Chenega, Cordova, and Tatitlek Ferry Terminals, Alaska

Federal Project #003290, 0851073, 003289 |
State Project #SFHWY00461, SFHWY00465, SFHWY00460
NEPA ID EAXX-021-70-000-1734709329

Prince William Sound Ferry Terminals Environmental Assessment

Alaska Department of Transportation
& Public Facilities

December 2025

Contents

Tables

Figures

Appendices[1, 2]

---

[1] On May 5, 2025, the Office of Management and Budget issued *Guidance Implementing Section 6 of Executive Order 14154, Entitled Unleashing American Energy.* This guidance is reflected throughout this Environmental Assessment. However, consistent with Executive Order 14154, *Unleashing American Energy*, to prevent delays in the grant award process, various appendices, attachments, figures, and other related materials developed and finalized prior to the Executive Order may still include discussion of greenhouse gases and related topics.

[2] Executive Order 14173, *Ending Illegal Discrimination and Restoring Merit-Based Opportunity*, rescinded Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. As such, references to Executive Order 12898 and related topics have been removed from the text of this Environmental Assessment. However, consistent with Executive Order 14154, *Unleashing American Energy*, to prevent delays in the grant award process, various documents located in the appendices developed and finalized prior to the Executive Order may still include discussion of Executive Order 12898 and related topics.

1 Introduction

The U.S. Department of Transportation (USDOT) Maritime Administration awarded a Fiscal Year 2022 Port Infrastructure Development Program grant to the Prince William Sound Economic Development District (PWSEDD), in the amount of $28,248,386, for the Prince William Sound Ferry Terminals Project (Project). The Federal Highway Administration is contributing approximately $3.9 million. The construction estimate for the Project is currently approximately $50 million.

The Proposed Action includes improvements to ferry terminal dock facilities in three Prince William Sound (PWS) communities: Chenega, Cordova, and Tatitlek. These improvements, which vary by location, are necessary to maintain critical ferry service to these communities, as older ferries are removed from service and replaced with new Alaska Class Ferries (ACFs).

The Alaska Department of Transportation and Public Facilities (DOT&PF) manages the Alaska Marine Highway System (AMHS), which includes the terminals at Chenega, Cordova, and Tatitlek and the ferry vessels that serve those terminals. PWSEDD and DOT&PF are partners on this Proposed Action. DOT&PF is completing the design for the Proposed Action, and these two entities intend to have an agreement in place prior to construction for DOT&PF to implement it.

Chenega, Cordova, and Tatitlek all lack road connections to other local communities. The AMHS is the sole highway connection for Chenega, Cordova, and Tatitlek to other locations outside those areas, including larger hub communities that provide urban necessities such as medical care and access to international airports. The AMHS in PWS connects with the continental road system at the Whittier and Valdez ports. The Whittier port allows connection to the Whittier access tunnel, providing a route to Anchorage and the Ted Stevens Anchorage International Airport.

This Environmental Assessment (EA) was prepared pursuant to the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. § 4321, *et seq*., and is consistent with implementing guidance issued by the Council on Environmental Quality (CEQ) and USDOT *Procedures for Considering Environmental Impacts*.[3]

1.1 Project Location

The Proposed Action is in PWS, a large inlet in the Gulf of Alaska, on the southern coast of Alaska and the eastern side of the Kenai Peninsula. The Proposed Action is

[3] MARAD is aware of CEQ's rescission of its NEPA-implementing regulations at 40 CFR §§ 1500–1508. This Environmental Assessment was prepared while those CEQ regulations were still in effect. To efficiently process NEPA documents, this document may still reflect previous CEQ regulatory language. MARAD also utilized the Department of Transportation Order 5610.1C, titled "Procedures for Considering Environmental Impacts," and MARAD's Maritime Administrative Orders (MAO) 600- 1, titled "Procedures for Considering Environmental Impacts," to meet the agency's obligations under NEPA, 42 U.S.C. § 4321, *et seq*., MARAD notes that new DOT "Procedures for Considering Environmental Impacts" (DOT Order 5610.1D) went into effect July 1, 2025, and will be applied to future environmental reviews.

composed of three separate ferry terminals, each at a different location in PWS: Chenega, Cordova, and Tatitlek. Refer to Appendix B, Project Locations Mapbook, for an overview of the Proposed Action locations and the individual sites.

1.1.1 Chenega Ferry Terminal

The Chenega Ferry Terminal is in the community of Chenega, a census-designated place (CDP) in the Chugach U.S. Census Area. Chenega is on Evans Island in PWS, approximately 160 kilometers (km; 100 miles [mi]) southeast of Anchorage. The original Chenega townsite was destroyed during the 1964 Good Friday Earthquake and tsunami, and many residents relocated to the new town of Chenega, also known as Chenega Bay. This ferry terminal is at the southeastern end of Chenega, within Section 25, Township 1 South, Range 8 East of the Seward Meridian; U.S. Geological Survey (USGS) Quadrangle Seward A-3 SW; Latitude 60.06319° North, Longitude -148.00933° West.

1.1.2 Cordova Ferry Terminal

The Cordova Ferry Terminal is located in the city of Cordova, in the Chugach U.S. Census Area. Cordova is on the southeastern shore of PWS, approximately 240 km (150 mi) southeast of Anchorage. This ferry terminal is at the northern end of Cordova, in Orca Inlet, within Section 21, Township 15 South, Range 3 West of the Copper River Meridian; USGS Quadrangle Map Cordova C-5 SW; Latitude 60.55726° North, Longitude -145.75399° West.

1.1.3 Tatitlek Ferry Terminal

The Tatitlek Ferry Terminal is in the community of Tatitlek in the Chugach U.S. Census Area. Tatitlek is on the eastern side of PWS, approximately 180 km (112 mi) southeast of Anchorage. This ferry terminal is a multipurpose dock structure at the southern end of Tatitlek, within Section 5, Township 12 South, Range 8 West of the Copper River Meridian; USGS Quadrangle Map Cordova D-8 SE; Latitude 60.85817° North, Longitude -146.67544° West.

1.2 Proposed Action Description

The Proposed Action includes improvements and modifications to three existing ferry terminals in PWS: the Chenega Ferry Terminal, the Cordova Ferry Terminal, and the Tatitlek Ferry Terminal. The improved terminals would accommodate the larger AMHS ACF vessels, as the current fleet of Aurora Class Ferry vessels are expected to be phased out of service during the next several years.

Improvements to each ferry terminal are summarized as follows:

- Addition of a new side-loading ferry terminal facility in Chenega Bay (Chenega), including a pile-supported approach, vehicle transfer bridge, mechanical support system for the seaward end of the bridge, and three mooring dolphins;
- Modification to the existing stern- and side-berth ferry terminal facility in Cordova; and

- Retrofit to the existing end-loading ferry terminal facility in Tatitlek to replace the existing tidal ramp facility, including a new vehicle transfer bridge, mechanical support system for the seaward end of the bridge, and two dolphins.

The Proposed Action activities at all three locations would include pile installation and removal as well as power and lighting upgrades. Additional activities at the Cordova Ferry Terminal would include upland improvements, as further discussed in Section 1.2.2.3 below, and dredging. Appendix C (Plan Drawings) provides plan drawings of all the Proposed Action components.

1.2.1 Chenega Ferry Terminal

At the Chenega Ferry Terminal, the Proposed Action would involve pile installation to support an approach trestle, shoreward vehicle transfer bridge abutment, mechanical lift system or float to support the seaward end of the transfer bridge, and three mooring dolphins. The Proposed Action would also involve modifications to the existing fendering system on the existing dock face. An onsite generator and generator building would be installed to power the bridge mechanical lift system, apron hydraulics, and pedestrian/vehicle lighting along the new bridge.

1.2.1.1 Pile Installation and Removal

Due to shallow bedrock with minimal overburden, all vertical, permanent piles require rock sockets. Except for 20 piles in the approach trestle, all permanent piles (vertical and battered) require tension anchors. Construction of the marine structures requires up to 30 temporary, 61-centimeter (cm; 24-inch [in]) steel pipe piles to support pile installation, which would be removed prior to construction completion.

The approach trestle would be supported on 30, 61-cm (24-in)-diameter steel pipe piles with a cap beam at each bent and girders spanning between each bent. The shoreward bridge abutment would be supported on six, 76-cm (30-in)-diameter steel pipe piles with a precast concrete cap. Each seaward lift tower would be supported on four, 91-cm (36-in)-diameter steel pipe piles with a precast concrete pile cap, for a total of eight piles. The 3 fixed-fender dolphins would each have 2 vertical and 2 battered, 76-cm (30-in) steel pipe piles, for a total of 12 piles.

Tension anchors would be installed within piles drilled into the bedrock below the elevation of the pile tip after the pile has been driven through the sediment layer to refusal. A 15- or 20-cm (6- or 8-in)-diameter steel pipe casing would be inserted inside the larger diameter production pile and may be seated with a small pneumatic hammer. A rock drill would be inserted into the casing, and a 15- or 20-cm (6- to 8-in)-diameter hole would be drilled into bedrock with rotary and percussion drilling methods. The drilling work would be contained within the steel pile casing and steel pipe pile. The typical depth of the drilled tension anchor hole would vary, but 6 to 9 meters (m; 20 to 30 feet [ft]) deep is common. Rock fragments would be removed through the top of the casing with compressed air. A steel rod would then be grouted into the drilled hole and affixed to the top of the pile. The purpose of a tension anchor is to secure the pile to the bedrock to withstand uplift forces. It is estimated that tension anchor installation would take between 1 to 4 hours per pile.

Pile installation would be conducted using both a vibratory and impact hammer as well as down-the-hole (DTH) pile installation methods. Note, throughout this document, DTH pile installation generally refers to both rock socket drilling and tension anchor installation, unless specified. Piles would be advanced to refusal using a vibratory hammer. After DTH pile installation, the final approximately 3 m (10 ft) of driving would be conducted using an impact hammer so the structural capacity of the pile embedment can be verified. The exact duration or staging of each pile installation method would depend on sediment depth and conditions at each pile location. Pile removal would be conducted using a vibratory hammer. Pile installation and removal would occur in waters approximately 6 to 7 m (20 to 23 ft) deep.

1.2.1.2 Electrical and Power Upgrades

This Proposed Action would provide a new generator housed in a new 3- to 6-m (10- by 20-ft) building that would power the bridge mechanical lift system, apron hydraulics, and pedestrian/vehicle lighting along the length of the new approach and bridge. The existing Chenega Dock has a high-mast light at the shoreward end of the approach, which is located on the opposite side from the proposed new side berth. New solar-powered marker lights would be installed on the new dolphins to aid the ferry captains with approach and mooring operations.

1.2.2 Cordova Ferry Terminal

The Proposed Action at the Cordova Ferry Terminal would involve the removal of five, three-pile, floating fender dolphins; two, four-pile, fixed fender dolphins; and one, two-pile, catwalk support dolphin. These would be replaced with three new, four-pile, fixed fender dolphins and five, five-pile, floating fender dolphins. Above-water construction would include catwalk modifications for dolphin access as well as modifications to the pedestrian walkways and elevated steel platforms. Other Proposed Action components would be electrical and power system upgrades; replacement of portions of the fuel lines as well as the sewer and potable water lines on the transfer bridge and float system of a sewer holding tank; replacement of the potable water line to the stern berth; and improvements of the upland area. Upland improvements would involve replacing the existing sewer holding tank and associated lines between the tank and transfer bridge shoreward abutment. Dredging would also occur within the Proposed Action area to maintain clear and navigable depths for vessel operations.

1.2.2.1 Pile Installation and Removal

Pile removal would include 5 vertical steel pipe piles (76-cm [30-in] diameter), 5 vertical steel pipe piles (46-cm [18-in] diameter), and 15 battered steel pile piles (46-cm [18-in] diameter). The Proposed Action would install 20 vertical and 18 battered steel pipe piles (76-cm [30-in]-diameter) to create 8 new mooring dolphins. Up to 32 temporary, 61-cm (24-in)-diameter steel pipe piles would be installed to support pile installation and would be removed following construction completion.

Pile installation would be conducted using both a vibratory and impact hammer. Piles would be advanced to refusal using a vibratory hammer, and the final approximately 3 m (10 ft) of driving would be conducted using an impact hammer so the structural capacity of the pile embedment can be verified. The exact duration or staging of each

pile installation method used would depend on sediment depth and conditions at each pile location. Pile removal would be conducted using a vibratory hammer. Pile installation and removal would occur in waters approximately 2 to 10 m (6 to 33 ft) deep.

1.2.2.2 Dredging and Disposal

Dredging would occur to -8 m (-27 ft) mean lower low water (MLLW) around the stern berth fender line. Approximately 13,240 cubic yards (CY) of material within a 1.23-acre area would be dredged. The disposal area is a 1.23-acre area located approximately 1.6 km (1 mi) southwest of the Cordova Ferry Terminal, just west of Spike Island. Testing would occur prior to dredging to confirm that dredged materials are free from contaminants. Should any contaminants be detected, dredged materials would be disposed at an uplands site and not in the water.

1.2.2.3 Upland Improvements

The existing 4,000-gallon sewer-holding tank would be replaced with a 10,000-gallon holding tank, and all sewer lines from the tank to the abutment and along the terminal marine structure to the ferry berths would be replaced.

1.2.2.4 Electrical and Power Upgrades

The existing shore power conductors between the service and ferry berths would be replaced to increase power capacity to meet ACF power demands.

1.2.3 Tatitlek Ferry Terminal

At the Tatitlek Ferry Terminal, the Proposed Action would involve removal of the existing dolphin, catwalk, and tide ramp structures. The Proposed Action would also include the installation of a shoreward vehicle transfer bridge abutment, two lift towers with a mechanical support system for the seaward end of the bridge, catwalks to each lift tower, fendering system upgrades on the existing dock face, and two mooring dolphins. An onsite generator and generator building would be installed to power the bridge mechanical lift system, apron hydraulics, and pedestrian/vehicle lighting along the new bridge.

1.2.3.1 Pile Installation and Removal

Due to shallow bedrock with minimal overburden, all vertical, permanent piles would require rock sockets, and all permanent piles (vertical and battered) would require tension anchors. Construction of the marine structures would require up to 20 temporary, 61-cm (24-in)-diameter steel pipe piles to support pile installation, and these would be removed prior to construction completion.

The shoreward bridge abutment would be supported on six, 76-cm (30-in)-diameter steel pipe piles with a precast concrete cap. Each seaward lift tower would be supported on four, 91-cm (36-in)-diameter steel pipe piles with a precast concrete pile cap, for a total of eight piles. The two fixed-fender dolphins would each have two vertical and two battered 76-cm (30-in)-diameter steel pipe piles, for a total of eight piles.

Tension anchors would be installed within piles that are drilled into the bedrock below the elevation of the pile tip after the pile has been driven through the sediment layer to

refusal. A 15- or 20-cm (6- or 8-in)-diameter steel pipe casing would be inserted inside the larger diameter production pile and may be seated with a small pneumatic hammer. A rock drill would be inserted into the casing, and a 15- or 20-cm (6- to 8-in)-diameter hole would be drilled into bedrock with rotary and percussion drilling methods. The drilling work would be contained within the steel pile casing and steel pipe pile. The typical depth of the drilled tension anchor hole varies, but 6 to 9 m (20 to 30 ft) is common. Rock fragments would be removed through the top of the casing with compressed air. A steel rod would then be grouted into the drilled hole and affixed to the top of the pile. The purpose of a tension anchor is to secure the pile to the bedrock to withstand uplift forces. It is estimated that tension anchor installation would take between 1 to 4 hours per pile.

Pile installation would be conducted using both a vibratory and impact hammer as well as DTH pile installation methods. Piles would be advanced to refusal using a vibratory hammer. After DTH pile installation, the final approximately 3 m (10 ft) of driving would be conducted using an impact hammer so the structural capacity of the pile embedment can be verified. The exact duration or staging of each pile installation method would depend on sediment depth and conditions at each pile location. Pile removal would be conducted using a vibratory hammer. Pile installation and removal would occur in waters approximately 6 to 9 m (20 to 30 ft) deep.

1.2.3.2 Electrical and Power Upgrades

The existing Tatitlek Dock has a high-mast light at the top of the fixed tidal ramps. The Proposed Action would provide a new generator housed in a new 3- by 6-m (10- by 20-ft) building that would power the bridge mechanical lift system, apron hydraulics, and pedestrian/vehicle lighting along the length of the new bridge. New solar-powered marker lights would be installed on the new dolphins and existing dock face to aid ferry captains with approach and mooring operations.

1.3 Existing Conditions

Below are brief descriptions of the existing infrastructure at each ferry terminal.

1.3.1 Chenega Ferry Terminal

The Chenega dock and tidal ramps were originally constructed in 1995 to provide a terminal for the motor vessel (MV) *Bartlett*. The MV *Bartlett* was decommissioned and sold in 2003, and Chenega is currently serviced by Aurora Class Ferry vessels. A routine inspection of the Chenega dock and ramp in 2022 rated the conditions of the structures as “Satisfactory” (CONSOR 2022a, 2022b). The marine facilities consist of an approach, dock, and two tidal ramps constructed of prestressed concrete panels welded to bridge beams supported by steel pipe piles socketed to the underlying bedrock. The MV *Tustumena* (currently in overhaul) has used the dock’s eastern face for moorage, while the MV *Aurora* uses the tidal ramps located along the dock’s northern face for stern loading.

1.3.2 Cordova Ferry Terminal

Cordova's original facility was built in 1968; it has been improved and expanded over the years. The uplands were expanded and improved in 1997, the terminal building was constructed in 1998, and the maintenance building was constructed in 2005. The marine structures were completely reconstructed in 2006. The Cordova Ferry Terminal underwent routine inspection in 2021, and the overall condition was rated at "Satisfactory" (DOT&PF 2022). The maritime facilities consist of a 12-m (40-ft)-long approach span (pile-supported), a transfer bridge, an intermediate ramp with articulating apron and six berthing/mooring structures for the side berth, and a 46-m (150-ft)-long approach span (float supported) to an intermediate ramp with articulating apron and six berthing/mooring structures for the stern berth. The stern berth was originally built as a homeport for the Fast Vehicle Ferry *Chenega*; this vessel was sold in 2021. The MV *Aurora*, the only vessel currently able to serve Cordova, uses the side berth. The current Cordova stern berth has a shallow-water approach that occasionally causes landing issues for larger ACF vessels because it was built for a vessel that AMHS no longer operates.

1.3.3 Tatitlek Ferry Terminal

The Tatitlek Ferry Terminal is a multipurpose dock structure that was originally constructed in 1995 to accommodate the MV *Bartlett*. A 2021 routine inspection rated the overall condition of the Tatitlek Ferry Terminal as "Satisfactory" (CONSOR 2022c). The marine facilities consist of a staging area, an approach, a dock, and two tidal ramps constructed of welded concrete panels supported by steel beams and piles. The current dock at Tatitlek only supports stern berthing from the currently operating Aurora Class Ferry vessels.

1.4 Purpose and Need

1.4.1 Purpose

The purpose of the Proposed Action is to improve the Chenega, Cordova, and Tatitlek Ferry Terminals to accommodate the new ACF berthing and home port needs, so they support continued reliable AMHS ferry service into the future.

1.4.2 Need

The existing Chenega and Tatitlek Ferry Terminal facilities are fixed platform docks that only accommodate vessels with attached vehicle ramps, which are aging out of service. The ACFs need a vehicle transfer system to be installed at these facilities to operate at these terminals.

