Supplemental provides a detailed discussion of the types of airborne acoustics generated by military aircraft.

In addition to the broader socioeconomic resources listed in the paragraph above, the less quantifiable social resource described generally as the enjoyment of a natural setting, like the Olympic National Park, may also be impacted by airborne acoustics. While noise levels can be measured and noise sources can be compared to each other using well-established metrics, the perception of a noise by individuals and their reaction to the same noise heard simultaneously may vary widely. While some visitors to a natural setting like the Olympic National Park may be disturbed by an aircraft overflight, others may not register the event or, if they do notice it, may not consider it to be significant.

In 2010, the National Park Service conducted an acoustic monitoring study within the Olympic National Park, measuring both natural sounds and noise generated by human activities (National Park Service, 2016). Noise sampling took place at five sites, with three of those sites (Hoh River Trail, Third Beach Trail, and Lake Ozette) beneath the Olympic MOA. The purpose of the noise monitoring effort was to characterize existing sound levels in the park and to use the data to estimate a natural ambient acoustic baseline in the park from sounds collected at the five sites, as well as identify the sources of recorded sounds. The study reported the percentage of time that measured noise levels exceeded four noise thresholds indicative of disturbance at each of the measurement locations for the winter season. The fourth and highest level, 60 dBA, provided a basis for estimating impacts on normal voice communications at 3 ft. Noise levels at Hoh River Trail and Third Beach Trail exceeded 60 dBA less than 1 percent of the time during daytime and nighttime monitoring. Noise levels at Lake Ozette exceeded 60 dBA just 1.2 percent of the time in daytime measurements and 1.4 percent of the time in nighttime measurements (National Park Service, 2016).

The data also show that natural sounds dominated between 7 a.m. and 7 p.m. at each of the three sites beneath the Olympic MOA. At the Hoh River Trail site, natural sounds were audible 83 percent of the time. Sounds from aircraft, including fixed-wing aircraft and helicopters, were audible 12 percent of the time, and other human sounds were audible 5 percent of the time. At Third Beach Trail, natural sounds were audible 91 percent of the time, and sounds from aircraft and other human activities were audible 5 percent and 4 percent of the time, respectively. At Lake Ozette, the most remote site, natural sounds were recorded 93 percent of the time. Aircraft sounds were audible 7 percent of the time and other human sounds less than 1 percent of the time.

Lake Crescent, which is located approximately 20 km east of the eastern edge of the Olympic MOA, was the site most affected by human sounds (primarily vehicle noise from the highway). Human-generated sounds dominated the sound spectrum 58 percent of the time. Noise from high-altitude jets were audible 7.2 percent of the time, and lower-altitude fixed-wing aircraft and helicopters were audible 0.3 percent of the time. Naturally occurring sounds were louder than human-generated sounds 35 percent of the time. (National Park Service, 2016). The data for the National Park Service study were collected in 2010 but are considered relevant to the Proposed Action, because the tempo of Navy training and testing activities involving aircraft is generally consistent with the baseline data, as presented in Section J.5.1 (Reference Missions) of Appendix J (Airspace Noise Analysis for the Olympic Military Operations Area).

The Navy also reviewed a recent study of aircraft noise on the Olympic Peninsula (Kuehne, 2019). The results of the study, which attempted to distinguish noise produced by Navy aircraft from noise produced by other (e.g., commercial) aircraft, was based on sound recordings at three sites on the Olympic Peninsula (two inside the MOA and one just east of the MOA). The study relied on human interpretation of the recordings to identify audible aircraft events and to classify events as military or commercial. The Navy's approach to analyzing noise impacts from aircraft operating in a MOA is to apply one of the FAA-approved models rather than relying on site-specific monitoring, which is not an FAA-approved methodology for detailed noise analysis. The noise model used in the Navy's analysis, MR_Nmap, is approved by the FAA for these types of analyses. Noise modeling allows the prediction of noise levels in support of analyzing impacts from proposed activities, such as the proposed training and testing activities. Noise modeling is the preferred and most common method of analyzing noise in the military environment. Short-term monitoring studies, such as the one conducted by Kuehne (2019), can provide a snapshot of noise detections at a specific site (or sites), but are limited in their ability to predict how future activities would impact a larger region over the long term.

In general, noise intensity or loudness decreases with distance from the sound source. In the case of aircraft overflights, noise levels perceived on the ground are expected to be higher at higher elevations. This correlation is supported by the results presented in the Navy's noise study in Appendix J (Airspace Noise Analysis for the Olympic Military Operations Area). A scenario similar to the examples described above but taken from the study illustrates how noise may be perceived by a visitor to the park. Suppose a hiker is beneath the Olympic MOA at a terrain height of 300 ft. (a likely situation given that 45 percent of the Olympic MOA overlays terrain between 0 and 500 ft.). In a worst-case scenario, if an EA-18G flew directly over the hiker at full power and at the lowest permissible altitude (6,000 ft. MSL), the hiker would be exposed to noise at 82.9 dBA. That is similar to the sound level the hiker might experience 5 meters from a busy roadway. However, as noted above, the sound of the jet would be at this intensity for only an instant as the jet flies directly overhead, decreasing rapidly as the jet flies away from the hiker. If the jet did not fly directly over the hiker (a more likely occurrence), then the highest noise experienced by the hiker would be less than 82.9 dBA, dissipating with increasing distance between the jet and the hiker.