The existing Cordova Ferry Terminal facility has side and stern berths for AMHS ferry vessels. The terminal needs modification of the mooring dolphins to accommodate the newly built ACF vessel's (MV *Hubbard*) mooring line system.

2 Alternatives Considered

2.1 Proposed Action

The Proposed Action would consist of improvements and modifications to three existing ferry terminals in PWS: Chenega Ferry Terminal, Cordova Ferry Terminal, and Tatitlek Ferry Terminal. The Proposed Action's activities would include pile installation and removal, dredging, uplands excavation and grading, and electrical upgrades. Detailed descriptions of these activities and locations where they would occur can be found in Section 1.2 Proposed Project Action Description.

Following the upgrades at each ferry terminal, operations and use are expected to continue at existing levels. No additional ferry or vessel traffic is anticipated as a result of the Proposed Action, and it is not intended to support an increase in vessel activity at these facilities.

The Proposed Action is the Preferred Alternative.

2.2 No Action Alternative

NEPA requires the federal agency to consider a "No Action" alternative. This includes analysis of any negative environmental impacts of not implementing the proposed agency action and serves as a baseline comparison to the Proposed Action to evaluate the extent of potential impacts.

Under the No Action Alternative, existing conditions at the Chenega, Cordova, and Tatitlek Ferry Terminals would remain the same (see Section 1.3 Existing Conditions). The dock operations would continue as normal under routine maintenance. The existing dock limitations would continue to compromise the facilities' utility, and the respective purpose and need would not be met.

3 Affected Environment and Environmental Consequences

This EA analyzes 25 different resources across three categories—physical, ecological/natural, and human—that may be impacted by the Proposed Action. Each resource area discussion includes an overview of the existing conditions, anticipated temporary impacts from construction of the Proposed Action, anticipated permanent impacts resulting from the Proposed Action, and a summary of the likely impacts from the No Action Alternative.

As of July 2011, Alaska no longer participates in the Coastal Zone Management Act (CZMA) program. As such, no consistency determination is required, and CZMA will not be discussed further in this EA, though impacts to coastal resources are covered in other resource sections of the document. In addition, no Prime and other Important Farmlands are identified by the U.S. Department of Agriculture (USDA) for the Chugach National Forest – Prince William Sound Area, Alaska, i.e., the geographic area where

the Proposed Action is located (USDA-NRCS n.d.). Thus, this resource is not included further in the EA. No Wild and Scenic Rivers are located within the Proposed Action areas near Chenega, Cordova, or Tatitlek (NPS 2025), so this resource is also not included further in the EA.

3.1 Physical Resources

This section provides supporting information to describe the affected environment and environmental consequences of the Proposed Action and No Action Alternative on physical resources within the Proposed Action areas. This section evaluates short-term impacts of construction activities and long-term impacts of operation of the Proposed Action and No Action Alternative on physical resources. Physical resources include geology, soils, and seismicity; air quality; hazardous materials and waste management; and noise and vibration.

3.1.1 Geology, Soils, and Seismicity

PWS is a semicircular basin containing numerous fjords, islands, bays, and inlets that is bordered in the north by the Chugach Mountains and in the east by the Kenai Mountains (Sharma 1979). The geologic structure of PWS is very complex, with exposed rocks that are intensely folded, faulted, and fractured due to the number of major faults and tectonic activity within the region (Sharma 1979; Wilson and Hults 2012). The geology of PWS mainly consists of sedimentary and volcanic rocks of Mesozoic and early Tertiary age (Case, *et al.* 1966). These rocks were divided based on difference in petrology and metamorphism into two groups: the older Valdez Group on the northern and western sides of PWS, and the younger Orca Group that comprises most of the islands and mainland of the southeastern part of PWS (Moffit 1954). Chenega, Cordova, and Tatitlek are all composed of bedded sedimentary rocks from the Orca Group that formed during the Tertiary period (lower middle Eocene to late Paleocene), with Chenega being additionally composed of volcanic igneous rocks and unconsolidated surficial deposits from the Quaternary period (Wilson and Hults 2012).

PWS is a seismically active region that is a site of complex subduction of the Yakutat Block and Pacific Plate beneath North America (Doser, *et al.* 2008). PWS was the epicentral region of the 1964 Good Friday Earthquake (Case, *et al.* 1966), also known as the Great Alaska Earthquake. This earthquake, which occurred on March 27, 1964, had a moment magnitude of 9.2 (Johnson, *et al.* 1996). This earthquake was accompanied by vertical tectonic deformation within an area of 170,000 to 200,000 square km (105,633 to 124,274 square mi) in Southcentral Alaska, with an average uplift of 2 m (6.6 ft) within the southern and eastern parts of PWS (Plafker 1965). The earthquake also generated tsunami waves across the Pacific Ocean; the greatest tsunami wave height recorded was 67 m (220 ft.) at Valdez Inlet in PWS (Stover and Coffman 1993; NOAA 2016). Underwater landslides in PWS generated destructive waves across the sound, including one that demolished the Native village of Chenega (USGS 2016). All three ferry terminals are located within USGS Seismic Design Category D_2. See Appendix D (Seismic Design Categories for Default Site Conditions for Alaska) for a map of the Seismic Design Category areas in Alaska.

Executive Order 12699, *Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction,* requires that agencies consider and address seismic risk for federally funded construction.

3.1.1.1 Proposed Action

The Proposed Action is anticipated to have minimal construction-related impacts and long-term impacts from operations on geology, soils, and seismicity. Pile installation and removal, dredging and disposal, and uplands excavation may result in temporary disturbance of soils and sediments, but are not anticipated to adversely affect soils and sediments with the implementation of standard construction best management practices (BMPs) to minimize soil erosion and sedimentation. Modifications to the ferry terminals at Chenega, Cordova, and Tatitlek would comply with all applicable seismic building and engineering codes and requirements. Ongoing operations would not affect geology, soils, and seismicity.

3.1.1.2 No Action Alternative

The No Action Alternative would result in no substantive impacts on geology, soils, and seismicity. The ferry terminals in Chenega, Cordova, and Tatitlek would continue operating until existing Aurora Class Ferry vessels are no longer able to service the terminals due to aging infrastructure or the decommissioning of these vessels. The risk of damage from earthquakes would increase with time due to the age and condition of the ferry terminals.

3.1.2 Air Quality

Recent readings from the Alaska Department of Environmental Conservation's (ADEC) Air Quality Index dashboard shows that the overall air quality for Cordova is good. Sources of air pollutants in Cordova are largely associated with the fishing industry such as fishing boats, tenders, and processing plants. Chenega and Tatitlek have fewer sources of air pollutants because they are smaller communities with limited industrial and commercial activity. Wind-blown particulates of dust from glaciers and riverbeds are a natural source of air pollutants throughout the PWS region.

The Clean Air Act (CAA) requires the U.S. Environmental Protection Agency (USEPA) to establish National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants, including carbon monoxide (CO), lead, ozone, nitrogen dioxide, sulfur dioxide, particulate matter $(PM)_{10}$, and $PM_{2.5}$. ADEC has been delegated air quality permitting and regulatory activities under the CAA. ADEC has established its own permitting and registration requirements as well as emission standards for equipment and air pollutant sources in Alaska Ambient Air Quality Standards (AAAQS) established in 18 Alaska Administrative Code (AAC) 50.010. The key criteria pollutants for AAAQS include nitrogen dioxide, sulfur dioxide, PM_{10}, and $PM_{2.5}$. Two additional pollutants of concern, nitrogen oxides (NOx) and volatile organic compounds (VOCs), are also regulated because they contribute to the formation of ozone in the atmosphere. No NAAQS or AAAQS have been established for these pollutants. None of the Proposed Action ferry terminals are located within an air quality non-attainment or maintenance area for NAAQS (USEPA 2024a).

3.1.2.1 Proposed Action

The Proposed Action would have minimal construction-related impacts to air quality at the three Proposed Action ferry terminals. A minor increase in equipment and vehicle exhaust emissions would occur during construction but would be limited to a localized area at each Proposed Action ferry terminal.

Table 3-1 outlines the criteria air pollution attributable to construction from marine, off-road, on-road, and plane emission sources. Construction-related assumptions are based on information provided in agency correspondence and summarized in the *Air Quality Data Gap Technical Memorandum* (HDR 2024a; Appendix E), including equipment type and fuel use, construction duration and schedule, dredging and fill operations, worker commuting patterns, and material transport logistics. Water-side boats and off-road equipment are the dominant sources of construction-related pollution, particularly for NOx, CO, and PM emissions.

Table 3-1. Construction-related emissions by emission source for 2028.

Emission Source	VOC[a]	NOx[a]	CO[a]	SOx[a]	PM_{10} Exh[a]	$PM_{2.5}$ Exh[a]
Water-side boats	0.12	3.24	0.61	<0.01	0.08	0.08
Off-road equipment	0.18	2.52	0.71	<0.01	0.12	0.11
On-road vehicles	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
Plane	0.01	<0.01	0.01	<0.01	<0.01	<0.01
Total Emissions	**0.30**	**5.77**	**1.35**	**0.01**	**0.20**	**0.19**

Notes: Exh = from exhaust sources; SOx = sulfur oxides
[a] Measured in short tons/year

Construction-related emissions are not expected to lead to levels that exceed the NAAQS or the establishment of a new non-attainment area. The temporary air impacts are expected to be minimal because of BMP implementation. These BMPs include watering exposed surfaces (e.g., soil piles, graded areas) and maintaining all construction equipment in proper working order. In places where passenger vehicles are needed, such as Cordova for uplands work, vehicle idling would be limited.

Table 3-2 provides the number of criteria air pollutant emissions attributable to operations of both the No Action Alternative and Proposed Action scenarios by replacing the MV *Aurora* with the MV *Tazlina*. Operation characteristics, such as horsepower and hours operated per year, are obtained from the survey data from the *AMHS Fleet EPA Emissions Study* (AMHS 2009). For all criteria air pollutants other than VOC[4], there is a substantial decrease (in NOx, CO, sulfur oxides (SOx), PM_{10}, and $PM_{2.5}$ emissions) as the MV *Tazlina* operates with a Category 3 engine, which has more stringent emission standards for marine diesel engines, as opposed to the Aurora Class Ferries' Category 1 and 2 engines.

[4] The USEPA's Port Emissions Inventory Guidance (https://www.epa.gov/state-and-local-transportation/port-emissions-inventory-guidance) provides VOC emission factors separated by Category 3 and Category 1 and 2 vessel engines, with Category 3 vessel engines having a higher emission factor in grams per horsepower-hour. Therefore, the MV *Tazlina*'s engines are Category 3 and have higher horsepower, which leads to an increase in VOC emissions.

Table 3-2. Operation-related emissions by source for both the No Action Alternative and Proposed Action scenarios.

Emission Source	HP	Hours Operated	Criteria Air Pollutants Emissions (short tons/year)					
			VOC	NOx	CO	SOx	PM10	PM2.5
No Action Alternative Scenario (MV *Aurora*)	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
Starboard Main Engine	2,150	2,916	0.58	54.88	10.19	46.18	4.58	4.21
Port Main Engine	2,150	2,916	0.58	54.88	10.19	46.18	4.58	4.21
Generator #1	603	2,485	0.10	3.52	0.53	3.96	0.40	0.37
Generator #2	603	3,116	0.13	4.42	0.66	4.97	0.50	0.46
Boiler	50	2,401	0.14	0.24	0.06	0.70	0.02	0.02
Total	**—**	**—**	**1.52**	**117.94**	**21.63**	**101.99**	**10.08**	**9.27**
Proposed Action Scenario (MV *Tazlina*)	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
EMD 12-710G7C-T3 (Main Engines)	3,000	5,832	6.04	29.80	12.61	4.59	2.14	1.97
CAT C18, 8 Cylinder (Generator #1)	737.56	2,485	0.18	1.12	0.47	0.18	0.08	0.07
CAT C18, 8 Cylinder (Generator #2)	737.56	3,116	0.23	1.40	0.59	0.23	0.10	0.09
Emergency Generator CAT C18	—[a]	—[a]	—[a]	—[a]	—[a]	—[a]	—[a]	—[a]
Seattle Boiler SDW-50M	50	5,500[a]	0.01	0.24	0.02	0.07	0.02	0.02
Tatitlek New Diesel Fuel Generator	167.63	100	<0.01	0.04	0.01	<0.01	<0.01	<0.01
Total	**—**	**—**	**6.46**	**32.62**	**13.71**	**5.08**	**2.35**	**2.16**

Notes: HP = horsepower

[a] Emergency generator not assumed to be operational

[b] Sherrill 2025

Operation of the Proposed Action would result in a minimal increase in overall emissions in the long term. The Tatitlek Ferry Terminal does not have an onsite generator to power any ferry-related systems, so the use of a new diesel fuel generator would lead to a small increase in emissions to power the ACF lift system and bridge lighting. However, emissions from this generator would only be required when ACFs are docked at the ferry terminal. Operation of the Proposed Action at the Chenega Ferry Terminal is not expected to increase emissions from replacement of the existing generator. Operation of the Proposed Action at the Cordova Ferry Terminal would not impact air quality because the facility is connected directly to shoreside power sources and does not require a generator.

The Proposed Action would help accommodate the new ACF vessels, which feature a diesel-electric propulsion system. The system is expected to improve efficiency and reduce fuel consumption, compared to the existing Aurora Class Ferries.

3.1.2.2 No Action Alternative

Under the No Action Alternative, air quality impacts from construction would not occur. Once the existing AMHS vessels stop visiting the Proposed Action ferry terminals, the minor, temporary effects of their diesel emissions from the generators and ferries would cease. However, these communities would likely rely on additional chartered barges and airplane services; therefore, emissions could increase from those sources.

3.1.3 Hazardous Materials and Waste Management

The USEPA defines hazardous materials and waste as materials that have dangerous properties or can have a harmful effect on human health or the environment (USEPA 2024b). Hazardous waste can be generated from many sources and may be in the form of liquids, solids, gases, and sludges. Chenega and Tatitlek both have Class III solid waste landfills within the vicinity of these communities. Cordova has a Class II landfill east of the city at Mile 17 of the Copper River Highway.

Environmental effects of the *Exxon Valdez* Oil Spill (EVOS) are described in Section 3.4.1 Past Actions.

Table 3-3 displays sites contained in ADEC's Contaminated Sites Database (ADEC n.d.-a) within each Proposed Action ferry terminal's vicinity. The ADEC Spills Database (ADEC n.d.-b) does not contain any records of spills for the Proposed Action vicinities.

Table 3-3. Known contaminated sites within the Proposed Action vicinities.

Site Name	Hazard ID	Status	Distance from Proposed Action (miles)
Chenega	—	—	—
Chenega Bay Saltery	1852	Cleanup complete	0.15
Chenega Bay Former Tank Farm	4638	Active	0.15
Cordova	—	—	—
Orca Cannery Site	1541	Clean up complete	1.9
USFS Cordova Housing Site	1856	Clean up complete	0.6
Cordova Airporter Site	23095	Clean up complete	0.5
Commercial Property – 405 1st Street	27962	Active	0.8
Tatitlek	—	—	—
Tatitlek Community & Tribal Buildings Site	2076	Active	0.3

Source: ADEC n.d.-a
Notes: ID = identifier

3.1.3.1 Proposed Action

The Proposed Action would not affect any known contaminated sites shown in Table 3-3. A Tier 1 Evaluation of the dredge site was conducted in accordance with the *Alaska Dredge Material Evaluation Framework* (USACE 2024) and *Dredge Material Evaluation and Disposal Procedures User Manual* (USACE 2021). The evaluation found the proposed dredging at the Cordova Ferry Terminal to be a rank of "Low-Moderate" based on the size and volume to be dredged as well as the limited potential for encountering contaminants from spills, discharges, or other sources (Appendix F *Tier 1 Evaluation, Cordova Ferry Terminal Improvements Project*). Dredged materials would be sampled for contaminants consistent with the Low-Moderate rank prior to disposal at the U.S. Army Corps of Engineers (USACE) dredging disposal area near Spike Island. If contamination is found in the dredged sediment, it would be disposed of at a permitted upland site.

The Proposed Action could potentially cause short-term, minor to moderate effects through accidental spills associated with construction activities and operations. Appropriate BMPs and control measures mentioned in Section 4 Mitigation Measures

would be implemented throughout construction and operation. Any solid waste generated during construction or operation would be handled at existing facilities within each community or transported out of the Proposed Action area for disposal at an appropriate solid waste facility.

3.1.3.2 No Action Alternative

Under the No Action Alternative, no contaminated sites would be affected, and existing procedures for the management, procurement, handing, storage, and disposal of hazardous materials associated with each ferry terminal would not change.

3.1.4 Noise and Vibration

Ambient (or background) sound is composed of sound from many sources and multiple locations (Richardson et al. 1995). In general, ambient sound levels in the environment are variable over time due to biological, physical, and anthropogenic (i.e., human-made) inputs. Sounds are considered noise when they disrupt normal activity or diminish quality of life. Ambient noise can vary with location, time of day, tide, weather, season, and frequency on scales ranging from a second to a year.

In PWS, ambient noise is associated with marine traffic, small aircraft and associated landing strips, local automobile traffic, and fishing industry activities. Ongoing vessel activities near Chenega, Cordova, and Tatitlek, as well as land-based industrial and commercial activities, result in elevated in-air and underwater acoustic conditions around these communities that likely increase with proximity to each community. Land-based industrial and commercial activities are more limited in Chenega and Tatitlek than in Cordova. Near Tatitlek, ongoing vessel activities also include large-vessel traffic to and from Valdez. The main navigation channel for large vessels loading crude oil in Valdez is within 15 km (9.3 mi) of Tatitlek, with multiple tugs and large tanker vessels sailing past weekly. Background sound levels for Chenega, Cordova, and Tatitlek likely vary seasonally, with elevated levels during summer when commercial fishing and recreational boating activities are at their peaks.

Ambient in-air noise levels at the Chenega, Cordova, and Tatitlek Ferry Terminals are likely similar to an area with light automobile traffic, based on a sound study at Statter Harbor in Juneau (PND 2011).

3.1.4.1 Proposed Action

The Proposed Action would temporarily increase in-air and underwater noise levels above ambient noise levels during construction activities, with pile installation and removal being the loudest activity in-air and underwater. The largest noise producing construction activities, such as pile driving, would occur during daylight hours. At the Chenega and Cordova Ferry Terminals, impact installation of 76-cm (30-in)-diameter steel piles would generate the most in-air noise, extending up to 4.8 km (3.0 mi) from the noise source over open water, and 1,524 m (5,000 ft) over land due to absorption and scattering from vegetation, buildings, and other surfaces (Appendix G NMFS Biological and Conference Opinion (BiOp)). For the Tatitlek Ferry Terminal, impact installation of 91-cm (36-in)-diameter steel piles is likely to generate the most in-air

noise, extending up to 9.6 km (6.0 mi) from the noise source over open water, and 2,648 m (8,688 ft) over land (Appendix G).

DTH installation of 76-cm (30-in)-diameter steel piles would produce the greatest extent of underwater noise at the Chenega and Tatitlek Ferry Terminals. It would travel up to 15.0 km (9.3 mi) and encompass an area of approximately 13.0 square km (5.0 square mi) around Chenega and 62.4 square km (24.0 square mi) around Tatitlek (Appendix G). At the Cordova Ferry Terminal, vibratory installation or removal of 76-cm (30-in)-diameter steel piles would produce the most underwater noise, traveling up to approximately 11.7 km (7.3 mi) and encompassing an area of approximately 52.3 square km (20.2 square mi) (Appendix G). See Appendices G and H (Incidental Harassment Authorization Application, prepared for the National Marine Fisheries Service) for details on sound source levels and methodology used to calculate the extent of in-air and underwater noise levels for Proposed Action activities at each location.