While higher elevations in the Olympic National Park would receive higher noise levels, the areas with the highest elevations are located in the eastern half of the park; the MOA only overlays the western portion of the park, and in total, only approximately 27 percent of the entire park. Based on the data and analysis presented in the National Park Service noise study, aircraft overflight noise is only a very small portion of the sounds detectable in the Olympic National Park. An individual visitor may still be disturbed by an aircraft overflight; however, for the vast majority of the time, visitors are exposed to

naturally occurring sounds, and to a lesser extent, noise from other human sources not associated with the Proposed Action, including noise from commercial and general aviation aircraft.

Military aircraft conducting training activities in the Olympic MOA would contribute to cumulative impacts from airborne noise on visitors to the Olympic National Park and on the Olympic Peninsula; however, the majority of aircraft overflights would continue to be from civilian aircraft, specifically commercial air carriers and general aviation aircraft. Flight data from the FAA collected from February of 2018 through February of 2019 in three regions over the Olympic Peninsula (a transition area, Olympic National Park, and the Olympic Peninsula and Puget Sound) indicate that the military conducts approximately 7 percent of all flights in the transition area east of the Olympic National Park where military aircraft enter and exit the Olympic MOA. Commercial air carriers make up approximately 71 percent and general aviation aircraft make up approximately 22 percent of flights in the transition area. Over the Olympic National Park, military flights make up approximately 25 percent of all flights, air carriers make up approximately 67 percent, and general aviation aircraft make up approximately 8 percent of all flights. Over the Olympic Peninsula and Puget Sound, military flights make up approximately 6 percent of all flights, air carriers make up approximately 74 percent, and general aviation aircraft make up approximately 20 percent of all flights.

While an increase in military flights over the Olympic Peninsula would contribute to impacts from airborne noise, 75 to 94 percent of flights over the region are conducted by commercial air carrier aircraft and general aviation aircraft. A proposed 13 percent increase in military flights would not substantially change the proportion of military flights over the Olympic Peninsula or substantially increase the potential for noise impacts on the Olympic Peninsula, including in the Olympic National Park.

Refer to Section 3.12.3.3 (Aircraft and Vessel Noise) in the 2015 NWTT Final EIS/OEIS for more information on the potential impacts of airborne acoustics (airborne noise) in the Study Area. Refer to Appendix J (Airspace Noise Analysis for the Olympic Military Operations Area) for more information on noise levels that visitors to the Olympic National Park and other areas beneath the Navy's Olympic MOA could experience.

3.12.3.2.1 Impacts on Airborne Acoustics Under Alternative 1

3.12.3.2.1.1 Impacts on Airborne Acoustics Under Alternative 1 for Training Activities

Under Alternative 1, the number of annual events with aircraft movements in the Offshore Area (Table 3.0-11) would increase by 12 percent (from 6,311 to 7,047) and in the Inland Waters area would increase from 100 to 143 events. Airborne acoustics are not expected to impact commercial transportation and shipping, because these types of activities are generally not sensitive to occasional noise from aircraft overflights, and shipping vessels would not be delayed by airborne acoustics. As described in Section 3.12.2.1.2.2 (Inland Waters), Navy air traffic made up 6.2 percent of all air traffic in Washington State in 2018. The change in the number of aircraft movements under Alternative 1 would not appreciably change that percentage. A slight increase in the number of activities with aircraft movements in the Inland Waters would increase potential impacts on commercial and recreational fishing, and tourism and related forms of recreation occurring inland and on adjacent land areas. However, these changes would not appreciably change the existing environmental conditions as presented in the 2015 NWTT Final EIS/OEIS, and the results of the analysis of impacts from airborne

acoustics on commercial and recreational fishing, and tourism and related forms of recreation remain valid.

Aircraft overflights from Air Combat Maneuver training activities and Electronic Warfare Training – Aircraft activities occurring in the Olympic MOA have the potential to disturb land-based recreational and tourism activities (e.g., hiking) in the Olympic National Park and other areas on the Olympic Peninsula. While airborne acoustics from aircraft overflights are likely to be heard and may disturb some visitors to Olympic National Park, economic indicators representing tourism and recreational activities in the region, and annual visitation to the Park, have been trending upwards in recent years (although there was a decrease in visitation to the Park of almost 9 percent between 2017 and 2018) (see Section 3.12.2.3.1, Offshore Area). The Navy has been conducting aircraft activities in the Olympic MOA for decades, and those same economic indicators have been steadily increasing over much of that time (National Ocean Economics Program, 2018b, 2018c).

From 2015 through 2017, the average annual number of Navy EA-18G aircraft transits to and from the Olympic MOA was 2,224. Under Alternative 1, EA-18G transits to and from the Olympic MOA are proposed to increase by 300 per year, or 13 percent. This proposed increase equates to, on average, between one and two additional transits per day over a calendar year (excluding weekends and holidays).