Overall, construction-related noise levels are anticipated to have a minor to moderate impact on Proposed Action area resources. Impacts would be minimized with appropriate BMPs and mitigation measures (see Section 4 Mitigation Measures).

Following the upgrades at each ferry terminal (Cordova, Chenega, Tatitlek), operations and use are expected to continue at existing levels. No additional ferry or vessel traffic is anticipated as a result of the Proposed Action; therefore, no additional noise or vibration impacts above existing operational levels are anticipated after construction is complete.

Noise impacts are discussed in Section 3.2.8.1 and Appendix H for marine mammals, Section 3.2.9.3 as well as Appendices G and I (*Essential Fish Habitat Assessment*) for fish and Essential Fish Habitat (EFH), and Section 3.2.10.1 and Appendix G for threatened and endangered species and their critical habitats.

3.1.4.2 No Action Alternative

Under the No Action Alternative, no new noise or vibrations would be produced in addition to those from the existing ferry terminal operations in Chenega, Cordova, and Tatitlek.

3.2 Ecological/Natural Resources

This section provides data and background necessary to support the conclusions presented in this EA, including a detailed description of the affected environment and environmental consequences of the Proposed Action and No Action Alternative on ecological and natural resources within the Proposed Action area. This section evaluates short-term impacts associated with construction and long-term impacts associated with operation of the Proposed Action and No Action Alternative on ecological and natural resources. Ecological and natural resources include marine and surface waters; water quality; groundwater; wetlands, waters of the United States (WOTUS), and vegetation; floodplains; wildlife; marine mammals; fish and EFH; and threatened and endangered species and their critical habitat.

3.2.1 Marine Waters

PWS is a large, tidal estuarine system that connects to the northern Gulf of Alaska through the Hinchinbrook Entrance and Montague Straight (Campbell 2018; NRT 1989; Schmidt 1977). Surface waters in the adjacent northern Gulf of Alaska are typically dominated by the Alaska Coastal Current and Copper River, which generally enter PWS through the Hinchinbrook Entrance and exit through Montague Straight (Campbell 2018). PWS surface waters also receive freshwater input from countless streams, small rivers, icefields, and precipitation, as well as considerable sediment loading (Campbell 2018). The PWS marine ecosystem is extremely productive, supporting several commercially valuable fisheries of considerable importance to the local economy (Campbell 2018; Gay 2013).

On March 24, 1989, the 301-m (987-ft) tank vessel *Exxon Valdez* struck Bligh Reef in PWS, causing one of the largest oil spills in United States history (NRT 1989). The 1989 EVOS released approximately 10.8 million gallons of crude oil into PWS; it affected approximately 575 km (360 mi) of PWS shoreline and approximately 1,170 km (730 mi) of Gulf of Alaska shoreline (Wolfe 1996). The EVOS had disastrous effects on birds, marine mammals, fisheries, and other marine resources (NRT 1989). Despite extensive cleanup efforts, lingering subsurface oil residues from the EVOS remain patchily distributed across the PWS and Gulf of Alaska shorelines, and will likely persist in the environment on a decadal scale (Lindeberg et al. 2018; Nixon and Michel 2018).

Chenega is between Crab and Sawmill Bays on the eastern side of Evans Island, in southwestern PWS. Chenega is connected to the Gulf of Alaska through Elrington Passage to the south. Sawmill Bay's bathymetry is variable depending on location and proximity to shore, islands, or rocks. Depths in Sawmill Bay range from 20 to 60 m (66 to 197 ft), and up to 155 m (509 ft) toward the bay's mouth. Sawmill Bay is generally characterized by semidiurnal tides with a typical tidal range of up to 5 m (16 ft).

Cordova is located on the eastern side of PWS in Orca Inlet, northwest of the Copper River Delta. Orca Inlet leads to Strawberry Channel and out to the Gulf of Alaska. Orca Inlet is approximately 28 km (17 mi) long, with varying widths between 2.5 and 5 km (1.5 and 3 mi). The southern and central areas of the inlet are filled with sediment, making the area very shallow, with exposed mudflats during low tides. The inlet's bathymetry is predominantly mud and sand, with rocks closer to shore. Depths are shallower toward the mouth of Orca Inlet, generally 4 m (13 ft) or shallower with few, discontinuous channels. The recommended vessel navigation route to Cordova is through Orca Bay to the northern end of the inlet, where depths can range from 10 to 70 m (33 to 230 ft). Orca Inlet is generally characterized by semidiurnal tides averaging 3.5 m (11.5 ft) that can exceed 6.5 m (21 ft) during the highest spring tides (Adelfio 2016).

Tatitlek is located north of Port Fidalgo, at the entrance to Boulder Bay and the Tatitlek Narrows on the eastern side of PWS. Tatitlek is in a relatively calm and secluded area removed from the Pacific Ocean by a series of islands. The area's bathymetry is variable depending on location and proximity to shore, islands, or rocks. Depths approach 137.2 m (450 ft) or more within Port Fidalgo, up to 36.6 m (120 ft) in Boulder Bay, and as shallow as 3 m (10 ft) within the Tatitlek Narrows. The Tatitlek Narrows are

generally characterized by semidiurnal tides, with mean tidal ranges of approximately 5 m (16 ft).

3.2.1.1 Proposed Action

During construction activities, various work boats and barges would be moored within the Chenega, Cordova, and Tatitlek Ferry Terminal vicinities. Two barges would likely be mobilized for each Proposed Action site: one barge with a crane mounted on it and a staging/work barge that would be moved into place with a tugboat. Additional barges and tugs may be used to deliver equipment as needed. All vessels associated with the Proposed Action would follow well-established, frequently used navigation lanes within the region, resulting in no additional impacts from the Proposed Action. Pile installation and removal would occur in waters 6 to 7 m (20 to 23 ft) deep in Chenega, 2 to 10 m (6 to 33 ft) deep in Cordova, and 6 to 9 m (20 to 30 ft) deep in Tatitlek. Additional construction activities that may impact marine waters include dredging and disposal in Cordova.

SUBSTRATE

Marine substrates would be most affected during dredging at the Cordova Ferry Terminal and the disposal of dredged material west of the Cordova Boat Harbor. The disposal area is likely to be composed of the same substrate as the dredged material, reducing the likelihood of introducing new substrate. Pile installation and removal at each Proposed Action site would cause localized impacts to substrates around each pile.

Short-term impacts of construction activities on substrate would be temporary and minor due to the small footprint of each Proposed Action component compared to the overall existing substrate within the Proposed Action areas. Long-term adverse impacts to the aquatic environment as a result operations making changes to the substrate are not anticipated.

SUSPENDED PARTICULATES/TURBIDITY

During pile installation and removal in Cordova, Chenega, and Tatitlek, a temporary and localized increase in turbidity and sedimentation near the seafloor is possible within the immediate area surrounding each pile. Impact installation, DTH, and vibratory installation and removal would generate some sedimentation and turbidity around each pile as it is actively being hammered. Any potential water quality exceedances would be minor, temporary, and highly localized to the work sites. The local tides and currents are expected to disperse suspended sediments from pile driving to near background levels within a few hours.

Several studies have attempted to measure the recovery time for a marine system to return to baseline suspended sediment concentration levels after dredging and disposal occurred, with typical recovery time ranging from 9 to 35 minutes (Lanckneus et al. 2001; Roman-Sierra et al. 2011; van Parjis et al. 2002) and up to 130 minutes for sites that are not highly dispersive (Palanques et al. 2022). It is anticipated that local currents and tidal action in Cordova would minimize sediments in the water column, and suspended sediment levels in Cordova would recover to baseline levels quickly, within 1 to 2 hours after dredging or disposal is completed each day.

CONTAMINANTS

Dredged materials have the potential to introduce contaminants into marine waters. The dredging area would be surveyed for contaminants prior to dredging. Should any contamination be detected within the dredging area, dredged materials would be disposed in a designated location on land instead of in the water to avoid impacts. See Section 3.1.3 Hazardous Materials and Waste Management for more information. A Spill Prevention, Control, and Countermeasure (SPCC) Plan; Hazardous Material Control Plan (HMCP); Water Quality Control Plan (WQCP); and other BMPs will be implemented during construction to prevent contaminants from entering the marine environment. Plans will be in place and materials will be available for spill prevention and cleanup activities at the marine terminal to limit potential contamination. Construction will be conducted in accordance with Clean Water Act (CWA) Sections 404 and 401 regulations to minimize potential construction-related impacts on water quality. Proposed Action impacts on water quality are further discussed in Section 3.2.3.1 Water Quality.

3.2.1.2 No Action Alternative

The No Action Alternative would result in operations continuing at the Chenega, Cordova, and Tatitlek Ferry Terminals, and would be unlikely to create additional impacts on substrate, turbidity, water quality, or contaminants.

3.2.2 Surface Waters (Freshwater)

The Proposed Action would not occur in non-marine surface waters. Table 3-4 lists the nearest named freshwater waterbodies less than 1.6 km (1 mi) from the Chenega and Cordova Ferry Terminals. No fresh waterbodies are within 1.6 km (1 mi) of the Tatitlek Ferry Terminal.

Table 3-4. Surface waters within the Proposed Action vicinity.

Ferry Terminal	Waterbody	Direction from Terminal	Distance from Terminal (miles)
Chenega	Anderson Creek	West	0.34
Chenega	O'Brien Creek	Northeast	0.58
Cordova	Ocean Dock Creek	East	0.21
Cordova	Flemming Spit	North	0.55

Freshwater bodies are common in PWS. Many provide spawning and rearing habitat for anadromous fish and are used by various species of wildlife (see Sections 3.2.7 Wildlife and 3.2.9 Fish and Essential Fish Habitat).

3.2.2.1 Proposed Action

Given the distance to the nearest fresh waterbodies, construction and operation of the Proposed Action would not impact any surface fresh waterbodies.

3.2.2.2 No Action Alternative

The No Action Alternative would not affect any surface fresh waterbodies.

3.2.3 Water Quality

The USEPA regulates water quality under Sections 401, 402, and 404 of the CWA. ADEC is responsible for developing water quality standards (18 AAC 70); addressing nonpoint source pollution; assessing surface water quality, including determination of 303(d) listed waters; providing quality assurance assistance; developing regulations; and administering the Alaska Pollutant Discharge Elimination Program that regulates discharge water quality.

PWS primarily exchanges water with the Gulf of Alaska through the Hinchinbrook Entrance and Montague Strait. Water movement into PWS is heavily influenced by winter winds. During summer and fall, winds in the Gulf of Alaska decrease in strength, and the downwelling caused by wind relaxes and allows for a flux of deep Gulf of Alaska water to reach PWS. Water exits PWS through Montague Strait to the Gulf of Alaska. Large-scale water quality patterns in the Gulf of Alaska are often mirrored in PWS.

PWS waters tend to reach a temperature minimum during February to April before warming occurs during May. Warming is primarily confined to the upper 25 m (82 ft) of the water column. After September, the warmer surface waters mix with deeper, cooler water. Salinity increases at depth between June and September, following deepwater renewal. In general, PWS is undergoing regional warming with increased freshwater input. In northwestern PWS, waters are cooling, and salinity is decreasing. This may be the result of glacial melt mixing with marine waters as most of the ice mass in PWS is concentrated to the northwest (Campbell 2018). PWS is subject to high turbidity and sedimentation. Sediments are suspended in the water column from shelf sediment resuspension, plumes from the Copper River, sediment disturbed from earthquakes, highly erodible bedrock, and glacial geology that are introduced to PWS from melt and runoff (Marshall 2015; Noll et al. 2008).

Recurring blooms of microscopic organisms in PWS contribute to pulses of marine-derived nutrients, and salmon provide an important nutrient source to PWS. These blooms are a major source of primary production during summer throughout PWS fjords (McInnes et al. 2015). The magnitude of blooms has waned during the last two decades, but bloom timing has remained the same (Gulf Watch Alaska 2025).

3.2.3.1 Proposed Action

Water quality at each Proposed Action site would be affected by pile installation and removal at each ferry terminal location, resulting in localized and temporary increases in turbidity and sedimentation near the seafloor and in the water-column surrounding each pile. All potential water quality impacts from pile installation and removal would be minor, highly localized, and temporary. Tides and currents are expected to disperse suspended sediments from pile driving to near background levels within a few hours. Dredging and disposal of dredged material at the Cordova Ferry Terminal would increase turbidity; however, this would be temporary because tides and local currents are expected to redistribute sediments within hours.

Piles and decking can permanently change water quality with chronic shading and changing water circulation. Shading artificially restricts the light available to reach the water column and benthic habitat. Natural and anthropogenic debris can become

entangled in piers and increase shading. Shading and circulation changes can alter water quality and change local productivity (Logan et al. 2021).

Temporary, minor impacts on water quality would only be related to construction activities. BMPs would be used to avoid and minimize water quality impacts from construction as described in Section 4.2 Mitigation Measures. A WQCP will be created for the Proposed Action that includes mitigation measures specific to water quality. Increased shading of the nearshore environment would be minimal because piles and metal walkways are largely replacing existing structures. No water quality impacts are anticipated during operation of the Proposed Action.

During pre-application meetings between DOT&PF and USACE, USACE confirmed that Letters of Permission from USACE under Section 10 of the Rivers and Harbors Act of 1899 will be required for construction of the Proposed Action. The Letters of Permission must be received prior to construction of the Proposed Action. The construction contractor would be responsible for securing the appropriate construction permit as well as developing and implementing a Stormwater Pollution and Prevention Plan prior to initiating construction activities.

3.2.3.2 No Action Alternative

The No Action Alternative would not affect water quality.

3.2.4 Groundwater

Minimal information on groundwater resources exists for the Proposed Action areas. Groundwater in Cordova generally occurs in shallow unconsolidated deposits. Groundwater flow likely matches the local topography, flowing from larger springs on the sides of the Chugach Mountains toward the coast (Dorava and Sokup 1994). Precipitation, streamflow, and some subsurface inflow provides groundwater recharge to the unconsolidated deposits, with the most effective permeability occurring in wetlands. Groundwater discharges from these deposits into springs, streams, and sloughs, and is lost by evapotranspiration and well withdrawal.

The Alaska Department of Natural Resources (ADNR) Division of Mining, Land, and Water maintains a list of the water rights and temporary use authorizations for subsurface and surface sources. A review of this data showed 14 subsurface water rights certificates that have been issued within an 8-km (5-mi) radius of the Cordova Ferry Terminal for private uses (ADNR 2025). The closest groundwater well is approximately 3 km (2 mi) from the Cordova Ferry Terminal. The City of Cordova has a surface water system that uses water from Murcheson Falls, Heney Creek Dam/Meals reservoir, and Orca Inlet catchments (City of Cordova 2024a).

A review of the ADNR water rights and temporary use authorizations data showed no subsurface water use permits, certificates, or pending actions located within an 8-km (5-mi) radius of the Chenega and Tatitlek Ferry Terminals (ADNR 2025). Surface water use permits authorize Chenega's public water supply at Anderson Creek and Tatitlek's public water supply at Nunu Creek.

3.2.4.1 Proposed Action

Construction of the Proposed Action would not affect groundwater. No known drinking water wells are within the Proposed Action areas, and the Proposed Action would not affect public drinking water supplies. No impervious surfaces are proposed for construction that could reduce groundwater recharge or infiltration.

3.2.4.2 No Action Alternative

The No Action Alternative would not modify the Chenega, Cordova, and Tatitlek Ferry Terminals and would not affect groundwater resources.

3.2.5 Wetlands, Waters of the United States, and Vegetation

USACE has jurisdiction over navigable WOTUS that are regulated under Section 404 of the CWA of 1972 (as amended) and Section 10 of the Rivers and Harbors Act of 1899. Wetlands are a subset of WOTUS that are identified by three indicators: hydrophytic vegetation, hydric soil, and wetland hydrology (USACE 2007). Section 404 of the CWA and Executive Order 11990, *Protection of Wetlands*, require avoiding and minimizing wetland impacts. Per these regulations and guidance, the Proposed Action must avoid wetlands unless there is no practicable alternative; if an alternative uses wetlands, it must undergo all possible planning to minimize harm.

An *Office-Based Wetland and Waterbody Delineation Report* (HDR 2024b; Appendix J) and an accompanying wetlands and waterbody mapping dataset, completed for DOT&PF, identified wetlands and marine waters potentially subject to USACE jurisdiction within the three ferry terminal Proposed Action areas. These areas included the marine waters of the Gulf of Alaska and the shoreside components of each existing ferry terminal. The marine waters were mapped primarily as subtidal areas found below MLLW. A small amount of freshwater wetlands mapped within the Tatitlek Ferry Terminal Proposed Action area consist of emergent vegetation or a mixture of emergent and scrub-shrub vegetation.

The Alaska ShoreZone mapping shows marine vegetation along the coastline at all three ferry terminal locations (NOAA 2024). This mapping uses high-resolution aerial imagery to catalog geomorphic and biological resources as well as create coastline habitat maps. The ShoreZone mapping indicates that rockweed and soft brown kelp can be found in marine waters near the Chenega Ferry Terminal; rockweed near the Cordova Ferry Terminal; and rockweed, soft brown kelp, and eelgrass near the Tatitlek Ferry Terminal (NOAA 2024). The upland portion of the Cordova Ferry Terminal Proposed Action area is within an industrialized area with no remaining natural vegetation.

3.2.5.1 Proposed Action

Construction of all three ferry terminals would require pile installation and removal, which would likely cause a temporary increase in turbidity and sedimentation near the seafloor within the immediate area surrounding each pile. In addition, the augured sediment resulting from construction of the piles would be directly sidecast adjacent to each pile into marine waters. The local tides and currents are expected to disperse the suspended sediments to near background levels within a few hours. Effects to WOTUS

from sedimentation would be highly localized and temporary. A small amount of marine vegetation could be removed during ferry terminal construction; any impacts on marine vegetation would be minor and permanent.

Impacts that are unique to each of the ferry terminals are described below.

CHENEGA

Minor, permanent impacts on marine waters below the high tide line (HTL) would result from steel pile installation. Temporary piles would be installed to support permanent pile installation and removed following construction completion.

A negligible amount of upland vegetation (less than 0.1 acre) could be removed during staging and construction of the Chenega Ferry Terminal.

During pre-application meetings between DOT&PF and USACE, USACE confirmed that Letters of Permission from USACE under Section 10 of the Rivers and Harbors Act of 1899 will be required for construction of the Proposed Action. The Letters of Permission would be received prior to construction of the Proposed Action.

CORDOVA

Minor, permanent impacts on marine waters below the HTL would result from steel pile installation. Temporary piles would be installed to support permanent pile installation and removed following construction completion.

The Cordova Ferry Terminal includes dredging of approximately 1.2 acres (13,240 CY) of sediment near the stern berth fender line to approximately -8 m (-27 ft) MLLW. Dredged material would be disposed of in Orca Inlet near Spike Island, approximately 1.1 km (0.7 mi) southwest of the ferry terminal. Dredging and disposal would result in minor, short-term impacts on WOTUS. Elevated levels of suspended sediments are expected to return to baseline levels within 1 or 2 hours after dredging or disposal occurs due to the large tidal currents in Orca Inlet.

During pre-application meetings between DOT&PF and USACE, USACE confirmed that Letters of Permission from USACE under Section 10 of the Rivers and Harbors Act of 1899 will be required for construction of the Proposed Action. The Letters of Permission would be received prior to construction of the Proposed Action.

TATITLEK

Minor, permanent impacts on marine waters below the HTL would result from steel pile installation. Temporary piles would be installed to support permanent pile installation and removed following construction completion. No impacts to freshwater wetlands would occur as a result of the Proposed Action.

During pre-application meetings between DOT&PF and USACE, USACE confirmed that Letters of Permission from USACE under Section 10 of the Rivers and Harbors Act of 1899 will be required for construction of the Proposed Action. The Letters of Permission would be received prior to construction of the Proposed Action.

3.2.5.2 No Action Alternative

The No Action Alternative would not change the current status of wetlands, marine waters, and vegetation within the Chenega, Cordova, and Tatitlek Ferry Terminal Proposed Action areas. Wetlands and marine waters would not be filled or altered, and vegetation would not be removed due to the No Action Alternative.

3.2.6 Floodplains

The Federal Emergency Management Agency (FEMA) identifies Special Flood Hazard Areas (SFHA) as areas that would be inundated by a flood event having a 1 percent chance of being equaled or exceeded in any given year. FEMA manages the FEMA Flood Map Service Center, the official location for flood hazard mapping products created under the National Flood Insurance Program. The marine environment beneath and surrounding the Cordova Ferry Terminal is an SFHA. FEMA does not have mapping products detailing flood hazards in Chenega and Tatitlek (FEMA 2025). However, given the similarities between each ferry terminal's positioning within the marine environment and assuming the most impactful of situations, the Chenega and Tatitlek Ferry Terminals are considered to be within an SFHA for this discussion.

Under Executive Order 11988, *Floodplain Management*, federal agencies are required to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct and indirect support of floodplain development wherever there is a practical alternative.

Coastal flooding in PWS is often caused by strong storm surges combined with high winds and high tides. Storm surges can be amplified within confined sea areas by the shallowing of seabed that slows water return. Other forms of severe coastal flooding include tsunamis created by sub-seabed earthquakes (WMO 2011).

Floodplains are often composed of unique habitats formed by land and water interaction. These areas provide habitat for fish and wildlife, aid in surface and groundwater regulation, and create natural flood and erosion controls. Coastal floodplains help mitigate coastal storm risks (FEMA 2025).

3.2.6.1 Proposed Action

The Proposed Action would install and remove piles within the SFHA at the Chenega, Cordova, and Tatitlek Ferry Terminals. There is no practicable alternative outside the floodplain that would accomplish the Proposed Action's purpose and need. This would remove a negligible amount of area from the SFHA outside each terminal. The Proposed Action is anticipated to avoid long- and short-term adverse impacts on floodplains due to the limited number of additional piles that would be placed at each ferry terminal. Refer to Appendix K (Location Hydraulic Studies) for detailed location hydraulic study findings.

3.2.6.2 No Action Alternative

The No Action Alternative would not affect floodplains.

3.2.7 Wildlife

PWS is predominantly a coastal rainforest composed of evergreen trees. It has fjords formed by glacier movement; the islands and mainland habitat are rainforest at lower elevations, transitioning to alpine and mountains with rocky habitat at higher elevations. PWS provides habitat for more than 220 bird species and 30 terrestrial mammals (USFWS 2002). Coastal habitat exists around each ferry terminal location (Chenega, Cordova, Tatitlek).

3.2.7.1 Terrestrial Mammals

Chenega is located on an island, while Cordova and Tatitlek are on the mainland. Terrestrial mammals highly associated with estuarine, riparian, and coastline habitats in PWS include brown and black bears, gray wolves, Sitka blacktail deer, and wolverines (USFWS 2002).

Gray wolves are endemic to the mainland areas of PWS. Wolves in PWS are known to predate on mountain goats, salmon, beavers, marine mammals, and Sitka blacktail deer (Westing 2022a).

Sitka blacktail deer were introduced to PWS islands between 1916 and 1923, and populations established themselves within the mainland areas shortly thereafter. Sitka blacktail deer were the first, and among the most successful, big game translocation efforts in Alaska. They receive minimal predation from wolves and coyotes, and even less so from bears. PWS is the northern extent of Sitka blacktail deer range. PWS's islands and mainland provide forage habitat. The deer forage on forbs until they become covered by snow. At that time, their diet transitions to blueberry stems and kelp along the shoreline. Snow depth and the duration of snowpack are a limiting factor for Sitka blacktail deer in PWS. The population wanes during years of increased snow cover and duration due to starvation (Westing 2018).

Black bears can be found throughout PWS, except for Montague, Hinchinbrook, and several smaller islands; population density is highest in western PWS. Black bear diet is composed primarily of vegetation during early spring, and transitions to fish and berries during summer and fall (Westing 2022b). Brown bears are common throughout much of the PWS mainland and islands. Their distribution is attributed to salmon presence throughout PWS, which the bears prey on during summer and fall. They may also feed opportunistically on Sitka blacktail deer and moose, which were introduced to the Copper River Delta and have since expanded east (Westing 2022c). Bears tend to move inland during September, before winter denning.

3.2.7.2 Birds

Due to PWS's geographic location and being surrounded by the Chugach Mountains' restrictive topography, it acts as a sink for migratory birds transiting to northern locations. Birds use many habitats in PWS, including tundra, shrub thickets, hemlock-Sitka spruce forests, bogs, mixed deciduous-spruce woodlands, marshes, lacustrine waters, fluviatile waters, cliffs, bluffs, screes, moraines, alluvia, barrier islands, beaches, tidal flats, rocky shores, reefs, and inshore and offshore waters (Isleib and Kessel 1973).

The highest bird diversity and population presence occur during spring migration. Tidal areas are heavily used by migrating waterfowl, gulls, terns, and shorebirds. Terrestrial nesting occurs during summer. Breeding and non-breeding shorebirds, gulls, and waterfowl use tidal areas throughout summer, and marine birds use offshore waters for feeding. Gulls, eagles, and fish-eating ducks populate salmon streams and intertidal spawning areas to feed on salmon during summer and fall. Southward fall migrations by migratory birds tend to be more diffuse than spring migrations. Similar to spring migrations, migratory species heavily use tidal areas during fall. Shorebirds use rocky shorelines and intertidal reefs during winter, while bald eagles, ravens, crows, and gulls forage on tidal flats. Gulls and alcids compose most of wintering bird groups found offshore during winter (Isleib and Kessel 1973).

Under the Fish and Wildlife Conservation Act, the U.S. Fish and Wildlife Service (USFWS) is required to identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA; USFWS 2021). The Bald and Golden Eagle Protection Act (16 USC 668–668d) prohibits the take of bald and golden eagles, including their parts, nests, or eggs. Table 3-5 lists birds protected under these two acts that are present at the ferry terminal vicinities. Refer to Appendix L (Bald Eagle Nest Memo) for details on known bald eagle nests near the Proposed Action areas. Additional protections are provided for birds under the Migratory Bird Treaty Act (16 USC 703–712), which prohibits the take of protected migratory bird species. USFWS also manages the Birds of Conservation Concern (BCC) list. Birds eligible for the BCC list include migratory and non-migratory birds that are of the highest conservation concern and are not ESA listed. USFWS evaluates a species' population abundance, trends, threats to its breeding and non-breeding ground, and size of its breeding and non-breeding population to determine if it should be listed as a BCC.

Table 3-5. Special status bird species within the Proposed Action vicinity.

Species	Latin Name	BCC Status	Chenega	Cordova	Tatitlek
Aleutian tern	*Onychoprion aleuticus*	CON	—	Present	—
Ancient murrelet	*Synthliboramphus antiquus*	CON	—	Present	—
Bald eagle	*Haliaeetus leucocephalus*	Non-BCC	—	Present	Present
Black oystercatcher	*Haematopus bachmani*	CON	—	Present	—
Black turnstone	*Arenaria melanocephala*	CON	—	Present	—
Black-legged kittiwake	*Rissa tridactyla*	Non-BCC	Present	—	Present
California gull	*Larus californicus*	CON	—	Present	—
Chestnut-backed chickadee	*Poecile rufescens rufescens*	BCR	—	Present	—
Common loon	*Gavia immer*	Non-BCC	Present	—	Present
Common murre	*Uria aalge*	Non-BCC	Present	—	—
Golden eagle	*Aquila chrysaetos*	Non-BCC	—	Present	—
Kittlitz's murrelet	*Brachyramphus brevirostris*	CON	—	Present	—
Lesser yellowlegs	*Tringa flavipes*	CON	—	Present	—
Marbled godwit	*Limosa fedoa*	CON	—	Present	—
Olive-sided flycatcher	*Contopus cooperi*	CON	—	Present	—
Pomarine jaeger	*Stercorarius pomarinus*	Non-BCC	—	—	—
Red-breasted merganser	*Mergus serrator*	Non-BCC	Present	—	—
Red-necked phalarope	*Phalaropus lobatus*	Non-BCC	—	—	Present
Rufous hummingbird	*Selasphorus rufus*	CON	—	Present	—

Species	Latin Name	BCC Status	Chenega	Cordova	Tatitlek
Short-billed dowitcher	*Limnodromus griseus*	CON	—	Present	—
Tufted puffin	*Fratercula cirrhata*	BCR	—	Present	—
Western screech-owl	*Megascops kennicotti cardonensis*	BCR	—	Present	—
Yellow-billed loon	*Gavia adamsii*	CON	—	Present	—

Source: USFWS 2021
Notes: "—" = not present; BCR = Bird Conservation Regions in the Continental United States; CON = Continental United States and Alaska

The EVOS adversely affected many marine bird populations. Both marbled murrelets and pigeon guillemots have shown little or no improvement from impacts stemming from the EVOS in 1989 (EVOSTC 2014).

3.2.7.3 Proposed Action

The installation and removal of piles would temporarily increase noise levels within wildlife habitats surrounding the Chenega, Cordova, and Tatitlek Ferry Terminals. The distance to reaching background noise levels depends on environmental conditions such as land, water, vegetation, and buildings, and varies by site. The terrestrial environment near the ferry terminals includes dense, mature forests. Noise from pile driving and removal would likely reach ambient background levels within less than 1.6 km (1 mi).

TERRESTRIAL MAMMALS

Noise from construction activities such as pile driving can produce avoidance responses in terrestrial mammals and may lead to other behavioral, physiological, and physical responses. Noise can cause masking of communication and other meaningful sounds as well as stress mammals. Under extreme conditions, noise can produce threshold shifts in terrestrial mammals. Hearing loss can occur when noise exceeds 140 to 150 A-weighted decibels (dBA), with the onset of behavior or physiological responses occurring when noise exceeds 110 dBA (Knight and Gutzwiller 1995).

Terrestrial mammals may be disturbed by noise produced from pile-driving activities if they are near the Proposed Action areas during construction. They may also be disturbed from the increase in human presence at each ferry terminal during Proposed Action construction. However, each ferry terminal is within a community that is a source of noise and human disturbance, so terrestrial mammals are likely somewhat habituated to these disturbances. The Proposed Action is anticipated to have minor, short-term impacts on terrestrial mammals during the construction phase from noise and human presence. Once constructed, the Proposed Action would not affect terrestrial mammals beyond the baseline effects already caused by existing ferry operations.

BIRDS

Since documented eagle nests and suitable nesting habitat occur within 0.8 km (0.5 mi) of the proposed ferry terminal improvements, nesting eagles could experience short-term disturbance from pile driving, if they are present. DOT&PF would conduct eagle nest surveys around all three ferry terminals during the final design phase, prior to construction of each ferry terminal improvement. If eagle nests are located within 0.8 km (0.5 mi) of the proposed improvements and disturbance from pile driving cannot be

avoided, then DOT&PF will coordinate with USFWS to determine the appropriate action, which may include applying for a disturbance permit. If required, a permit will need to be issued by USFWS prior to any construction activities that may disturb eagles can commence.

Birds use sound for communication, finding mates, expressing territorial occupation, and other social behaviors. Continuous noise levels above 110 dBA lasting more than 12 to 24 hours or a single impulsive noise more than 140 dBA can cause damage and loss of inner ear sensory cells, resulting in a large initial threshold shift followed by a small lingering threshold shift. Threshold shifts in birds are unlikely when exposed to noise less than 110 dBA continuous exposure. Noise that exceeds background levels may mask communication signals and result in other behavioral or physiological effects (Caltrans 2016).

Construction would likely occur during summer and fall 2027 at the Chenega, Cordova, and Tatitlek Ferry Terminals. This may occur during the nesting window for forest, woodland, open, or shrub migratory birds (May 1 to July 15) and eagles (March 1 to August 31). Piles would be installed in the marine environment. Nesting and other birds on or over land would not be exposed to noise levels loud enough to cause physical injury. However, birds nesting on land or occupying the terrestrial and marine habitat near the ferry terminals may be subject to behavioral impacts such as avoidance and masking. The siting of the piers would remove a negligible amount of habitat from marine birds, and the presence of additional infrastructure may result in new perching habitat for birds.

Construction for the Proposed Action would have minor, short-term impacts on birds from noise and human presence. Once constructed, the operation of the Proposed Action is unlikely to cause additional impacts on birds.

3.2.7.4 No Action Alternative

The No Action Alternative would not impact wildlife.

3.2.8 Marine Mammals

In PWS, nine species of marine mammals could occur around the Chenega, Cordova, and Tatitlek Ferry Terminals: Steller sea lions, harbor seals, harbor porpoises, Dall's porpoises, Pacific white-sided dolphins, killer whales, humpback whales, minke whales, and northern sea otters (Appendix H Incidental Harassment Authorization Application, prepared for the National Marine Fisheries Service; and Appendix M Letter of Authorization Application, prepared for the U.S. Fish and Wildlife Service). In addition to the species listed above, the National Marine Fisheries Service (NMFS) Alaska Endangered Species and Critical Habitat Mapper Web Application (NOAA Fisheries 2018) also identified gray whales and northern fur seals as possibly occurring in PWS based on broadly generalized species ranges. Sperm whales, which are usually restricted to deep waters of the continental slope in the Gulf of Alaska, have also occurred in northern Southeast Alaska during recent years. However, it is highly unlikely that gray or sperm whales or northern fur seals would occur near Chenega, Cordova, or Tatitlek because their habitat is not within these areas. Recent NMFS Incidental Harassment Authorizations (IHAs) issued for activities around PWS have not included

these species. The Proposed Action's NMFS IHA application (Appendix H) and USFWS's Letter of Authorization (LOA) application (Appendix M) contain further details regarding the status, distribution, and life history of marine mammals that may be present within the Proposed Action areas.

3.2.8.1 Proposed Action

Pile installation and removal at each ferry terminal (Chenega, Cordova, and Tatitlek) have the potential to temporarily create minor impacts on marine mammals through disturbance from elevated underwater noise and impacts on prey resources. Other construction-related activities, such as increased vessel traffic as well as dredging and disposal, may also have a minor, temporary effect on marine mammals. No long-term or population-level effects on any marine mammal species are anticipated due to the Proposed Action.

Potential Proposed Action-related impacts on marine mammals are discussed further in Appendix H for Steller sea lions, harbor seals, harbor porpoises, Dall's porpoises, Pacific white-sided dolphins, killer whales, humpback whales, and minke whales, and in Appendix M for northern sea otters. Appendix G (National Marine Fisheries Service Biological and Conference Opinion (BiOp)) contains further details regarding potential Proposed Action-related impacts on marine mammals listed under the ESA.

An IHA under the Marine Mammal Protection Act (MMPA) has been obtained for each Proposed Action location for Steller sea lions, harbor seals, harbor porpoises, Dall's porpoises, Pacific white-sided dolphins, killer whales, humpback whales, and minke whales (Appendix N National Marine Fisheries Service Incidental Harassment Authorizations). Incidental take authorization via incidental take regulations under the MMPA for northern sea otters has been requested and is in progress (Appendix M). This authorization will be received prior to the construction of the Proposed Action. A Biological and Conference Opinion and Incidental Take Statement for all Proposed Action locations has been issued for ESA-listed species (Appendix G). In addition, consultation with NMFS determined that geotechnical investigation using subsurface soil borings near the Cordova Ferry Terminal would not adversely impact the Western Distinct Population Segment (wDPS) of Steller sea lions or Steller sea lion critical habitat (Appendix O National Marine Fisheries Service Letter of Concurrence for Cordova Geotechnical Sampling).

During construction, mitigation measures will be implemented to minimize impacts on marine mammals. Mitigation measures include the use of Protected Species Observers (PSOs) to monitor for marine mammals and the implementation of shutdown zones. In addition, DOT&PF is voluntarily proposing more conservative shutdown zones for killer whales during impact pile installation to minimize impacts on the AT1 Transient stock that resides in PWS and Kenai Fjords. The AT1 Transient stock is below its Optimum Sustainable Population as a result of the EVOS and is designated as depleted and a strategic stock under the MMPA; however, it is not classified as threatened or endangered under the ESA. Mitigation measures are outlined in Section 4 Mitigation Measures.

3.2.8.2 No Action Alternative

Under the No Action Alternative, marine mammals are unlikely to experience impacts beyond the normal operations of and existing activities at the Chenega, Cordova, and Tatitlek Ferry Terminal locations. These may include disturbances from marine vessel traffic as well as risk of ship strike. Ongoing maintenance work to existing structures is likely to occur and may cause temporary disturbance to marine mammals.

3.2.9 Fish and Essential Fish Habitat

PWS's nearshore features and islands, which separate it from the Gulf of Alaska, create unique fish habitats (e.g., sheltered and rocky shores, fjords, tidewater glaciers, eelgrass meadows, kelp areas). Primary productivity within the pelagic and nearshore areas supports a complex trophic structure composed of forage and large fish, some of which are prey for birds, and marine and terrestrial mammals (Johnson et al. 2010).

Marine habitat in PWS was affected by both the 9.2-magnitude 1964 Good Friday Earthquake and the EVOS in 1989. The earthquake changed coastal environments throughout PWS, displacing salmon streams as well as intertidal and subtidal areas. The EVOS contaminated marine environments and resulted in detrimental effects to marine birds, marine and terrestrial mammals, fish, and shoreline habitats. Many fisheries throughout PWS were impacted by closures because of the spill, with fish stocks experiencing population decline. The EVOS also greatly impacted PWS commercial fishing operations and the local economy (EVOSTC 2024).

3.2.9.1 PWS Fisheries

PWS provides nearshore and deepwater habitats that host a variety of fish species. Surveys of the nearshore habitat in PWS (Johnson et al. 2010) captured 45 different fish species. The most common species among seine catches were Pacific herring, saffron cod, pink salmon, capelin, bay pipefish, crescent gunnel, tubesnout, and walleye pollock. Other commercially important species captured during the survey were chum salmon, lingcod, coho salmon, sockeye salmon, and rockfish. Other species in PWS include eulachon, Pacific sand lance, Euphausiids, Pacific cod, sablefish, lingcod, and Pacific halibut. Invertebrate species in PWS include golden, red, and blue king crab; tanner crab; and coonstripe, sidestripe, northern, and humpy shrimp. Refer to Appendix P (Fisheries Desktop Analysis Memo) for details regarding area fisheries.

ROCKFISH

Rockfish species that are most common in PWS sport and commercial fisheries are black, dusky, dark, yellowtail, yelloweye, quillback, rougheye, copper, and shortraker rockfish (Rumble et al. 2021). Fisheries management has implemented restrictive harvest measures for rockfish to account for the traits (e.g., age to sexual maturity, lack of production, longer lives) that make them susceptible to overharvest (Thalhauser 2014).

SALMON

Chinook, coho, chum, sockeye, and pink salmon have the potential to be present near the Chenega, Cordova, and Tatitlek Ferry Terminals year-round. In general, salmon lay their eggs in freshwater between summer and winter. Salmon out-migrate to estuaries

or marine waters between spring and summer to rear. Nearshore areas are used as feeding and rearing habitat as well as shelter from high currents and predators.