As described in detail in the Airspace Noise Analysis for the Olympic Military Operations Area (Appendix J), visitors to the National Park, National Forest, and wilderness areas on the Olympic Peninsula would potentially be affected by and respond to individual flyover events by aircraft transiting to and from NAS Whidbey Island. The highest elevations along the flight transit routes between NAS Whidbey Island and the Olympic MOA range from approximately 4,500 to 8,000 ft. MSL. An EA-18G flying at an altitude of 10,000 ft. MSL directly over an 8,000 ft. peak could produce maximum noise levels of up to 97.2 dBA at ground level (i.e., at a distance of 2,000 ft.) (see Table J-17 of Appendix J, Airspace Noise Analysis for the Olympic Military Operations Area). Maximum noise levels would be lower at elevations below the highest peaks and ridgelines and where the aircraft is not directly overhead. The noise level also depends on the engine power used by the aircraft at the time of overflight. At ground level elevations near sea level (i.e., 0 ft. MSL), where the distance between the aircraft at an altitude of 10,000 ft. MSL and a receptor is approximately 10,000 ft., the maximum noise level would be 72.7 dBA (see Table J-17 of Appendix J, Airspace Noise Analysis for the Olympic Military Operations Area). Although instantaneous noise from overflights during transit would likely be higher than other noise sources on the ground, averaged over the day they would not be substantially above the range of commonly heard natural sounds in the Olympic National Park or nearby areas (National Park Service, 2016). At the Hurricane Ridge site (elevation 5,242 ft. above ground level), which is the closest site to the YETII navigation point, the daytime median ambient noise level was 24.4 dBA. After removing noise from all aircraft overflights, the median ambient noise level was reduced to 23.4 dBA, and noise from only natural sounds was measured at 23.1 dBA. To reduce the overflight noise in the Olympic National Park and surrounding areas, aircraft entering and exiting the MOA at the reporting points will transit in designated flight routes to the greatest extent practicable. For safety reasons, such as conflicts with other aircraft, aircraft preparing to enter or exit the MOA to conduct a training event may be directed off their flight path by FAA air traffic controllers.

Visitors to the National Park, National Forest, and wilderness areas on weekends or at night will rarely hear an EA-18G or other aircraft, because training flights typically occur Monday through Friday and during daylight hours. Visitors vacationing a week or more in the national park and other nearby lodging

or camping areas may experience aircraft overflight noise on multiple occasions during weekdays while they are staying the park. As noted in the discussion above, the level of disturbance from multiple aircraft overflights would be variable and dependent on the individual's sensitivity to aircraft noise and circumstances on the ground, such as the presence of other noise sources, which are difficult to predict and quantify. An individual seeking a quiet, peaceful, and remote location away from other visitors and sources of anthropogenic noise is more likely to be disturbed by aircraft overflight noise than individuals camping or hiking in a group or visitors in a more heavily populated area of the park where other noise sources are present (e.g., road noise). As noted in Section 3.12.2.3.1 (Offshore Area), with the exception of camp areas in the Washington Islands Wilderness Area along the Pacific coast, the majority of camp areas in the Olympic National Park and other wilderness areas are located east of the Olympic MOA. Noise from aircraft conducting training activities in the MOA would not be directly over most camping areas, and noise experienced on the ground would be lower than peak levels discussed above in those areas. Aircraft conducting activities in the MOA would potentially fly directly over camp areas located in the Washington Islands Wilderness Area. Individuals in this area may experience multiple direct overflights when an activity is occurring in the northern half of the MOA. However, peak noise levels would not be experienced in coastal areas, even with a direct overflight, because the lower elevation of the coastal areas effectively increases the distance between an individual on the ground and an aircraft flying overhead.

While the perception of overflight noise and the level of disturbance experienced may vary based on the individual and circumstances on the ground at the time of the overflight, the metrics quantifying the level of noise received at ground level support the following conclusions: (1) the highest noise levels would be experienced only at the highest elevations in the park, which are not located beneath the MOA; (2) natural sounds are the predominantly occurring sounds in the Olympic National Park; and (3) peak noise levels would be brief (lasting only seconds) and would only occur when an individual is directly under the flight path of the aircraft.

For a more detailed analysis of airborne acoustics on the Olympic Peninsula, refer to Appendix J (Airspace Noise Analysis for the Olympic Military Operations Area), which concludes that noise exposure within the Olympic MOA and W-237, including noise from aircraft transiting from NAS Whidbey, is within the Department of Defense Noise Zone 1, with DNL below 65 dBA for the entire area studied. While use of the DNL metric to assess potential impacts to recreational or other experiences on the Olympic Peninsula does not capture the potential for annoyance during a relatively short (several hours or overnight) visit to a park or recreational area, it does provide a means to quantify and compare overall impacts resulting from average annual noise exposure at parks and recreational areas that were not included as points of interest in the noise analysis. Instantaneous or very brief noise levels greater than 65 dBA may be encountered in relatively small portions of the land area underlying the Olympic MOA. The highest noise levels (up to 100.6 dBA) would be encountered at elevations above 4,000 ft. MSL, which is less than 1 percent of the total area of the Park. These areas could be exposed to the highest noise levels for periods of 1 second or less per aircraft sortie. Very few, if any, visitors to the Park are likely to be at locations above 4,000 ft. MSL at the same time an aircraft flies directly overhead, exposing the visitor to the highest predicted noise levels.

As concluded in Section 3.12.3.3 (Aircraft and Vessel Noise) in the 2015 NWTT Final EIS/OEIS and summarized above in Section 3.12.3.2 (Airborne Acoustics), airborne acoustics (airborne noise) generated by training activities would be transient, of short duration, and localized at a particular location and for a particular receptor in that location. For most activities, aircraft and airborne noise

would be far enough from areas popular with tourists and residents (i.e., more than 3 NM from shore) to have a negligible impact on people either on the water or on land such that socioeconomic resources (e.g., tourism and related industries) would not be impacted.

Some visitors to areas underlying the Olympic MOA (e.g., visitors to the Olympic National Park) may occasionally experience and be disturbed by aircraft overflight noise. While this may impact the enjoyment of the park or other outdoor areas for some people, analysis summarized above and described in Appendix J (Airspace Noise Analysis for the Olympic Military Operations Area) indicates that the disturbance would be transient, lasting only a few seconds per overflight at a particular location, and exceed 60 dBA less than 2 percent of the time during daytime and nighttime hours. For the majority of the daytime and nighttime, natural sounds are far more prevalent than anthropogenic sounds in the areas of the National Park beneath the Olympic MOA. Considering that trends in economic indicators have historically increased and are projected to continue to increase, disturbances from airborne acoustics on the Olympic Peninsula are expected to have a negligible impact on socioeconomic resources in the Study Area.