The salmon fisheries in PWS are composed of both native and hatchery stocks. Hatchery stocks are reared and released into PWS to relieve fishing pressures on native populations. Two hatchery organizations operate in PWS: Prince William Sound Aquaculture Association (PWSAC) and Valdez Fisheries Development Association (VFDA). PWSAC has remote rearing sites throughout PWS. VFDA produces fish that are reared and released in Port Valdez and Valdez Arm. The Chenega Ferry Terminal is located within PWSAC's Armin F. Koering Hatchery (AFK) terminal harvest area (THA) and is immediately east of the special harvest area (SHA; see Figure 2-3 in Appendix P).

The Alaska Department of Fish and Game's (ADF&G's) PWS commercial finfish management area, which is divided into 11 salmon management districts, includes all coastal waters and inland drainages entering the north-central Gulf of Alaska between Cape Suckling and Cape Fairfield. ADF&G manages fisheries in cooperation with PWSAC and VFDA to achieve cost-recovery and broodstock objectives. The Southwestern District (226; see Figure 2-4 in Appendix P) surrounds Chenega and is closed prior to July 18, except the AFK THA and SHA. The Southeastern District (228; see Figure 2-4 in Appendix P) has regulatory closed waters in Orca Inlet, surrounding Cordova, though these waters may be opened in times of surplus. The waters surrounding Tatitlek are in the Eastern District (221; see Figure 2-4 in Appendix P). This district's commercial fishery targets wild chum and Solomon Gulch Hatchery (SGH) pink salmon returns during the early part of summer.

PWS HERRING

Pacific herring were once a commercially important fish in PWS. Their populations suffered from the EVOS in 1989, and their fishery was subsequently closed. Spawn was documented in 2023 at Tatitlek, among other locations (Botz et al. 2024).

3.2.9.2 Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) defines EFH as "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." It notes:

> *…for the purpose of interpreting the definition of EFH, 'waters' include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; 'substrate' includes sediment, hard bottom, structures underlying the waters, and associated biological communities, 'necessary' means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and 'spawning, breeding, feeding, or growth to maturity' covers a species full life cycle.*

EFH is defined by textual and spatial descriptions in the EFH Fishery Management Plans (FMPs) developed by Fishery Management Councils. EFH includes waterbodies identified in the State of Alaska's Catalog of Waters Important for Spawning, Rearing or

Migration of Anadromous Fishes (AWC). EFH for multiple species at different life stages overlap the Chenega, Cordova, and Tatitlek Ferry Terminal footprints (NPFMC 2018, 2020; see Table 1-1 in Appendix P Fisheries Desktop Analysis Memo). An EFH assessment was created for the Proposed Action to assess impacts on FMP-managed species and EFH (Appendix I Essential Fish Habitat Assessment).

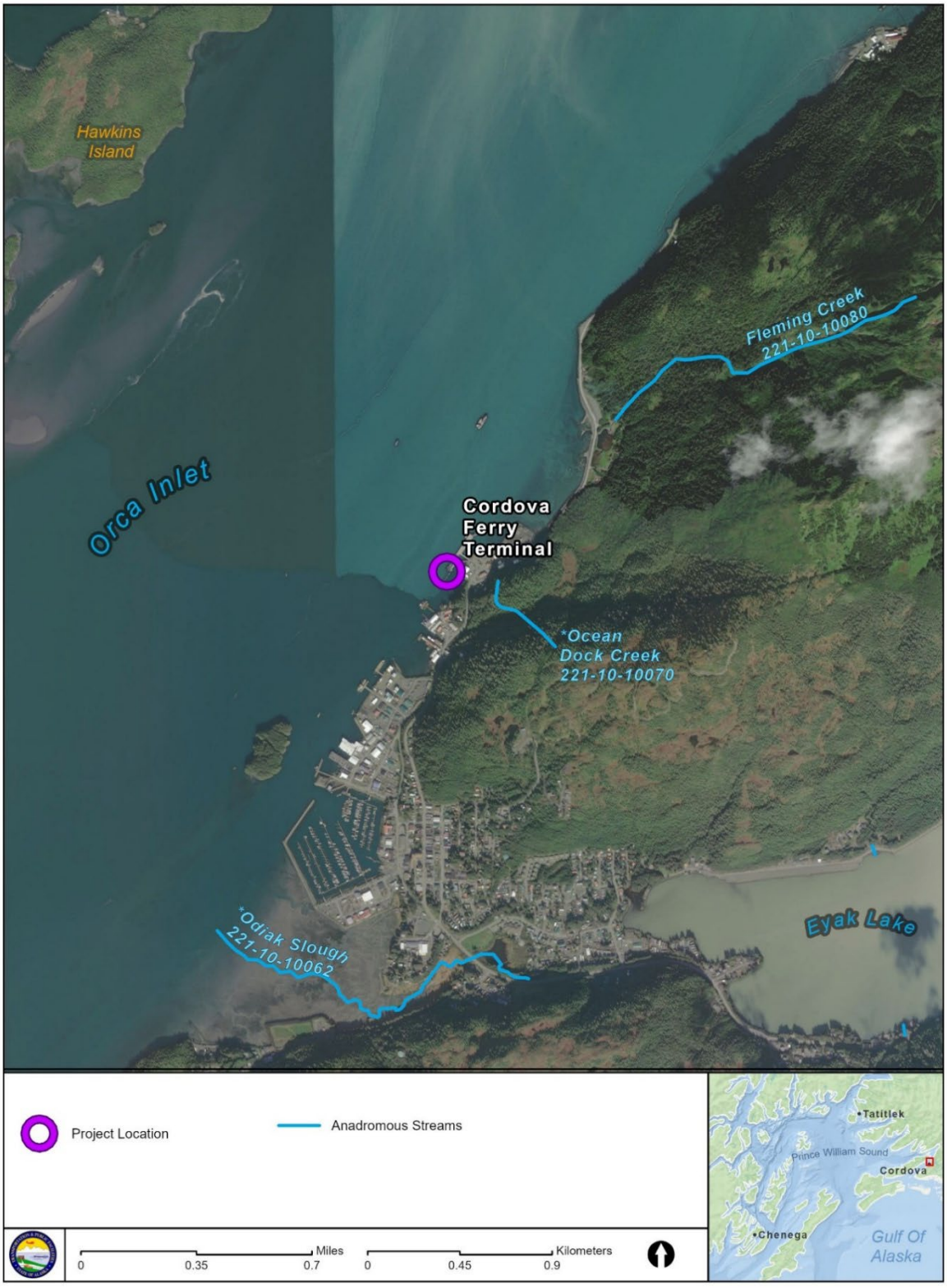
Planktonic and poor swimmer eggs and larvae are subject to tides and currents for movement. Flatfish larvae are poor swimmers, and their movement is influenced by environmental factors. Currents and wind carry larval flatfish to their juvenile nursery grounds. Larval supply within an area is often related to juvenile density for many species. This relationship varies by species, scale, and juvenile behavior (Able and Fodrie 2014; Bailey et al. 2005).

AWC WATERBODIES

Anderson Creek (226-40-16670) and O'Brien Creek (226-40-16665) are listed in the AWC and are within 1.6 km (1 mi) of the Chenega Ferry Terminal. Anderson Creek is 0.55 km (0.34 mi) overland from the terminal and provides EFH for coho (rearing), pink (spawning), and sockeye (presence) salmon. O'Brien Creek is 0.93 km (0.58 mi) from the Chenega Ferry Terminal and provides EFH for Chinook (presence) and pink (spawning) salmon. Unnamed waterbody (226-40-16665-2006) is a tributary of O'Brien Creek and provides EFH for Chinook (presence) and pink (presence) salmon (Giefer and Graziano 2024). The Anderson and O'Brien Creek mouths are sheltered by land from the Chenega Ferry Terminal.

Two freshwater AWC waterbodies are within 1.6 km (1 mi) of the Cordova Ferry Terminal (Figure 3-1). Flemming Creek is approximately 0.89 km (0.55 mi) north and Ocean Dock Creek is 0.24 km (0.15 mi) east of the ferry terminal. Fleming Creek provides EFH for Chinook (spawning), coho (rearing and spawning), and pink (spawning) salmon. Ocean Dock Creek provides EFH for pink salmon (spawning) (Giefer and Graziano 2024).

Figure 3-1. Cordova Ferry Terminal area anadromous streams.



Notes: In the AWC database, Ocean Dock Creek is mapped inland of the Cordova Ferry Terminal. However, ADF&G confirmed the AWC stream line is mapped in error and actually occurs 0.3 km (0.2 mi) north of the Cordova Ferry Terminal (ADF&G 2025a).

3.2.9.3 Proposed Action

The installation and removal of piles is expected to produce underwater sound pressure waves that may harm fish and temporarily affect EFH. The use of impact hammers for final pile installation that occurs during PWSAC hatchery operations may physically affect fish within areas important to hatchery operations in Sawmill Bay near the Chenega Ferry Terminal and at Fleming Creek near the Cordova Ferry Terminal. DOT&PF will avoid the use of impact hammers on permanent piles during these times to avoid impacts on juvenile and adult salmon. DOT&PF has coordinated with PWSAC to minimize impacts on hatchery fish. The impact hammer will not be used in Sawmill Bay between March and June to minimize hatchery fish impacts.

Vibratory hammers are known to be less impactful than impact hammers and are often the preferred installation method to reduce impacts on fish (WSDOT 2020). Fish that are nearby during impact hammer use may experience physical injury such as swim bladders rupturing or internal hemorrhaging. Fish farther from the impact area may display avoidance behavior to sounds in excess of 150 decibels (Popper et al. 2014; NOAA Fisheries 2024).

Sound generated during pile installation and removal may result in hearing impairment, physiological changes, changes in behavior, and masking of biologically important sounds (Popper et al. 2019).

Exposure to sound may result in temporary hearing loss from damage to the sensory cells of the inner ear. Temporary hearing loss happens when a short-term reduction in hearing sensitivity occurs due to exposure to intense or long-duration sounds. After the sound's cessation, baseline hearing ability returns within minutes to days. During periods of temporary hearing loss, fish may face an increased survival risk because their ability to communicate and detect predators or prey is impaired (Popper et al. 2019). The Proposed Action is not anticipated to have permanent hearing loss effects because fish can repair or replace sensory hair cells in the inner ear that have been lost or damaged (Smith et al. 2006; Smith and Monroe 2016).

Vibratory and impact hammer use results in the dispersal of underwater pressure waves. External pressure changes may result in swim bladder volume changes, causing its walls to move excessively and potentially rupture. A ruptured swim bladder, which is critical for buoyancy control, compromises a fish's ability to swim, which can lead to increased injury or risk of predation. Rapid size changes in the swim bladder can result in damage to nearby tissues (Halvorsen et al. 2011).

Exposure to sound may result in physiological changes that are stress responses. Stressors may change the state of the physiological process and may have an adverse effect on a fish's health and wellbeing. Fish are able to determine the direction from which sound comes, which enables them to move toward prey or away from predators (Popper et al. 2019). Masking may result in lessened ability to detect biologically significant sounds (from prey or predators) and may result in the generation of signals that are similar to those produced by fish themselves (Kaplan et al. 2015, 2016; Pine et al. 2016). The Proposed Action may have a minor effect on masking of biologically important sounds for fish during pile removal and installation, though this is anticipated to be localized and short term.

Overall, short-term impacts on fish from the use of vibratory and impact hammers during construction is anticipated to be minor. No long-term impacts are anticipated from Proposed Action operation. Drilling of rock sockets or tension anchors, pile installation, and pile removal may result in a small increase in sedimentation within a few feet of the piles. A small amount of sediment may be deposited near each pile. The semidiurnal tides in each community vary between 3.5 and 4.9 m (11.5 and 16 ft), and the sediment deposited near each pile is anticipated to be dispersed with each tide cycle. Due to the limited potential for sedimentation because of hydrology at each terminal, sedimentation impacts on fish are anticipated to be minor and short term.

DREDGING

The Cordova Ferry Terminal would require excavation of approximately 1.26 acre (13,240 CY) of sediments that would be disposed at the offshore disposal area. The proposed dredge disposal area is approximately 1.6 km (1 mi) southwest of the Cordova Ferry Terminal, just west of Spike Island. The proposed final design elevation is -8.2 m (-27 ft).

Excavation and disposal activities would cause a temporary and localized increase in turbidity, resulting in minimal to minor impacts. Suspended sediment from dredging and disposal activities could cause physiological effects to nearby fish. This is due to the reduced amount of dissolved oxygen in water (Henley et al. 2000). In addition, foraging and predation are negatively affected by suspended sediment because fish that prey on plankton or other fish species have a reduced range of sight from increased sediment, which may lead to reduced foraging success. Any changes in foraging success leads to changes in growth, condition, and reproductive output (Wenger et al. 2017). Dredging and disposal activities are likely to cause fish to move away temporarily, minimizing their exposure to short-term increases in turbidity.

Dredging and disposal sound levels, which are much lower than sound levels from other industrial activities (e.g., in-water impact hammer operation) (Dickerson et al. 2001; Limpinsel et al. 2017), are not anticipated to approach levels that harm fish.

Fish, such as salmon, occupying the nearshore habitat may be exposed to increased sediments in the water column. Increased siltation during dredging activities may hamper adult respiratory function, potentially delaying salmon migration to their natal streams (Flemming and Ocean Dock Creeks) as they wait for the water to clear. Increased turbidity may impact juvenile fish using the nearshore environment to forage. Impacts on fish from dredging activities are anticipated to be short term and minor.

OVERWATER STRUCTURES

Construction of the Proposed Action would involve the addition of overwater structures and removal of some existing structures. Additional overwater structures at the Cordova and Chenega Ferry Terminals would result in less than 0.1 acre of impact to EFH from shading from new overwater structures. The Tatitlek Ferry Terminal would not result in any additional shading from overwater structures.

Overwater structures that create dark environments can reduce localized habitat value by impairing visual tasks such as feeding and predator avoidance as well as habitat connectivity by constraining movements along shore (Munsch et al. 2017). Overwater

structures would reduce light availability, limiting primary productivity of aquatic vegetation, which has a trickle effect throughout the nearshore food web. Light reduction reduces the amount of energy available for photosynthesis of aquatic plants. Overwater structures may impact fish migration by creating noticeable underwater light contrasts. Daytime light reduction through shading poses a risk of delaying migration and driving the migration of juveniles into deeper waters, where a greater risk of predation by larger predators exists (Nightingale and Simenstad 2001).

The existing ferry terminals have been in operation since 1968 in Cordova, and 1995 in Chenega and Tatitlek. The Proposed Action, once complete, would be of a similar design to the existing ferry terminals. Overwater structures would affect habitat used by juvenile and adult salmon, such as by juvenile salmon for out-migration and rearing and by adult salmon to access freshwater for spawning grounds. Salmon may be deterred from these areas; however, since the existing overwater structures are being replaced with similar structures, a negligible loss of EFH would occur from the construction of overwater structures. Impacts from overwater structures on fish are anticipated to be negligible and long term.

MARAD initiated EFH consultation with the National Oceanic and Atmospheric Administration (NOAA) on March 13, 2025, and provided an EFH Assessment for the Proposed Action. NOAA responded on April 4, 2025, and concurred with MARAD's finding that the Proposed Action would have adverse effects on EFH, and those effects could be mitigated through the incorporation of conservation recommendations. MARAD responded on April 10, 2025, concurring with NOAA's proposed conservation recommendations, which have been incorporated into the mitigation measures listed in Section 4.2.2 Mitigation Measures. Appendix I (Essential Fish Habitat Assessment) includes the EFH Assessment for the Proposed Action and EFH consultation letters between MARAD and NOAA.

3.2.9.4 No Action Alternative

The No Action Alternative would not impact fish or EFH.

3.2.10 Threatened and Endangered Species, and Critical Habitat

Two species are listed under the ESA that may be present within the Proposed Action areas: the Mexico Distinct Population Segment (DPS) of humpback whales and wDPS Steller sea lions. The sunflower sea star, a proposed threatened species under the ESA, may also occur within the Proposed Action areas. The Proposed Action's NMFS Biological and Conference Opinion (BiOp) (Appendix G) contains further details on the status, distribution, critical habitat, and life history of listed and proposed threatened and endangered species that may be present within the Proposed Action areas.

The USFWS's Information for Planning and Consultation tool was accessed on September 24, 2025, to determine whether any ESA-listed species managed by USFWS may occur within the Proposed Action areas (Appendix Q U.S. Fish and Wildlife Service Information for Planning and Consultation (IPaC) Documentation). The short-tailed albatross (*Phoebastria albatrus*) was the only species suggested for the Proposed Action areas. No designated critical habitat for this species exists in Alaska, and its range does not include PWS (ADF&G 2025b). The short-tailed albatross does

not breed nor nest in Alaska but can be found in Alaska waters. This species congregates in the open ocean and along the edge of the continental shelf (Suryan et al. 2007).

3.2.10.1 Proposed Action

Direct effects to Mexico DPS humpback whales and wDPS Steller sea lions as well as their designated critical habitats through Proposed Action-related construction activities include disturbance from elevated underwater noise, changes in abundance and distribution of prey species, loss or alteration of habitat, disturbance due to construction vessel traffic, and introduction of pollutants into marine waters. Direct effects to sunflower sea stars could result from direct injury or disturbance from pile installation and removal as well as dredging and disposal.

Following Proposed Action construction, levels of vessel traffic near Cordova, Chenega, and Tatitlek are not expected to change. Therefore, noise and visual disturbance as a result of vessel activity are expected to remain at current levels. DOT&PF submitted a Biological Assessment and requested NMFS initiate Section 7 consultation on November 25, 2024. The NMFS Permits Division confirmed that the IHA was sufficient on April 8, 2025, and NMFS Alaska Region initiated Section 7 consultation.

The NMFS BiOp (Appendix G) provides further details on these potential impacts on ESA-listed and proposed species within the Proposed Action areas as well as the Proposed Action's Incidental Take Statement for these species under the ESA. Impacts on ESA-listed species would be further reduced through mitigation measures such as the use of PSOs to monitor for marine mammals and the implementation of shutdown zones. These measures are outlined in Section 4 Mitigation Measures. The NMFS BiOp has determined that the Proposed Action is likely to adversely affect but not likely to jeopardize the continued existence of the Mexico DPS humpback whale, wDPS Steller sea lion, and sunflower sea star and is not likely to adversely affect the designated critical habitat for the Mexico DPS humpback whale or wDPS Steller sea lion (Appendix G).

The Proposed Action would have no effect on the short-tailed albatross because its range does not include PWS, and its habitat in Alaska is far from the Proposed Action locations in the open ocean and along the edge of the continental shelf in the Gulf of Alaska. In addition, there is no designated critical habitat for the short-tailed albatross in Alaska.

3.2.10.2 No Action Alternative

Under the No Action Alternative, threatened or endangered species and their designated critical habitat are unlikely to experience impacts beyond the normal operations of and existing activities at the Chenega, Cordova, and Tatitlek Ferry Terminal locations. These may include disturbances from vessel traffic as well as risk of ship strike. Ongoing maintenance work to existing structures is likely to occur and may cause temporary, minimal disturbance to threatened or endangered species and their designated critical habitat.