As stated in the 2015 NWTT Final EIS/OEIS and summarized in this section, because the potential impacts on socioeconomic resources from airborne acoustics under Alternative 1 would remain negligible, there would be no disproportionately high and adverse human health or environmental effects on any minority populations and low-income populations or disproportionately high environmental health risks or safety risks to children.

3.12.3.2.1.2 Impacts on Airborne Acoustics Under Alternative 1 for Testing Activities

Under Alternative 1, testing activities involving aircraft movements in the Offshore Area would increase from 113 to 258 events, decrease in the Inland Waters from 456 to 61 events, and would remain at 4 annual events in Western Behm Canal (Table 3.0-11). Airborne acoustics are not expected to impact commercial transportation and shipping, because these types of activities are generally not sensitive to occasional noise from aircraft overflights, and commercial shipping vessels would not be delayed by airborne acoustics. As described in Section 3.12.2.1.2.2 (Inland Waters), Navy air traffic made up 6.2 percent of all air traffic in Washington State in 2018. The change in the number of aircraft movements under Alternative 1 would not appreciably change that percentage.

Aircraft movements in the Offshore Area, with the exception of the Olympic MOA, are primarily conducted in offshore warning areas far enough from people and areas popular with tourists (e.g., more than 3 NM from shore) to have a negligible impact on most recreation and tourism-related activities. The majority of aircraft overflights in the Inland Waters area are from aircraft transiting to the Offshore Area and activities occurring in the Olympic MOA (see Tables 2.5-2 and 2.5-3). In spite of increases in some aircraft movements, airborne acoustics from aircraft overflights would not substantially increase potential impacts on commercial and recreational fishing, and tourism and related forms of recreation, because these changes would not appreciably change the existing environmental conditions as presented in the 2015 NWTT Final EIS/OEIS. As summarized in Section 3.12.3.2 (Airborne Acoustics) and in Section 3.12.3.3 (Aircraft and Vessel Noise) in the 2015 NWTT Final EIS/OEIS, airborne acoustics (noise) generated by testing activities would be temporary, of short duration, and localized.

Some visitors to areas underlying the Olympic MOA (e.g., Olympic National Park) may occasionally experience aircraft overflight noise. While this may impact the enjoyment of the park or other outdoor areas for some people, analysis summarized above and described in Appendix J (Airspace Noise Analysis for the Olympic Military Operations Area) indicates that the disturbance would be transient, lasting only

a few seconds per overflight, and exceed 52 dBA less than 0.3 percent of the time. For the majority of the daytime and nighttime, natural sounds are more prevalent than anthropogenic sounds in the areas of the National Park beneath the Olympic MOA. Considering that trends in economic indicators have historically increased and are projected to continue to increase, disturbances from airborne acoustics on the Olympic Peninsula are expected to have a negligible impact on socioeconomic resources in the Study Area.

3.12.3.2.2 Impacts on Airborne Acoustics Under Alternative 2

3.12.3.2.2.1 Impacts on Airborne Acoustics Under Alternative 2 for Training Activities

Under Alternative 2, activities with aircraft movements in the Offshore Area would increase by 13 percent (from about 6,311 to 7,047 annually) compared with the number of events proposed in the 2015 NWTT Final EIS/OEIS (Table 3.0-11). Activities with aircraft movements would increase by about 100 events annually compared with the number of events under Alternative 1. Training activities using aircraft are primarily conducted in offshore warning areas, which do not overlap with commercial airways (Figure 3.12-4). The Olympic MOA overlaps airway route T257 and the Olympic ATCAA overlaps airway routes J54 and J501. Activities with aircraft movements in the Inland Waters area would increase to 165 compared with 100 ongoing events and 143 events under Alternative 1. As described in Section 3.12.2.1.2.2 (Inland Waters), Navy air traffic made up 6.2 percent of all air traffic in Washington State in 2018. The change in the number of aircraft movements under Alternative 2 would not appreciably change that percentage.

Aircraft overflights from Air Combat Maneuver training activities and Electronic Warfare Training – Aircraft activities occurring in the Olympic MOA have the potential to disturb land-based recreational and tourism activities (e.g., hiking) in the Olympic National Park. Relatively few events involving aircraft movements would occur in the Inland Waters area, consistent with the ongoing level of activity. Impacts from airborne acoustics would be temporary and dependent on the perceptions and sensitivity to noise of individuals primarily on the Olympic Peninsula. While airborne acoustics from aircraft overflights are likely to be heard and may disturb some visitors to the Olympic National Park, economic indicators representing tourism and recreational activities in the region, including in the National Park, have been trending upwards in recent years and are projected to continue to increase (see Section 3.12.2.3.1, Offshore Area). The Navy has been conducting aircraft activities in the Olympic MOA for decades, and those same economic indicators have been steadily increasing over much of that time (National Ocean Economics Program, 2018b, 2018c).

For a more detailed analysis of airborne acoustics on the Olympic Peninsula, refer to Appendix J (Airspace Noise Analysis for the Olympic Military Operations Area), which concludes that noise exposure within the Olympic MOA and W-237, including noise from aircraft transiting from NAS Whidbey is within the Department of Defense Noise Zone 1, with Day-Night Average Sound Levels below 65 dBA for the entire area studied. Small portions of the land area underlying the Olympic MOA, at elevations above 4,000 ft. MSL (less than 1 percent of the total area), could be exposed to greater noise levels for periods of 1 second or less per aircraft sortie. It is unlikely that many visitors to the National Park would be at locations above 4,000 ft. when aircraft are present and be exposed to higher noise levels. Some visitors to areas underlying the Olympic MOA (e.g., Olympic National Park) may occasionally experience aircraft overflight noise. While this may impact the enjoyment of the park or other outdoor areas for some people, analysis summarized above and described in Appendix J (Airspace Noise Analysis for the Olympic Military Operations Area) indicates that the disturbance would be transient, lasting only a few seconds per overflight, and exceed 60 dBA less than 2 percent of the time during daytime and nighttime hours.

For the majority of the daytime and nighttime, natural sounds are more prevalent than anthropogenic sounds in the areas of the National Park beneath the Olympic MOA (National Park Service, 2016). Considering that trends in economic indicators have historically increased and are projected to continue to increase, disturbances from airborne acoustics on the Olympic Peninsula are expected to have a negligible impact on socioeconomic resources in the Study Area.

As concluded in Section 3.12.3.3 (Aircraft and Vessel Noise) in the 2015 NWTT Final EIS/OEIS and summarized above in Section 3.12.3.2 (Airborne Acoustics), airborne acoustics (airborne noise) generated by at-sea training activities would be temporary, of short duration, localized, and generally far enough from areas popular with tourists and residents (i.e., more than 3 NM from shore) to have a negligible impact on socioeconomic resources. Airborne acoustics are not expected to impact commercial transportation and shipping, because these types of activities are generally not sensitive to occasional noise from aircraft overflights, and shipping vessels would not be delayed by airborne acoustics. The slight increases in training activities with aircraft movements would have the same impacts on commercial and recreational fishing, and tourism and related forms of recreation described in Section 3.12.3.2.1.1 for Alternative 1.

3.12.3.2.2.2 Impacts on Airborne Acoustics Under Alternative 2 for Testing Activities

Testing activities using aircraft are primarily conducted in offshore warning areas, which do not overlap with commercial airways (Figure 3.12-4). Testing activities involving aircraft movements in the Offshore Area would increase from 113 to 260 compared with the number of events proposed in the 2015 NWTT Final EIS/OEIS and would be essentially the same as under Alternative 1. Testing activities with aircraft would decrease in the Inland Waters from 456 ongoing events to 61, and would continue to be 4 annual events in Western Behm Canal (Table 3.0-11). As described in Section 3.12.2.1.2.2 (Inland Waters), Navy air traffic made up 6.2 percent of all air traffic in Washington State in 2018. The change in the number of aircraft movements under Alternative 2 would not appreciably change that percentage.

As summarized above in Section 3.12.3.2 (Airborne Acoustics), airborne acoustics generated by testing activities would be temporary, of short duration, localized, and generally far enough from people and areas popular with tourists (e.g., more than 3 NM from shore) to have a negligible impact. Some visitors to areas underlying the Olympic MOA (e.g., Olympic National Park) may occasionally experience aircraft overflight noise. While this may impact the enjoyment of the park or other outdoor areas for some people, analysis summarized above and described in Appendix J (Airspace Noise Analysis for the Olympic Military Operations Area) indicates that the disturbance would be transient, lasting only a few seconds per overflight, and exceed 60 dBA less than 2 percent of the time during daytime and nighttime hours. For the majority of the daytime and nighttime, natural sounds are more prevalent than anthropogenic sounds in the areas of the National Park beneath the Olympic MOA (National Park Service, 2016).

For a more detailed analysis of airborne acoustics on the Olympic Peninsula, refer to Appendix J (Airspace Noise Analysis for the Olympic Military Operations Area), which concludes that noise exposure within the Olympic MOA and W-237, including noise from aircraft transiting from NAS Whidbey is within the Department of Defense Noise Zone 1, with Day Night Average Sound Levels below 65 A-weighted decibels (dBA) for the entire area studied. Considering that trends in economic indicators have historically increased and are projected to continue to increase, disturbances from airborne acoustics on the Olympic Peninsula are expected to have a negligible impact on socioeconomic resources in the Study Area.

3.12.3.2.3 Impacts on Airborne Acoustics Under the No Action Alternative

Under the No Action Alternative, the proposed training and testing activities would not occur. Disturbances from airborne acoustic stressors as listed above would not be introduced into the marine environment or over the land areas, including the Olympic Peninsula. As described in Section 3.12.2.1.2.2 (Inland Waters), Navy aircraft flights only account for approximately 6.2 percent of all air traffic in Washington State. Therefore, existing environmental conditions would either remain unchanged or would improve slightly after cessation of ongoing training and testing activities.

Discontinuing training and testing activities would result in fewer disturbances from airborne acoustics within the marine environment and over the Olympic Peninsula where training and testing activities have historically been conducted. Therefore, discontinuing training and testing activities under the No Action Alternative would lessen but not eliminate the potential for disturbances from airborne acoustics, because other aircraft, including commercial, general aviation, and military, use the same airspace. Ceasing training and testing with aircraft may reduce the frequency or severity of disturbances from airborne acoustics experienced by some members of the public depending on their sensitivity to aircraft overflights, but would not significantly reduce average noise levels in the Study Area.