3.3 Human Resources

This section provides information necessary to support the conclusions presented in this EA, including a detailed description of the affected environment as well as environmental consequences of the Proposed Action and No Action Alternative on human resources within the Proposed Action areas. This section evaluates short-term impacts associated with construction and long-term impacts associated with operation of the Proposed Action and No Action Alternative on human resources. Human resources include archaeological and historical resources; subsistence; socioeconomics; marine traffic and navigation; public health and safety; public services and utilities; parks and recreation, including Section 4(f); visual impact, and light and glare; and land ownership, management, and use.

3.3.1 Archaeological and Historical Resources

Archaeological and historical resources include prehistoric and historic archaeological sites, traditional cultural properties, buildings, and trails. Under NEPA, federal agencies must review potential impacts of major federal actions on the human environment, including cultural resources that exhibit physical evidence of past human activity (50 years of age or older), regardless of National Register of Historic Places (NRHP) eligibility status. The Proposed Action is also subject to review under Section 106 of the National Historic Preservation Act (NHPA; 36 Code of Federal Regulations [CFR] 800), which requires federal agencies to consider the effects of undertakings[5] on historic properties, which include any prehistoric or historic district, site, building, structure, object, or traditional cultural property included in or eligible for inclusion in the NRHP (36 CFR 800.16(l)(1)). Federal regulations encourage agencies to coordinate NEPA and Section 106 review processes, where possible (36 CFR 800.8).

The Proposed Action must also adhere to other environmental and cultural resources regulatory requirements, including, but not limited to, the Archaeological Resources Protection Act; American Indian Religious Freedom Act; Native American Graves Protection and Repatriation Act; Section 4(f) of the USDOT Act; the American Antiquities Act of 1906; and Executive Orders 11593 (*Protection and Enhancement of the Cultural Environment*), 13007 (*Indian Sacred Sites*), and 13175 (*Consultation and Coordination with Indian Tribal Governments*).

To identify archaeological and historical resources that may be impacted by the Proposed Action, analyses were confined to a preliminary Area of Potential Effect (APE) at each Proposed Action site (see Appendix R Section 106 Consultation/Coordination). Under 36 CFR 800.16(d), the APE is defined as “the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historical properties, if any such properties exist.”

[5] Under Section 106, an undertaking refers to any project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; and those requiring a federal permit, license or approval (36 CFR 800.16(y)).

For Chenega, the APE is defined as the ferry terminal property, encompassing the new vehicular transfer bridge, ramp, and apron; the bridge support floats; associated staging areas; and all uplands within the DOT&PF leased right-of-way for the ferry terminal. For Cordova, the APE is defined as the ferry terminal property, encompassing the associated and adjacent buildings; the new dolphins, catwalks, and mooring structures; associated staging and utility work and parking areas in the uplands; and the fender line dredging area. For Tatitlek, the APE is defined as the ferry terminal property, encompassing the new vehicular transfer bridge, lift tower, ramp, and apron that are replacing the previous high and low tide ramps; the bridge support floats; new end berth dolphins; a new generator building on the dock; and uplands within the parcel for the ferry terminal property.

The APE has been developed in consultation with DOT&PF, the Alaska State Historic Preservation Officer (SHPO), and other consulting parties (see Appendix R). DOT&PF provided the preliminary APE to SHPO and potential consulting parties as part of the Proposed Action's Section 106 initiation letters, sent on October 7, 2024. DOT&PF received comments from SHPO on November 5, 2024, and the U.S. Department of Agriculture Forest Service (Forest Service) on November 7, 2024. Comments were incorporated into APE development and consideration of the Proposed Action's potential effects. SHPO recommended that the APEs for all three Proposed Action sites identify staging areas and requested the Cordova Proposed Action APE include locations of underwater dredging, blasting, and material disposal. Forest Service recommended that the APEs encompass direct and indirect effects, including effects from vibration and sound, and extra consideration be given for any sites within the Proposed Action area that are NRHP eligible or listed and have setting as an important aspect of historic integrity.

Appendix R provides additional details regarding consultation and coordination conducted for the Proposed Action's Section 106 process.

3.3.1.1 Cultural Context

PREHISTORIC

The Gulf of Alaska extends from the Copper River in the east to the end of the Alaska Peninsula in the west and includes PWS, the Kenai Peninsula, Cook Inlet, and the Kodiak Archipelago. The first human occupations within the region seem to occur circa 8,600 years before present (BP), nearly 4,500 years after the region was deglaciated and more than 5,000 years after the earliest known human occupation in Alaska.

Though understanding of PWS's prehistory is limited, archaeologists use a cultural chronology based on de Laguna's (1956) work at the Palugvik site (COR-00001) on Hawkins Island (near modern-day Cordova). Evidence from this site indicates that Indigenous people of PWS and the Outer Coast of the Kenai Peninsula shared cultural patterns with those of southwestern Alaska (de Laguna 1956; Yarborough and Yarborough 1998). Table 3-6 summarizes the archaeological phases of the region.

Table 3-6. Summaries of PWS region archaeological phases.

Tradition	Date	Artifact Types
Paleoarctic tradition	8000–7000 BP	Microblades, microblade cores (Clark 2001a; Steffian et al. 2015)
Ocean Bay tradition	8600–3600 BP	Bifaces, leaf-shaped stone projectile points, microblades (Clark 2001a; Steffian et al. 2015)
Uqciuvit phase	4400–2500 BP	Double edged, ground-slate projectile points (Clark 1984, 2001a, 2001b; Yarborough and Yarborough 1998)
Kachemak tradition	4000–650 BP	Fish harvesting toolkits (net weights, bone fishhooks, lures, hooks, needles) (Clark 2001a, 2001b; Steffian et al. 2015, 2016)
Palugvik phase	2400–900 BP	Stone lamps, labrets, fishhooks (Yarborough and Yarborough 1998; Clark 1984)
Chugach phase	850–150 BP	Characterized as continuation of Palugvik phase artifacts (Yarborough and Yarborough 1998)

ETHNOGRAPHIC

The Proposed Action areas are within the traditional territory of three distinct cultural groups. PWS is the traditional homeland of ancestral Sugpiaq or Alutiiq peoples. The Copper River Valley and its tributaries are traditionally Ahtna Dene territory, and the Copper River Delta area west to Cordova is Eyak country (Buzzell et al. 1993; Davis 1984).

Three historically distinct sociopolitical groups of Sugpiaq/Alutiiq peoples occupy the region spanning from the Alaska Peninsula, Gulf of Alaska, and PWS. These groups are the Koniag of Kodiak Archipelago, the Chugach of PWS, and the Unegkurmiut of the Lower Kenai Peninsula. Sugt'stun is their common language (Davis 1984:198).

The traditional Ahtna Dene territory includes the Copper River Valley north of the Copper River Delta. The Ahtna of the Copper River Delta area, or Lower Ahtna, speak a slightly different dialect than their counterparts to the north (Buzzell et al. 1993; de Laguna and McClellan 1981).

The Eyak's traditional home territory is the region surrounding Cordova and the eastern coast of PWS, though they were often confused for the Chugach and other groups in historical accounts. Linguistically, Eyak is more closely related to Dene languages than to Sugpiaq (Birket-Smith and de Laguna 1938; de Laguna 1990; Yarborough and Yarborough 1998).

HISTORIC

Russian presence within the PWS region can be dated back to 1741, when members of Russia's second Vitus Bering Expedition landed on Kayak Island, approximately 80.5 km (50 mi) from present-day Cordova, near what they thought was a village. The occupants had apparently fled before the Russians reached the village. George Steller, a naturalist, described signs of human occupancy, including foods at various stages of preparation for consumption or storage, storage pits, and fire remnants. Steller collected salmon from these storage pits, and Bering ordered him to leave items such as cloth, trade beads, and tobacco as compensation. This is described as the first recorded Western contact with the Indigenous peoples of PWS, though they did not actually see or communicate with anyone. Later, this foray would determine the boundary of Russian America (Black 2004; Clark 1984; Naske and Slotnick 2014).

The United States purchased Alaska in 1867 from the Russians and conducted several expeditions to explore the new territory, including U.S. Army expeditions into the Copper River valley led by Lieutenant Henry Allen and the Harriman Expedition in 1889 (Buzzell et al. 1993). American enterprises such as commercial fishing and mining developed between the nineteenth and twentieth centuries, as well as the development of the Copper River and Northwestern Railway (CR&NW). The communities of Chenega, Cordova, and Tatitlek were established by the late twentieth century (DCRA 2024a, 2024b, 2024c).

3.3.1.2 Previous Surveys and Previously Documented Cultural Resources

The Proposed Action's APEs have been subject to cultural resource surveys since the 1930s. Fredrica de Laguna conducted the first archaeological explorations throughout PWS from 1930 to 1933, including sites near Chenega, Cordova, and Tatitlek (de Laguna 1956). Since then, government agencies such as the Bureau of Indian Affairs and DOT&PF have conducted cultural resources investigations to support Section 106 compliance and in the wake of the EVOS to assess damages.

A review of previously documented archaeological and historical resources was conducted in September 2024 (ADNR 2024; Holman 2025). This review also included the Bureau of Ocean Energy Management-compiled list of known shipwrecks within Alaska waters (BOEM 2011). The results of this review follow.

CHENEGA

Five Alaska Heritage Resources Survey (AHRS) sites are reported within 1.6 km (1 mi) of the Chenega Proposed Action area; none of these sites are within the APE. Two sites (SEW-00576 and SEW-0077) have been determined NRHP eligible, and three sites have not been evaluated. Two known shipwrecks are within the Chenega vicinity, neither of which are located within the APE (BOEM 2011). See Appendix R for additional details regarding sites within the APE vicinity.

CORDOVA

A total of 36 AHRS sites are reported within 0.8 km (0.5 mi) of the Cordova Proposed Action area. Of these sites, 32 have been evaluated for inclusion in the NRHP. The Copper River Highway (COR-00576) as well as the Copper River and Northwestern Railroad Railbed (COR-00398) were determined not NRHP eligible in 2015 and 2004, respectively. The Morpac Cannery Cook House (COR-00444) was determined NRHP eligible in 1997. The Ocean Dock Historic District (COR-00476) was proposed NRHP eligible in 1997, with 25 contributing properties (Buzzell 2002).

Five AHRS sites are within the APE. The AHRS boundary of the Ocean Dock Historic District (COR-00476) extends into the APE, but none of the properties associated with the historic district are within the APE boundary. The northern portion of the CR&NW dock (COR-00481) is within the APE but was destroyed by a series of fires. A 2024 survey recorded three sites that were recommended not NRHP eligible: the Municipal Dock/Cordova Ferry Terminal (COR-00608), the Orca Oil Building (COR-00609), and the Cordova Pilings (COR-00610) (Gray and Rider 2024). A total of 24 known shipwrecks are within the Cordova vicinity, none of which are located within the APE

(BOEM 2011). See Appendix R for additional details regarding sites within the APE vicinity.

TATITLEK

Five AHRS sites are within 1.6 km (1 mi) of the Tatitlek Proposed Action area, and none are within the APE. None of the five sites have been evaluated for NRHP eligibility. One known shipwreck is within the Tatitlek vicinity, but it is not within the APE (BOEM 2011). See Appendix R for additional details regarding sites within the APE vicinity.

3.3.1.3 Proposed Action

In accordance with Section 106 of the NHPA, MARAD initiated consultation, designating DOT&PF to continue consultation on MARAD's behalf, with the Alaska SHPO, Forest Service, and other consulting parties on October 7, 2024. Correspondence that included DOT&PF and MARAD's recommendations regarding NRHP eligibility and a proposed finding of "no historic properties affected" (36 CFR 800.4(d)(1)) for all three Proposed Action locations was sent to consulting parties on June 3, 2025. On June 13, 2025, SHPO sent a letter concurring with a finding of "no historic properties affected" for both the Chenega and Tatitlek locations. In a letter dated June 25, 2025, SHPO replied that they were unable to concur with DOT&PF and MARAD's recommended finding of "no historic properties affected" for the Cordova location until further evaluation regarding the NRHP eligibility of the Ocean Dock Historic District (COR-00476), Municipal Dock/Cordova Ferry Terminal (COR-00608), Orca Oil Building (COR-00609), and Cordova Pilings (COR-00610) was completed (see Appendix R). DOT&PF held a meeting with SHPO on July 3, 2025, to clarify how the Proposed Action sufficiently avoids and minimizes potential effects upon these resources in Cordova. Following the meeting, it was agreed that a finding of "no adverse effect" (36 CFR 800.5(b)) under Section 106 would be more appropriate. On July 7, 2025, the consulting parties were given additional time, until July 11, 2025, to submit their comments. No substantive comments or concerns were received by any consulting party, except SHPO, regarding the Cordova finding discussed above. On July 23, 2025, SHPO sent a letter stating that DOT&PF and MARAD had provided sufficient information to support a finding of "no adverse effect" for the Proposed Action and concurring with this finding of effect. SHPO did not request further correspondence or documentation from DOT&PF or MARAD regarding the matter.

Table 3-7summarizes the consulting parties for each Proposed Action location, the dates of any responses received from those parties, and their comments or concurrence, if provided.

The Proposed Action is not anticipated to have direct or indirect impacts on documented or undocumented archaeological and historical resources. As the Proposed Action would not cause physical or other changes within the area of the APE where it intersects historic property boundaries (Ocean Dock Historic District [COR-00476]) and would not cause physical or other changes to the historic properties within the Proposed Action APEs (Municipal Dock/Cordova Ferry Terminal [COR-00608], Orca Oil Building [COR-00609], and the Cordova Pilings [COR-00610]), SHPO concurred with DOT&PF and MARAD's finding of "no adverse effect" on historic properties from the Proposed Action in a letter dated July 23, 2025 (see Appendix R).

Table 3-7. Consulting party comments regarding the Proposed Action.

Recipient	Response Date	Comments
Chenega	—	—
Chenega Corporation	7/8/2025	Concurrence with Finding of No Historic Properties Affected
Native Village of Chenega	N/A	No comments
Chugach Alaska Corporation	N/A	No comments
Chugachmiut Heritage	N/A	No comments
SHPO	6/13/2025	Concurrence with Finding of No Historic Properties Affected
Forest Service	N/A	No comments beyond initial clarifications
Cordova	—	—
Native Village of Eyak	N/A	No comments
Eyak Corporation	N/A	No comments
Chugach Alaska Corporation	N/A	No comments
Chugachmiut Heritage	N/A	No comments
City of Cordova	N/A	No comments
Cordova Historic Preservation Commission	N/A	No comments
Cordova Historical Society and Museum	N/A	No comments
SHPO	7/23/2025	Concurrence with No Adverse Effect
Forest Service	N/A	No comments beyond initial clarifications
Tatitlek	—	—
Tatitlek Corporation	N/A	No comments
Native Village of Tatitlek	N/A	No comments
Chugach Alaska Corporation	N/A	No comments
Chugachmiut Heritage	N/A	No comments
SHPO	6/13/2025	Concurrence with Finding of No Historic Properties Affected
Forest Service	N/A	No comments beyond initial clarifications

Notes: N/A = not applicable

3.3.1.4 No Action Alternative

The No Action Alternative would not affect archaeological and historical resources because no construction activities would occur.

3.3.2 Subsistence

The PWS marine environment provides subsistence harvest opportunities for its communities. In addition, terrestrial harvest opportunities on islands and more remote areas in PWS are often accessed by boat.

Alaska National Interest Lands Conservation Act Title VIII declares, in general, that fish and wildlife taken on public lands will be given priority over taking for other purposes. Subsistence opportunities for fish and wildlife exist in Alaska under state and federal management.

A subsistence report generated by surveys of Chenega Bay, Cordova, Tatitlek, and Whittier residents in 2009 asked households to summarize their harvest activities in PWS. The species most harvested were Pacific halibut, salmon, rockfish, berries, and Sitka blacktail deer. All species, except salmon, experienced declines in harvest during the 5-year study period. Reasons for this decline include lifestyle change, age, medical condition, and resource decline. Most subsistence harvests were accessed by small watercraft (Poe et al. 2009). Table 3-8 provides percentages of household use of subsistence resources between 2004 and 2008.

Table 3-8. PWS subsistence harvest composition (2004–2008).

Resource	Percent of Households that Harvest the Resource	Percent Change Over 5 Years
Pacific halibut	75	-7
Salmon	74	-3
Berries	64	-5
Rockfish	57	-6
Deer	50	-6
Shrimp	42	-6
Shellfish	31	-5
Other finfish	24	-3
Waterfowl	24	-5
Plants	22	-1
Crab	14	-6
Mountain goat	11	-2
Harbor seal	10	-1
Sea duck	10	-2
Black bear	9	-1
Eggs	9	-3
Brown bear	5	-1
Sea otter	5	0
Sea lion	2	0
Shorebirds	2	-1
Furbearers	1	0
Pacific herring spawn	1	0
Seabirds	1	0

Source: Poe et al. 2009

3.3.2.1 Subsistence Fisheries

In 1988, state-run subsistence fisheries were established in both Tatitlek and Chenega villages to support traditional use of salmon by residents. The Chenega subsistence area includes all of the Southwestern District and a portion of the Montague District for commercial fisheries (see Figure 2-4 in Appendix P Fisheries Desktop Analysis Memo). The Tatitlek subsistence area is south of the Valdez Non-subsistence Area (5 AAC 90.015(a)(5)) and includes portions of the Northern and Eastern Districts (see Figure 2-5 in Appendix P).

Both subsistence fisheries are open 7 days per week beginning May 15, and close 2 days before the first commercial fishing period in the overlapping commercial fishing districts. As of 2018, subsistence fishing is also allowed during the commercial fishing season on Saturdays from 6:00 a.m. to 10:00 p.m. Two days after the closure of the commercial fishing season in each respective district, the subsistence fisheries open again to 7 days per week until October 31 (Botz et al. 2024).

VFDA contributes SGH coho salmon to support subsistence harvests in Tatitlek. Since 2011, approximately 20,000 coho smolt have been released annually at Boulder Bay to support the Tatitlek community (VFDA 2024). In 2023, 13 permits were issued for the Chenega subsistence area, and 10 permits were issued for the Tatitlek subsistence area. No salmon harvest was reported for either fishery.

Both state-run shrimp and federal halibut subsistence fisheries exist throughout PWS. This pot fishery for shrimp is subject to emergency order between April 15 and September 15. Cordova, Chenega Bay, and Tatitlek qualify for a subsistence Pacific halibut fishery; participants must obtain a Subsistence Halibut Registration Certificate. Gear types for this fishery include setline and hand-held gear, including longline, handline, rod and reel, spear, jig, and hand troll. Recording harvests for this fishery is voluntary.

3.3.2.2 Terrestrial Subsistence Harvest

PWS is in federal and state game management units (Unit) 6D. Unit 6D is bordered to the west by Cape Fairfield and the east by Orca Inlet, excluding Cordova. It includes Hinchinbrook, Montague, and adjacent islands as well as the communities of Chenega and Tatitlek. Unit 6C extends from Orca Inlet to the Copper River. The remainder of Unit 6 extends eastward to Icy Bay. Most of Unit 6 is only accessible by boat or float plane. Unit 6C is bisected by the Copper River Highway, which originates in Cordova and provides road and other motorized use access.

Subsistence is defined federally as:

> *the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools or transportation; for the making and selling of handcraft articles out of nonedible by-products of fish and wildlife resources taken for personal or family consumption; and for the customary trade barter or sharing for personal or family consumption (16 USC 3113)*

Under the federal subsistence program, residents of Units 6D and 6A have harvest opportunities for black bear, Sitka blacktail deer, moose, beaver, coyote, fox, hare, lynx, wolverine, grouse, and ptarmigan (Federal Subsistence Board 2024). In addition to food, other uses of subsistence wild resources are clothing, fuel, transportation, construction, home goods, sharing, customary trade, ceremony, and arts and crafts. All state-managed harvests in Unit 6 are either administered by harvest tickets, registration, or drawing (ADF&G 2024).