Not conducting the proposed at-sea training and testing activities may have negative impacts on the socioeconomic resources of coastal areas in Washington State, Oregon, and Northern California. Communities located along inland waters in Washington State and southeast Alaska may also be impacted. The number of jobs and types of jobs, particularly in coastal communities, that depend on the support of Navy personnel residing or transiting through those communities may be impacted. The Navy and Navy personnel are an important and often stabilizing contributor to the local and regional economies, and a reduced Navy presence could negatively impact certain businesses. For example, vessels and associated equipment used specifically for training and testing activities would no longer be needed if all training and testing ceased. Consequently, the civilian and Navy personnel supporting those activities may be relocated, reassigned, or have to find other employment. The secondary effects from reducing the number of personnel who support at-sea training and testing activities could include a decline in revenue for local businesses frequented by Navy personnel and their families, such as businesses in the food services, retail, and housing sectors. While more complex studies at the local level would need to be conducted to quantify potential socioeconomic impacts from ceasing training and testing activities, it is likely that many coastal communities with a Navy presence would be impacted.

3.12.3.3 Physical Disturbance and Strike Stressors

The evaluation of impacts on socioeconomic resources from physical disturbance and strike stressors focuses on direct physical encounters or collisions with objects moving through the water or air (e.g., vessels, aircraft, unmanned devices, and towed devices), dropped or fired into the water (e.g., explosive and non-explosive munitions, other military expended materials, and ocean bottom deployed devices), or resting on the ocean floor (e.g., anchors, mines, targets) that may damage or encounter civilian equipment. These stressors remain the same as analyzed in the 2015 NWTT Final EIS/OEIS.

Physical encounters that damage equipment and infrastructure could disrupt the collection (e.g., of fisheries resources) and transport of products, which could impact industry revenue or operating costs. Socioeconomic resources potentially impacted by encounters with military vessels, devices, and objects include commercial transportation and shipping, commercial and recreational fishing, and tourism and related forms of recreation.

As discussed above in Section 3.12.3.1 (Accessibility [to the Ocean and the Airspace]), the majority of recreational fishing and tourism and related forms of recreation in the Study Area takes place in nearshore waters (within 3 NM from shore), and the military conducts the training and testing activities involving munitions or other expended materials farther offshore, beyond 12 NM for activities using munitions. Therefore, most recreational fishing and tourism activities would not occur in close proximity to physical disturbance and strike stressors.

Larger commercial fishing vessels are more likely to go beyond 3 NM and approach areas where the military trains and tests and may be in close proximity to physical disturbance and strike stressors. To avoid conflicts with civilian vessels, the military follows standard operating procedures to visually scan an area to ensure that non-participants (i.e., civilian vessels and aircraft) are not present. If non-participants are present, the military delays, moves, or postpones the activity. Refer to Section 2.3.3 (Standard Operating Procedures) for additional information on standard operating procedures. Appendix A (Navy Activities Descriptions) lists standard operating procedures that are implemented for each activity to ensure the safety of civilians and military personnel.

Commercial shipping vessels transport goods internationally and would be expected to transit through offshore waters en route to domestic and foreign ports. Shipping vessels follow established routes which are avoided by the military during training and testing activities, and both military and civilian vessels in proximity to each other are expected to communicate their positions. In addition, the military provides advance notification of training and testing activities to the public through NTMs and other means of communication as described in Section 3.12.3.1 (Accessibility [to the Ocean and the Airspace]) and in the 2015 NWTT Final EIS/OEIS. For these reasons, a direct strike or collision with a shipping vessel is unlikely.

Additional information of physical disturbance and strike stressors and the potential for interactions with commercial fishing vessels and gear is described in Section 3.12.3.2 (Physical Disturbance and Interactions) of the 2015 NWTT Final EIS/OEIS.

3.12.3.3.1 Impacts from Physical Disturbance and Strike Under Alternative 1

3.12.3.3.1.1 Impacts from Physical Disturbance and Strike Under Alternative 1 for Training Activities

Under Alternative 1, physical disturbance and strike stressors that may impact socioeconomic resources include (1) vessels and in-water devices, (2) aircraft, and (3) military expended materials. These three categories represent the same stressors analyzed in the 2015 NWTT Final EIS/OEIS.

As discussed in Section 3.12.3.1 (Accessibility [to the Ocean and the Airspace]), the slight increases in training activities including vessel movements, aircraft movements, and in-water devices would not appreciably change from the existing environmental conditions as presented in the 2015 NWTT Final EIS/OEIS. Under Alternative 1, the number of military materials that would be expended during training activities is generally consistent with the number proposed for use in the 2015 NWTT Final EIS/OEIS. When the amount of military expended materials from Tables 3.0-14 through 3.0-22 are combined, the number of items proposed to be expended under Alternative 1 is approximately 7 percent less than ongoing activities. The largest changes are in the number of explosive and non-explosive large-caliber projectiles and medium-caliber projectiles used under Alternative 1 (Table 3.0-14 and 3.0-16). The number of non-explosive large-caliber projectiles increases by about 6,000, and the number of medium-caliber projectiles decreases by about 16,000 (Table 3.0-14). The number of explosive large-caliber projectiles and explosive medium-caliber projectiles both decrease under Alternative 1 (390 to 172 annually for large caliber and 6,368 to 550 annually for medium caliber) (Table 3.0-16). The

activities that expend military materials, including munitions, would occur in the same locations and in a similar manner as were analyzed previously. Therefore, the impacts on socioeconomic resources from physical disturbance and strike by military expended materials would be expected to be the same or slightly reduced.

Therefore, the conclusions presented in Section 3.12.3.2 (Physical Disturbance and Interactions) of the 2015 NWTT Final EIS/OEIS remain valid. Specifically, due to implementation of the Navy's standard operating procedures and the unlikely occurrence of physical interactions between military vessels, aircraft, and expended materials with civilian vessels and aircraft, the potential for impacts on socioeconomic resources from physical disturbance and strike interactions is negligible.