CHENEGA

The most recent state subsistence harvest information is from 2014, during which 25 residents harvested 66 resources in Chenega (Fall and Zimpelman 2016). Table 3-9 lists the most harvested resources for Chenega in 2014.

Table 3-9. Most harvested subsistence resources for Chenega (2014).

Resource	Percent of Residents that Harvested the Resource	Amount Harvested (pounds)
Coho salmon	50	567
Chum salmon	42	1,094
Pink salmon	42	443
Sockeye salmon	42	2,170
Chinook salmon	25	217
Pacific halibut	42	1,055
Blueberry	67	125
Salmonberry	58	159

Resource	Percent of Residents that Harvested the Resource	Amount Harvested (pounds)
Moose	17	765
Deer	17	367
Black rockfish	25	255
Black bear	17	247

Source: Fall and Zimpelman 2016

CORDOVA

Poe et al. (2009) reported that Cordova residents (35 respondents) spent most of their harvest effort on berries, deer, halibut, rockfish, salmon, shrimp, and waterfowl. The months with the most subsistence activity were September, August, July, and October. Table 3-10 lists the most harvested resources according to 2014 state subsistence data of 184 households (Fall and Zimpelman 2016).

Table 3-10. Most harvested subsistence resources for Cordova (2014).

Resource	Percent of Residents that Harvested the Resource	Amount Harvested (pounds)
Blueberry	80	7,676
Chinook salmon	34	21,947
Coho salmon	54	40,947
Low bush cranberry	25	2,183
Mallard	14	1,442
Moose	15	78,065
Nagoonberry	44	4,270
Pacific halibut	39	37,671
Sockeye salmon	41	49,364
Sitka blacktail deer	21	20,408
Strawberry	65	8,269
Tanner crab	9	2,214

Source: Fall and Zimpelman 2016
Note: resources harvested by less than 5 percent of the sample size are not included

TATITLEK

Tatitlek residents (six respondents) reported that halibut was their main subsistence species (of species with more than 200 harvest days [Poe et al. 2009]). The months with the most subsistence activity were September, August, October, and November and December (tied). Table 3-11 provides the most harvested resources according to 2014 state subsistence data of 21 households (Fall and Zimpelman 2016).

Table 3-11. Most harvested subsistence resources for Tatitlek (2014).

Resource	Percent of Residents that Harvested the Resource	Amount Harvested (pounds)
Chinook salmon	23.8	622
Chum salmon	9.5	689
Coho salmon	52	2,687
Harbor seal	38	5,205
Gull eggs (unknown species)	29	225
Octopus	19	1,229
Pacific salmon	43	1,817
Pink salmon	14	291

Resource	Percent of Residents that Harvested the Resource	Amount Harvested (pounds)
Salmonberry	71	238
Sitka blacktail deer	57	1,633
Sockeye salmon	48	3,295
Steller sea lion	19	2,057

Source: Fall and Zimpelman 2016
Note: resources harvested by less than 5 percent of the sample size are not included

3.3.2.3 Proposed Action

In-water work under the Proposed Action may result in minor behavioral impacts of fish from avoidance of pile driving. This may have minor impacts on fish movement in the Chenega, Cordova, and Tatitlek Ferry Terminal vicinities during the construction period (summer and fall 2027). Noise from pile driving may also impact terrestrial mammal movement near these ferry terminals. However, avoidance would likely only occur within areas not used for subsistence hunting in Chenega, Cordova, and Tatitlek. Noise is anticipated to have negligible impacts on subsistence fisheries and subsistence hunting. No long-term impacts on subsistence activities are expected from the Proposed Action.

3.3.2.4 No Action Alternative

Under the No Action Alternative, no impact on subsistence would occur.

3.3.3 Socioeconomics

The Alaska Native Corporation for the PWS region is the Chugach Alaska Corporation. Regional Alaska Native Claims Settlement Act (ANCSA) village corporations include the Chenega Corporation (Chenega), Eyak Corporation (Cordova), and Tatitlek Corporation (Tatitlek). Chenega is an unincorporated village and CDP; the area's federally recognized Tribe is the Native Village of Chenega. The City of Cordova is a home rule city; the federally recognized Tribe is the Native Village of Eyak. Tatitlek is an unincorporated village; the federally recognized Tribe is the Native Village of Tatitlek (McKinley 2021).

The smallest community in PWS, Chenega, has averaged approximately 65 residents over the past 10 years. Home to more than one-third of the region's residents, Cordova had overall growth of more than 125 people between 2010 and 2012 (5.7 percent), though annual growth has varied during this period. Tatitlek has grown by a few residents, with seven more residents in 2020 than in 2010 (McKinley 2021). However, population estimates[6] for the three communities have declined since 2020 (ADOLWD n.d.), as shown in Table 3-12.

[6] Population estimates tend to vary between sources. For example, population estimates produced by ADF&G tend to be lower than U.S. Census and Alaska Department of Labor and Workforce Development (ADOLWD) estimates because criteria used to identify year-round, permanent residents facilitate a more accurate estimate of resources harvested throughout the year. The U.S. Census and ADOLWD develop estimates based on the decennial U.S. Census and Alaska permanent fund dividend application data, respectively. Therefore, seasonal residents that are reflected in these population estimates are not included in ADF&G population estimates (Keating et al. 2020).

Table 3-12. Alaska population estimates (2020–2024).

Community	Census Total April 2020	Estimate Total July 2021	Estimate Total July 2022	Estimate Total July 2023	Estimate Total July 2024
Chenega CDP	59	65	60	58	54
Cordova	2,609	2,553	2,570	2,547	2,506
Tatitlek CDP	90	82	81	68	56

Source: ADOLWD n.d.

The ports and harbors in Chenega, Cordova, and Tatitlek play a vital role in transportation infrastructure, supporting economic growth within these communities and the PWS region. They are the lifeline to the region's economic hub, and almost all goods arrive via these infrastructures. The AMHS serves as the primary connection to larger hub communities, which offer essential services such as medical care and commercial resources (PWSEDD 2022). The economies of Chenega, Cordova, and Tatitlek rely on the ongoing operation of ferry services, which support both tourism and the movement of essential commodities, including food, fuel, and other goods. Chenega and Tatitlek have limited transportation alternatives, as they depend on float planes and AMHS ferries for transportation to and from the community (PWSEDD 2022).

3.3.3.1 Chenega

Chenega is an Alutiiq Native community where residents maintain a way of life focused on subsistence activities and commercial fishing. While many still depend on these traditional resources, the need for cash income has increased since the EVOS in 1989. In response, job training efforts have focused on opportunities related to oil spill recovery, including Oil Spill Response, HAZWOPER, and 6 Pax Trainings. The primary sources of full-time employment in the village are through the Chugach School District, Chenega Indian Reorganization Act (IRA) Council, and Chenega Corporation. Occasionally, short-term jobs arise through community infrastructure projects, primarily in construction. No private businesses are within the community, and no residents currently hold a commercial fishing permit (Aurora Consulting 2008).

3.3.3.2 Cordova

Cordova is home to a large fishing fleet serving PWS, along with several fish processing plants. Approximately 400 residents held commercial fishing permits in 2011, and almost half of all households had at least one member working in the industry, whether in harvesting or processing. This number grows even larger when factoring in residents employed in seafood marketing and watershed protection. With thousands of seasonal workers and visitors, the salmon harvest plays a vital role in the local economy. Major employers in Cordova include Trident Seafoods, Inc.; the Cordova School District; Cordova Community Medical Center; the City of Cordova; and DOT&PF (City of Cordova 2024b).

3.3.3.3 Tatitlek

Like Chenega, Tatitlek is a traditional Alutiiq Native village where residents depend on subsistence resources and commercial fishing, with limited job opportunities. Most employment in the village is seasonal and temporary, with only a few permanent, year-round positions. Key employers include regional service organizations such as the Chugach School District; the regional ANCSA non-profit organization, Chugachmiut; the

regional Tribal natural resource organization, Chugach Regional Resources Commission; and the U.S. Postal Service. In addition, the Tatitlek Village IRA Council operates a mariculture farming business that employs five full-time residents (Tatitlek Village IRA Council 2001).

3.3.3.4 Proposed Action

The Proposed Action is not anticipated to have an adverse impact on socioeconomic resources in the communities of Chenega, Cordova, and Tatitlek. The Proposed Action would likely have an indirect effect on the PWS region's economy as ACF vessels are designed to accommodate more passengers and vehicles than the current fleet of Aurora Class Ferry vessels. The additional capacity may increase tourism travel to the PWS region. While temporary disruptions may occur due to construction activities, long-term, moderate to substantial benefits (e.g., increased reliability of consumer goods and services, job creation, strengthened local economies) would outweigh any short-term, adverse impacts from the Proposed Action.

3.3.3.5 No Action Alternative

The No Action Alternative would have a long-term, substantial, adverse impact on socioeconomic resources in the communities of Chenega, Cordova, and Tatitlek, as their current facilities would be unable to accommodate the larger ACF vessels once the current fleet of Aurora Class Ferry vessels are phased out of service. The loss of AMHS services would create economic hardships to residents and local businesses because there would likely be reduced freight movement or passenger ferry services coming to the communities. Without an updated facility that can accommodate future AMHS ferry vessels, only airplane or private marine charter services would be available to move people and goods in and out of these communities; these services are less reliable and substantially more costly than AMHS's regular ferry services.

3.3.4 Marine Traffic and Navigation

The Proposed Action areas are on the Marine Highway M-5 (M-5; Figure 3-2) Alaska Marine Highway Route, serving the Alcan (or Alaska) Highway and Richardson Highway Landside Routes. Approximately 90 percent of interstate freight, except for petroleum, travel the route. The M-5 provides an alternative to the land route between Alaska and Washington, which can present challenging conditions that limit speed and capacity. The route runs from Unalaska to Puget Sound and connects to various commercial navigation channels, ports, and harbors. From Puget Sound, the M-5 continues southward along the coast to San Diego, California (MARAD 2023).

Common transient vessel traffic within the PWS region includes AMHS ferry service, oil tankers, cruise ships, rail and barges, and freight vessels (PWSEDD n.d.). Commercial and recreational fishing as well as recreational boating also contribute to area marine traffic. While oil-related traffic revolves around Valdez, the Ship Escort/Response Vessel System has response centers in all PWS communities.

Figure 3-2. M-5 Alaska Marine Highway.

The PWS Vessel Traffic Service Area (VTSA) does not cover any of the Proposed Action sites, but AMHS vessels travel through the area. The U.S. Coast Guard (USCG) regulates traffic in designated safety and security zones (USCG 2017); no safety zones are within the Proposed Action area. Security zones potentially affecting the Proposed Action area include waters within 91 m (100 yards) of any AMHS or other high-capacity passenger vessels that are being escorted by the USCG or a law enforcement agency.

Chenega, Cordova, and Tatitlek have no land connection to the state's road system, making the communities dependent on air or marine transport (McKinley 2021). Air travel into the communities is by wheeled or float plane, while people travel by water using AMHS ferry service, fishing charter, or water taxi. All communities in PWS have a dock and/or harbor, an airport or runway, and a seaplane landing space to support both types of transport.

The AMHS is used as a means of personal transportation to access services not offered in the individual communities, such as certain medical services or international airports, as well as to transport goods such as food and fuel. The service commonly transports cargo container vans with perishable food products to supply individuals and businesses (DOT&PF 2023). Shipping perishable items via the AMHS is considered more cost-effective compared to air freight, and goods are often delivered more frequently than commercial freight. While scheduled ferry service exists in each community, it is unreliable and unpredictable due to weather disruptions and vessel maintenance issues; the three communities have gone as long as 6 months without ferry service (PWSEDD 2022). Table 3-13 provides a summary of AMHS passenger and vehicle traffic in Chenega, Cordova, and Tatitlek from 2020 to 2023.

Table 3-13. AMHS annual traffic volume (2020–2023).

Community	Criteria[a]	2020	2021	2022	2023
Chenega Bay	Embarking Passenger Traffic	26	47	63	79
Chenega Bay	Disembarking Passenger Traffic	31	39	85	83
Chenega Bay	Embarking Vehicle Traffic	21	27	26	43
Chenega Bay	Disembarking Vehicle Traffic	23	28	31	42
Cordova	Embarking Passenger Traffic	786	4,136	6,258	6,313
Cordova	Disembarking Passenger Traffic	831	4,248	6,372	6,460
Cordova	Embarking Vehicle Traffic	603	2,421	2,906	2,898
Cordova	Disembarking Vehicle Traffic	610	2,513	3,003	2,952
Tatitlek	Embarking Passenger Traffic	—	45	25	15
Tatitlek	Disembarking Passenger Traffic	—	28	22	19
Tatitlek	Embarking Vehicle Traffic	—	20	12	12
Tatitlek	Disembarking Vehicle Traffic	—	19	12	14

Source: DOT&PF 2023

[a] A passenger is defined as any person who boards/deboards the vessel. A vehicle is defined as any item used to transport people or goods, such as cars, construction equipment, or freight container vans.

3.3.4.1 Chenega

The MV *Aurora* typically arrives in Chenega twice per month (AMHS 2025). The ferry arrives from or departs to either Cordova or Whittier. However, ferry service can vary greatly due to weather disruptions and vessel maintenance issues. Dojer Services provides regularly scheduled barge delivery of fuel, gas, and propane to the community (PWSEDD 2022). Additional marine traffic within the Proposed Action area can be

attributed to commercial fishing vessels, water taxis, and other watercraft using the small boat harbor approximately 0.3 km (0.2 mi) northeast of the ferry dock.

3.3.4.2 Cordova

The MV *Aurora* typically arrives in Cordova four to five times per week, depending on the month (AMHS 2025). The ferry arrives from or departs to either Whittier, Chenega, Tatitlek, or Valdez. However, ferry service can vary greatly due to weather disruptions or vessel maintenance issues. Alaska Marine Lines and Samson Tug and Barge provide regular barge service to Cordova (PSWEDD 2022). The City of Cordova recently completed a major reconstruction and expansion of its small boat harbor, which can now accommodate more than 700 vessels (*Alaska Business* 2024). A number of docks just south of the Cordova Ferry Terminal are used by seafood harvesting and processing facilities, freight lines, and USCG (McKinley 2021). Recreational and commercial vessels operate out of these facilities. The nearest dock is approximately 0.3 km (0.2 mi) south of the ferry dock, while the small boat harbor is slightly less than 1.6 km (1 mi) south of the ferry dock. During commercial fishing season, area traffic is busy with commercial and recreational fishing vessels traveling between boat launches and docks.

3.3.4.3 Tatitlek

The MV *Aurora* typically arrives in Tatitlek one to four times per month (AMHS 2025). The ferry arrives from or departs to either Cordova, Whittier, or Valdez. However, ferry service can vary greatly due to weather disruptions or vessel maintenance issues. No regular barge service occurs in Tatitlek, and the community instead charters vessels on an as-needed basis (PSWEDD 2022). Tatitlek's community dock is less than 0.8 km (0.5 mi) northeast of the ferry dock.

3.3.4.4 Proposed Action

By updating infrastructure to accommodate a newer class of ferry vessels, ensuring continued service in the future that is more reliable, the Proposed Action would increase the level of AMHS service to communities, resulting in long-term, substantial, beneficial impacts. However, the ferry would continue to operate under the current level of scheduled service and would not increase marine traffic.

Construction activities would cause short-term delays to the AMHS schedule at each ferry terminal, as well as alter traffic patterns if the ferry does not travel to a community undergoing terminal construction. This would create temporary, minor, adverse impacts. A temporary increase in private charter vessels used for transportation may occur during the construction period. The construction schedule and anticipated ferry service downtime would be publicized in advance, so the public and charter service companies are aware of potential disruptions. The public would still be able to travel to the area by airplane or private charter vessel. Commercial freight, recreational boating, and commercial fishing traffic would remain active within the Proposed Action areas, and access to adjacent harbors and docks would remain open during construction.

3.3.4.5 No Action Alternative

Under the No Action Alternative, impacts on navigation would not occur. The AMHS ferry service would adhere to the established protocol for the PWS VTSA. Under the No Action Alternative, the ferry service would likely become increasingly unreliable and potentially phased out when the Aurora Class Ferries are no longer in service, creating long-term, substantial, adverse impacts. This would reduce the level of ferry traffic but may increase the level of private vessel traffic, increasing demand and cost of travel within the PWS region.

3.3.5 Public Health and Safety

Public health and safety resources are limited within the PWS region. Where no Alaska State Trooper or police presence exists, communities are served by the Village Public Safety Officer (VPSO) program, a division of the Alaska Department of Public Safety (ADPS). VPSOs provide emergency medical and fire response, community policing, and search and rescue, among other public safety services (ADPS 2025a). Within the PWS region, the program is funded partially by the State of Alaska and Chugachmiut, the non-profit Tribal consortium that supports Chugach Region Native communities. Chugachmiut also operates medical clinics in PWS villages, as described in the subsections below. The closest hospitals are located in Anchorage.

Chenega, Cordova, and Tatitlek have sometimes gone as long as 6 months without AMHS ferry service. Residents rely on ferry service for access to major medical services beyond what communities can provide, especially during winter months when planes can be weathered out for weeks. It is common for expectant mothers to travel to Anchorage via the ferry with their personal vehicle, where the medical protocol is to arrive 1 month before their due date (PWSEDD 2022).

3.3.5.1 Chenega

Chenega is served by the VPSO program and the Chenega Bay Fire Department (McKinley 2021; ADPS 2025b).

Chugachmiut operates the Arch Priest Nicholas Kompkoff Clinic in Chenega, where community health aides and advanced practice providers assist residents (Chugachmiut 2025). Chenega is served by the North Star Clinic in Seward, which provides primary care services such as preventative screenings, routine exams, immunizations, acute and chronic illness care, prenatal care, and behavioral health services (Chugachmiut 2025). The clinic's dental staff travels to Chenega to provide dental care. The Valdez Public Health Center supports Chenega residents through "Itinerant Public Health Nurses," or traveling nurses (ADOH 2023).

3.3.5.2 Cordova

One Alaska State Troopers wildlife officer is stationed in Cordova (McKinley 2021). In addition, the community is served by the Cordova Police Department, which employs three police officers and six civilian employees (ADPS 2022). The Cordova Volunteer Fire Department has two fire stations with 20 to 30 volunteer firefighters and medics that provide emergency medical and fire response (City of Cordova 2024c).

The *Cordova Comprehensive Plan* identifies challenges in attracting and retaining medical providers, as well as limited specialty care access and high cost of care (Agnew::Beck 2019). Area providers include the Cordova Community Medical Center, which is a Critical Access Hospital, and the Ilanka Community Health Center, which is a Federally Qualified Health Center that serves all residents and is operated by the Native Village of Eyak (McKinley 2021). One dental practice is in Cordova.

3.3.5.3 Tatitlek

Tatitlek is served by the VSPO program (McKinley 2021). The Tatitlek Volunteer Fire Department last registered under ADPS' Fire Department Registration Status in 2022 (ADPS 2025b).

Chugachmiut operates the Tatitlek Clinic, which provides community health aides and advanced practice providers (Chugachmiut 2025). Tatitlek residents are also served by the North Star Clinic in Seward, which provides primary care services in Seward and traveling dental care in Tatitlek. Tatitlek residents are also supported by Valdez Public Health Center's traveling nurses (ADOH 2023).