3.12.3.3.1.2 Impacts from Physical Disturbance and Strike Under Alternative 1 for Testing Activities

Under Alternative 1, physical disturbance and strike stressors that may impact socioeconomic resources include (1) vessels and in-water devices, (2) aircraft, and (3) military expended materials. These three categories represent the same stressors analyzed in the 2015 NWTT Final EIS/OEIS.

As discussed in Section 3.12.3.1 (Accessibility [to the Ocean and the Airspace]), the increases in testing activities including vessel movements, aircraft movements, and in-water devices would not appreciably change from the existing environmental conditions as presented in the 2015 NWTT Final EIS/OEIS. Under Alternative 1, the number of military materials that would be expended during testing activities is generally consistent with the number proposed for use in the 2015 NWTT Final EIS/OEIS. When the amount of military expended materials from (Tables 3.0-14 through 3.0-22) are combined, the number of items proposed to be expended under Alternative 1 is approximately 12 percent less than ongoing activities. The activities that expend military materials would occur in the same locations and in a similar manner as were analyzed previously. Therefore, the impacts on socioeconomic resources from physical disturbance and strike by military expended materials would be expected to be the same or slightly reduced.

Therefore, the conclusions presented in Section 3.12.3.2 (Physical Disturbance and Interactions) of the 2015 NWTT Final EIS/OEIS remain valid. Specifically, due to implementation of the Navy's standard operating procedures and the unlikely occurrence of physical interactions between military vessels, aircraft, and expended materials with civilian vessels and aircraft, the potential for impacts on socioeconomic resources from physical disturbance and strike interactions is negligible.

3.12.3.3.2 Impacts from Physical Disturbance and Strike Under Alternative 2

3.12.3.3.2.1 Impacts from Physical Disturbance and Strike Under Alternative 2 for Training Activities

Under Alternative 2, physical disturbance and strike stressors that may impact socioeconomic resources include (1) vessels and in-water devices, (2) aircraft, and (3) military expended materials. These three categories represent the same stressors analyzed in the 2015 NWTT Final EIS/OEIS.

As discussed in Section 3.12.3.1 (Accessibility [to the Ocean and the Airspace]), training activities including vessel movements, aircraft movements, and in-water devices would remain generally consistent with those proposed under Alternative 1. The number of military materials that would be expended during training activities is generally equivalent to the number proposed for use under Alternative 1. When the amount of military expended materials from Tables 3.0-14 through 3.0-22 is combined, the number of items proposed to be expended under Alternative 2 is approximately 13 percent more than under Alternative 1 (and approximately 5 percent greater than in ongoing activities). As under Alternative 1, the largest changes are in the number of explosive and non-explosive

medium-caliber projectiles (Tables 3.0-14 and 3.0-16). The activities that expend military materials would occur in the same locations and in a similar manner as were analyzed previously. Therefore, the impacts on socioeconomic resources from physical disturbance and strike by military expended materials would be expected to be the same or slightly greater.

Therefore, the conclusions presented in Section 3.12.3.2 (Physical Disturbance and Interactions) of the 2015 NWTT Final EIS/OEIS remain valid. Specifically, due to implementation of the Navy's standard operating procedures and the unlikely occurrence of physical interactions between military vessels, aircraft, and expended materials with civilian vessels and aircraft, the potential for impacts on socioeconomic resources from physical disturbance and strike interactions is negligible.

3.12.3.3.2 Impacts from Physical Disturbance and Strike Under Alternative 2 for Testing Activities

Under Alternative 2, physical disturbance and strike stressors that may impact socioeconomic resources include (1) vessels and in-water devices, (2) aircraft, and (3) military expended materials. These three categories represent the same stressors analyzed in the 2015 NWTT Final EIS/OEIS.

As discussed in Section 3.12.3.1 (Accessibility [to the Ocean and the Airspace]), the increases in testing activities including vessel movements, aircraft movements, and of in-water devices would remain generally consistent with those proposed under Alternative 1. The number of military materials that would be expended during testing activities is generally consistent with the number proposed for use under Alternative 1. When the amount of military expended materials from Tables 3.0-14 through 3.0-22 are combined, the number of items proposed to be expended under Alternative 2 is approximately 16 percent more than under Alternative 1. The activities that expend military materials would occur in the same locations and in a similar manner as were analyzed previously. Therefore, the impacts on socioeconomic resources from physical disturbance and strike by military expended materials would be expected to be the same or slightly greater.

Therefore, the conclusions presented in Section 3.12.3.2 (Physical Disturbance and Interactions) of the 2015 NWTT Final EIS/OEIS remain valid. Specifically, due to implementation of the Navy's standard operating procedures and the unlikely occurrence of physical interactions between military vessels, aircraft, and expended materials with civilian vessels and aircraft, the potential for impacts on socioeconomic resources from physical disturbance and strike interactions is negligible.

3.12.3.3.3 Impacts from Physical Disturbance and Strike Under the No Action Alternative

Under the No Action Alternative, proposed training and testing activities would not occur. Physical disturbance and strike stressors as listed above would not be introduced into the marine environment. Therefore, existing environmental conditions would either remain unchanged or would improve slightly after cessation of ongoing training and testing activities.

Discontinuing training and testing activities would result in fewer physical disturbance and strike stressors within the marine environment where training and testing activities have historically been conducted. Therefore, discontinuing training and testing activities under the No Action Alternative would lessen the potential for physical disturbances and strikes, but would not measurably change the number of times the public is exposed to physical disturbance and strike stressors in the Study Area.

Not conducting the proposed at-sea training and testing activities may have negative impacts on the socioeconomic resources of coastal areas in Washington State, Oregon, and Northern California. Communities located along inland waters in Washington State and southeast Alaska may also be impacted. The number of jobs and types of jobs, particularly in coastal communities, that depend on the

support of Navy personnel residing or transiting through those communities may be impacted. The Navy and Navy personnel are an important and often stabilizing contributor to the local and regional economies, and a reduced Navy presence could negatively impact certain businesses. For example, vessels and associated equipment used specifically for training and testing activities would no longer be needed if all training and testing ceased. Consequently, the civilian and Navy personnel supporting those activities may be relocated, reassigned, or have to find other employment. The secondary effects from reducing the number of personnel who support at-sea training and testing activities could include a decline in revenue for local businesses frequented by Navy personnel and their families, such as businesses in the food services, retail, and housing sectors. While more complex studies at the local level would need to be conducted to quantify potential socioeconomic impacts from ceasing training and testing activities, it is likely that many coastal communities with a Navy presence would be impacted.

3.12.3.4 Secondary Impacts

Secondary stressors resulting in indirect impacts on socioeconomic resources are discussed in Section 3.12.3.4 (Secondary Impacts) of the 2015 NWTT Final EIS/OEIS. A secondary stressor, as defined in this section, is a stressor that has the potential to affect a socioeconomic resource as a result of a direct effect on another non-socioeconomic resource. For example, if a training activity has the potential to affect certain types of fish, and those same fish are part of an economically important fishery, then the effect of the stressor on those fish species could have an indirect, or secondary, effect on the socioeconomic resource of commercial fishing.

The secondary stressor of resource availability pertains to the potential for loss of fisheries resources, including some invertebrates, within the Study Area, which is relevant to commercial, recreational, and traditional fishing practices as well as tourism. Additionally, impacts on marine mammal populations would have the potential to impact revenue for whale watching businesses if a substantial number of whales were to leave the area. Analysis in Sections 3.4 (Marine Mammals), 3.8 (Marine Invertebrates), and 3.9 (Fishes) determined, however, that no population-level impacts on marine species are anticipated from the proposed training and testing activities. For these reasons, there would be no secondary impacts on commercial and recreational fishing and tourism in the Study Area.

As discussed in Section 3.12.2.1.3 (Vehicle Traffic), openings of the Hood Canal Bridge can result in long delays and back-ups at the bridge, particularly during the summer tourism season when traffic is heaviest. The delays could result in a secondary impact on recreational activities and tourism on the Olympic Peninsula if visitors are unable to reach their destinations in a timely manner and choose to cancel their activity. While a training or testing activity may require a bridge opening to allow a Navy vessel to pass through the canal, occasional openings to accommodate Navy vessels are not likely to delay a significant portion of visitors to the Olympic Peninsula. Although delayed, many people would likely continue with their plans anyway. Also, tourists and local visitors planning recreational activities on the Olympic Peninsula are more likely to do so on weekends and holidays when openings to allow the passage of Navy vessels are less likely. Therefore, secondary impacts on recreational activities and tourism would be negligible.

3.12.3.4.1 Secondary Impacts Under Alternative 1 and Alternative 2

Analyses in Sections 3.4 (Marine Mammals), 3.8 (Marine Invertebrates), and 3.9 (Fishes) concluded that population level impacts on marine species from training and testing activities under Alternative 1 and

Alternative 2 are not anticipated. Based on these conclusions, secondary impacts on transportation or shipping, commercial or recreational fishing, or tourism are not anticipated.

There has been no appreciable change to the existing environmental conditions as presented in the 2015 NWTT Final EIS/OEIS, and the results of the analysis of impacts from secondary stressors on transportation and shipping, commercial and recreational fishing, and tourism remain the same.

3.12.3.4.2 Secondary Impacts Under the No Action Alternative

Under the No Action Alternative, proposed training and testing activities would not occur. Secondary stressors impacting resource availability as listed above would not be introduced into the marine environment. Therefore, existing environmental conditions would either remain unchanged or would improve slightly after cessation of ongoing training and testing activities.

Discontinuing training and testing activities would result in fewer secondary stressors from the availability of resources within the marine environment where training and testing activities have historically been conducted. Therefore, discontinuing training and testing activities under the No Action Alternative would lessen the potential for secondary stressors, but would not measurably improve the availability of resources associated with secondary impacts on socioeconomic resources in the Study Area.

Not conducting the proposed at-sea training and testing activities may have negative impacts on the socioeconomic resources of coastal areas in Washington State, Oregon, and Northern California. Communities located along inland waters in Washington State and southeast Alaska may also be impacted. The number of jobs and types of jobs, particularly in coastal communities, that depend on the support of Navy personnel residing or transiting through those communities may be impacted. The Navy and Navy personnel are an important and often stabilizing contributor to the local and regional economies, and a reduced Navy presence could negatively impact certain businesses. For example, vessels and associated equipment used specifically for training and testing activities would no longer be needed if all training and testing ceased. Consequently, the civilian and Navy personnel supporting those activities may be relocated, reassigned, or have to find other employment. The secondary effects from reducing the number of personnel who support at-sea training and testing activities could include a decline in revenue for local businesses frequented by Navy personnel and their families, such as businesses in the food services, retail, and housing sectors. While more complex studies at the local level would need to be conducted to quantify potential socioeconomic impacts from ceasing training and testing activities, it is likely that many coastal communities with a Navy presence would be impacted.

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