3.3.5.4 Proposed Action

The Proposed Action would create long-term, moderate, beneficial impacts on community health and safety by maintaining a reliable form of transportation for residents who have medical appointments outside the community, medical providers who travel to communities, and medical supplies to Proposed Action communities. In addition, the improved ferry docks under the Proposed Action would be important for emergency service access to these communities, or for transport of a large number of residents away from these communities, in the event of a natural disaster or similar emergency.

The Proposed Action would have short-term, minimal, adverse impacts on public health and safety from construction. AMHS ferry service would be delayed or closed in the communities during the construction window. The construction schedule and anticipated ferry service downtime would be publicized in advance, so communities can plan for known periods without ferry service due to construction. In addition, residents would still be able to fly or use private vessel charter services during ferry downtime. Increased demand for air and private vessel charter may reduce availability and increase costs for residents in the short term.

As described in Section 3.1.4.1 (Noise and Vibration), construction noise from pile driving would be temporary and limited to daylight hours to minimize impacts on the communities of Chenega, Cordova, and Tatitlek. As described in Section 3.1.2.1 (Air Quality), construction of the Proposed Action would have minimal impacts on air quality in Chenega, Cordova, and Tatitlek; material sites and staging areas would be located near the Proposed Action sites, which would reduce impacts from fugitive dust. In addition, the use of appropriate BMPs during construction would mitigate potential short-term impacts on hazardous materials or waste that would affect human health (see also Section 3.1.3.1 [Hazardous Materials and Waste Management]). See Section 4.1 Best Management Practices for related BMPs.

3.3.5.5 No Action Alternative

The No Action Alternative could result in substantial adverse impacts on public health and safety in Chenega, Cordova, and Tatitlek in the long-term. Ferry operations would potentially be discontinued without the Aurora Class Ferries in service, which would limit residents and medical providers' ability to travel for essential medical services and transport of supplies to air travel or private charter vessels. The increased reliance on these modes of travel would likely reduce service availability for everyone and increase costs. The lack of ferry access would be especially challenging for expectant mothers who use the ferry to travel to Anchorage with their personal vehicle prior to delivery.

3.3.6 Public Services and Utilities

Table 3-14 lists services and utilities that are provided by businesses or corporations within each respective community. DOT&PF manages the AMHS ferry service, which operates on a scheduled basis in each community. Ferry schedules are subject to change throughout and between years. See Section 3.3.4 Marine Traffic and Navigation for additional information regarding ferry service.

Table 3-14. Community services within the Proposed Action communities.

Service or Utility	Tatitlek	Cordova	Chenega
Water	Tatitlek Village IRA Council	City of Cordova	Chenega IRA Council
Sewer	Tatitlek Village IRA Council	City of Cordova	Chenega IRA Council
Solid Waste	Tatitlek Village IRA Council	City of Cordova	Chenega Bay Landfill
Electric	Tatitlek Village IRA Council	Cordova Electric Cooperative	Chenega IRA Council
Hospital and Health Facilities	Tatitlek Clinic	Cordova Community Medical Center and Ilanka Health Center	Chenega Clinic
Emergency Services	Tatitlek Volunteer Fire Department	Cordova Volunteer Fire Department	Chenega Bay Emergency Medical Services
Ferry Service	AMHS	AMHS	AMHS

3.3.6.1 Proposed Action

Construction of the Proposed Action would require public services and utilities usage in each community, including water, electric, and solid waste. Use of these utilities is anticipated to have a short-term, negligible effect on the communities. The sewer and potable water line at the Cordova Ferry Terminal would be replaced but would not impact services outside the ferry terminal. Ferry services are the only service with the potential to be impacted by the Proposed Action. During construction, ferry services would be delayed to allow for safe construction. After construction is completed, ferry service is expected to return to normal operations. Due to ferry schedule changes to accommodate construction, the Proposed Action is anticipated to have a short-term, minor impact on public services and utilities. The operations of the Proposed Action would not affect public services and utilities in the communities.

3.3.6.2 No Action Alternative

The No Action Alternative would have a long-term, substantial, adverse impact on public services and utilities in the communities of Chenega, Cordova, and Tatitlek as well as destination ports that currently travel to these locations because their current facilities

would be unable to accommodate the larger AMHS vessels once the current fleet of Aurora Class Ferry vessels are phased out of service. No public ferry services would operate to accommodate travel and movement of goods in and out of Chenega, Cordova, and Tatitlek. This may isolate these communities and create economic hardship as residents seek out different forms of travel, such as airplane and barge services.

3.3.7 Parks and Recreation Resources, Including Section 4(f)

Park and recreation resources include any property identified as a Section 4(f) property under 23 CFR 774. Section 4(f) refers to the original section within the USDOT Act of 1966 that provides for consideration of park and recreation lands, wildlife and waterfowl refuges, and historic sites during transportation project development. MARAD must determine that no feasible and prudent project alternative exists that avoids the use of these properties, the Proposed Action includes all possible planning to minimize harm to the property, or the Proposed Action has *a de minimis* use of the protected property. Section 4(f) protected properties include significant publicly owned public parks, recreation areas, and wildlife or waterfowl refuges, or any publicly or privately owned historic site listed or eligible for listing in the NRHP.

No national parks, preserves, monuments, or wild and scenic rivers are located within the Proposed Action areas in Chenega, Cordova, or Tatitlek (NPS 2025). In addition, no federal or state wildlife or waterfowl refuges are within the Proposed Action areas (USFWS 2025; ADEC 2025). The Copper River Delta Critical Habitat Area is located outside the Proposed Action vicinity, southeast of Cordova. In addition, the Proposed Action would not affect or use any NRHP-eligible sites that would qualify for Section 4(f) protection; see Section 3.3.1 Archaeological and Historical Resources for more information. The communities are located within the Chugach National Forest (CNF) boundary, but no park lands are located at the Proposed Action sites.

The Forest Service owns and manages a majority of the PWS area as the CNF (Forest Service 2020). According to the *Chugach National Forest Land Management Plan* (Forest Service 2020), the Prince William Sound Geographic Area is a popular destination for locals and tourists to recreate by hiking, camping, boating, fishing, hunting, skiing, mountaineering, and wildlife and nature viewing. Accessing the area through guided services is common. During summer, tourists comprise a large percentage of PWS ferry traffic (DOT&PF 2023); see Table 3-13 for a summary of AMHS transport to the Proposed Action communities.

3.3.7.1 Chenega

CNF land in Chenega is designated as MA 4 Backcountry, which is managed for recreational activities within fish and wildlife habitat areas that are mainly unaffected by human activity (Forest Service 2020). Data on recreation traffic in the community is unavailable, and formal recreation facilities are limited. The *Chenega Bay Master Plan* (GDM 2008) discusses potential commercial development projects to support numerous recreational activities within the area, such as a commercial lodge, kayak rental facility, fishing charters, and tour services. Some private developments, such as the Port Ashton Lodge, offer lodging for those seeking to stay within the area. In 2021, the State

of Alaska permitted the construction of a small recreational boat harbor on Latouche Island at Powder Point, a former mining area, to provide access to private land on the island. Horseshoe Bay State Marine Park is on Latouche Island, approximately 6.4 km (4 mi) southeast of Chenega, and provides scenic viewing opportunities.

3.3.7.2 Cordova

CNF land in Cordova is designated as MA 4 Backcountry and MA 6 EVOS Acquired Land. MA 6 EVOS designation is for lands purchased as part of the EVOS settlement, with the main goal being to protect and recover habitat resources.

During 2016, approximately 9,000 people visited Cordova, where popular tourism activities are typically recreational in nature (McKinley 2021). In addition, approximately 1,300 out-of-state visitors and 600 Alaska residents bought sportfishing licenses from Cordova vendors during 2019 (McKinely 2021). A salmon sport fishing destination, Flemming Spit, is approximately 0.9 km (0.6 mi) north of the ferry terminal. The Flemming Spit Recreation Area includes a fish cleaning station and kayak launch (City of Cordova 2024d). A recreational boat launch is approximately 0.6 km (0.4 mi) south of the ferry dock, adjacent to OBI Seafoods. The small boat harbor has an additional boat launch. For details on marine traffic within the area, including recreational activity, see Section 3.3.4 Marine Traffic and Navigation.

The community offers a number of recreational services and amenities, including lodging, tours/guides, and recreational activities guidance. The *Cordova Comprehensive Plan Update* (Agnew::Beck 2019) notes that the area is known for its outdoor recreation opportunities and scenic landscapes, and the plan seeks to improve recreation opportunities within the community, including supporting tourism. The Cordova Boat Harbor is south of the Cordova Ferry Terminal.

3.3.7.3 Tatitlek

Data on recreation traffic in Tatitlek is unavailable, and formal recreation facilities are limited. According to the Tatitlek Corporation's Land Access and Use Policy, there is no permitted access on its lands—other than for shareholders or spouses/lineal descendants of shareholders—without a Lands Access Permit. In addition, there is no nearby national or state forest or parkland, as the Tatitlek Corporation owns the area (TTC 2024). The *Native Village of Tatitlek Community Strategic Plan* notes natural and recreation resources in Tatitlek create opportunities for eco-tourism and recreation-focused business development (Tatitlek Village IRA Council 2001).

3.3.7.4 Proposed Action

The Proposed Action would not create long-term, adverse impacts on area parks and recreation resources. There would be no use of Section 4(f)-protected properties. Operation of the Proposed Action would have a long-term, minor to moderate, beneficial impact on maintaining a method of transportation used to access recreational opportunities within the PWS region.

Short-term, minor, adverse impacts on parks and recreation resources during construction could include the disruption of the ferry service schedule for recreators traveling to the area by ferry. The construction schedule and anticipated ferry service

downtime would be publicized in advance, so travelers would be made aware of potential disruptions. People would still be able to travel to the area by airplane or private charter vessel. Proposed Action construction would not impact existing recreational boating and fishing activities because access to adjacent harbors and docks would remain open. See Section 3.1.4 Noise and Vibration and Section 3.3.8 Visual Impact, and Light and Glare for details regarding Proposed Action noise or visual impacts during construction.

3.3.7.5 No Action Alternative

Under the No Action Alternative, the area communities would not be able to accommodate future ACF berthing requirements, making continued AMHS service unreliable. This situation would create long-term, substantial, adverse impacts on AMHS access to recreational opportunities within the PWS region. Travelers would instead rely on airplanes or private vessel charters, which would increase costs and demand for these services. The increased cost and reduced availability may reduce the number of tourists visiting the communities for recreation.

3.3.8 Visual Impact, and Light and Glare

The current visual aesthetic at the Chenega, Cordova, and Tatitlek Ferry Terminals is typical of a marine terminal or harbor within the PWS region. Continuous mature forests surround each Proposed Action area. The Cordova Ferry Terminal is neighbored on the south by commercial and industrial facilities along the shoreline of Orca Inlet. The Chenega and Tatitlek Ferry Terminals have limited marine and residential developments nearby.

3.3.8.1 Proposed Action

The Proposed Action would have a negligible, permanent impact on visual and aesthetic resources, light, and glare at the Chenega, Cordova, and Tatitlek Ferry Terminals because existing infrastructure is largely being replaced with similar structures in the same location. No additional lighting would be constructed under the Proposed Action.

During construction of the Proposed Action, the ferry terminal areas would look similar to the existing viewscape. As construction progresses, the view would change slightly, but the overall visual setting would remain the same. Temporary, minor impacts on the visibility of each ferry terminal would occur because of the presence of pile driving equipment. Construction would occur during summer, when the PWS region can get up to 22 hours of functional daylight, so impacts of light and glare from construction equipment would be short-term and minimal.

3.3.8.2 No Action Alternative

Under the No Action Alternative, visual, light, and glare impacts related to construction activities would not occur. Once AMHS ACF ferries are no longer able to visit the Chenega, Cordova, and Tatitlek Ferry Terminals, the minor, temporary visual impacts associated with the vessels, including lighting, would cease. Reliance on chartered barge and airplane service for travel to and from the communities as well as delivery of

goods could result in more frequent, temporary impacts to visual aesthetics, including light and glare.

3.3.9 Land Ownership, Management, and Use

The Forest Service owns and manages a majority of the PWS region uplands as the CNF. The communities of Chenega, Cordova, and Tatitlek are within the CNF boundary; however, the Proposed Action sites are not on any park land. Table 3-15 summarizes land ownership within the Proposed Action areas.

Table 3-15. Land ownership within 0.40 km (0.25 mi) of the Proposed Action sites.

Owner	Acres
Chenega	**51**
State (Other)	1
Chenega Corporation	50
Cordova	**128**
Federal (Forest Service)	2
State (ADNR)	1
State (Other)	33
Local Government	41
Private	51
Tatitlek	**59**
State (Other)	4
Tatitlek Corporation	54
Private	1

Source: BLM 2025

3.3.9.1 Chenega

The Native Village of Chenega owns the ferry dock and uplands area and holds the tideland lease at the ferry terminal (Harris 2025). ADNR manages state-owned tidelands. According to BLM Administered Lands data (BLM 2025), Chenega Corporation primarily owns the lands adjacent to the ferry dock (see Appendix S Project Area Land Ownership Mapbook for details).

According to the *Chenega Bay Master Plan*, the Chenega Ferry Terminal area is designated as commercial facilities land use. Note that the ferry dock itself is not included in this designation, only the land directly adjacent to it. The land between the Proposed Action area and community is classified as “major vegetative screening.” Due to space-development constraints, the plan notes that commercial and Marine Service Center functions should be placed along the shoreline, adjacent to the other harbor facilities, and that commercial structures should be grouped to minimize the footprint. One of the community’s main goals is improving area infrastructure (GDM 2008).

3.3.9.2 Cordova

The Proposed Action is located within submerged tidelands owned by the City of Cordova (PWSEDD 2022), including the ferry terminal mooring structures and ferry terminal uplands area (see Appendix S).

The *Cordova Comprehensive Plan* provides a future land use map (Agnew::Beck 2019). The ferry terminal is part of the industrial/commercial waterfront use area, adjacent to

the mixed-used development area and community core area that includes the small boat harbor. Planning concerns include limited development space and expensive housing. The land directly adjacent to the ferry dock is zoned as Waterfront Industrial District (City of Cordova 2015).

3.3.9.3 Tatitlek

The existing dock structure and uplands in Tatitlek are owned by the North Pacific Rim Housing Authority (NPRHA), which is also the lessee of the tidelands lease where the Tatitlek Ferry Terminal is located (Harris 2025). ADNR manages state-owned tidelands. According to BLM Administered Lands data (BLM 2025), the land adjacent to the Proposed Action site is primarily owned by the Tatitlek Corporation (see Appendix S). In accordance with Tatitlek Corporation's Land Access and Use Policy, there is no permitted access on its lands—other than for shareholders or spouses/lineal descendants of shareholders—without a Lands Access Permit (TTC 2024).

The *Native Village of Tatitlek Community Strategic Plan* considers infrastructure development to be a critical issue in the community, stating that infrastructure must be developed and maintained appropriately to provide basic services and create employment opportunities. According to the plan, the land adjacent to the ferry dock is intended for commercial development, while a planned harbor development is northeast of the ferry dock site (Tatitlek Village IRA Council 2001).

Proposed Action

The Proposed Action does not require any right-of-way or land acquisition and would not impact land ownership. Ensuring continued access to AMHS ferry service through the Proposed Action would encourage the continued community development and infrastructure improvements that the communities seek in their respective plans, creating long-term, minor, beneficial impacts to land use and management.

3.3.9.4 No Action Alternative

Under the No Action Alternative, Chenega, Cordova, and Tatitlek would receive increasingly unreliable ferry service. If the ferry terminals cannot accommodate future ACF berthing requirements, they would lose the use of continued AMHS ferry service for transporting people and goods. The loss of access to this service would have long-term, minor, adverse impacts on livability and development of communities as well as limit some land use and management goals.

3.4 Other Reasonably Foreseeable Impacts

This analysis of other reasonably foreseeable impacts considers how the direct and indirect environmental effects caused by the Proposed Action (i.e., the incremental impact of the action) contribute to the aggregate effects of past, present, and reasonably foreseeable future actions, and whether that incremental contribution is significant.

The Proposed Action would allow for the continuation of AMHS ferry services at Chenega, Cordova, and Tatitlek that have been occurring for decades. The Proposed Action would provide improvements to these communities' ferry terminals, and impacts

would be localized to three small areas within PWS that are already active ferry terminals.

3.4.1 Past Actions

The following sections describe past developments that have occurred at and near the Chenega, Cordova, and Tatitlek Ferry Terminals.

3.4.1.1 Exxon Valdez Oil Spill

On March 24, 1989, the oil tanker *Exxon Valdez* left Port Valdez, Alaska, and ran aground on Bligh Reef, approximately 11 km (7 mi) west of Tatitlek in PWS. The vessel spilled nearly 11 million gallons of Alaska North Slope crude oil. Surveys and studies conducted 12 years later indicated the presence of surface oil deposits in PWS. Recent studies have revealed that oil remained buried under most contaminated beaches and only minimal weathering has occurred. Most of the subsurface oil can be found below 10 to 20 cm (4 to 8 in) of clean sediments (Barron et. al. 2020).

3.4.1.2 Chenega Ferry Terminal

The original Chenega townsite was destroyed during the 1964 Good Friday Earthquake and tsunami, and many residents relocated to the new town of Chenega, also known as Chenega Bay. The Chenega dock and tidal ramps were built in 1995 to provide a terminal for the MV *E.L. Bartlett* (decommissioned and sold in 2003). The State of Alaska transferred ownership to the NPRHA in October 1998. The marine facilities consist of an approach, dock, and two tidal ramps constructed of prestressed concrete panels welded to bridge beams supported by steel pipe piles socketed to the underlying bedrock. The MV *Tustumena* (currently in overhaul) has used the eastern face of this dock for moorage, while the MV *Aurora* uses the tidal ramps located along the northern face of the dock for stern loading (PWSEDD 2022).

3.4.1.3 Cordova Ferry Terminal

Cordova's original facility was built in 1968. The uplands were expanded/improved in 1997, the terminal building constructed in 1998, and the maintenance building constructed in 2005. The marine structures were completely reconstructed in 2006 (PWSEDD 2022). The maritime facilities consist of a 12-m (40-ft)-long approach span (pile-supported), a transfer bridge, an intermediate ramp with articulating apron and six berthing/mooring structures for the side berth, and a 46-m (150-ft)-long approach span (float supported) to an intermediate ramp with articulating apron and six berthing/mooring structures for the stern berth. The stern berth was originally built as a homeport for the Fast Vehicle Ferry *Chenega*; however, this vessel was sold in 2021.

3.4.1.4 Cordova South Harbor Rebuild Project

During 2024, the City of Cordova constructed improvements to the South Harbor float system as part of their South Harbor Rebuild Project. This project replaced the drive-down transfer bridge and service float as well as installed a new South Harbor bulkhead, parking improvements, and a new walkway (City of Cordova 2024a).

3.4.1.5 Tatitlek Ferry Terminal

The Tatitlek facility is a multipurpose dock structure, originally constructed in 1995 to accommodate the MV *E.L. Bartlett* (decommissioned and sold in 2003). The marine facilities consist of a staging area, an approach, a dock, and two tidal ramps constructed of concrete panels supported by steel beams and piles. AMHS has a Memorandum of Agreement for the dock's use for ferry operations. Ownership of the facility was transferred to NPRHA in 1999. Similar to Chenega, the only vessels in the AMHS fleet that can access this port are the MV *Aurora* and an identical vessel, the MV *LeConte*, which does not currently service PWS. Both vessels have stern openings with internal ramps that fold out onto the tidal ramps, suitable for Chenega and Tatitlek's current stern berth-only facilities (PWSEDD 2022).

3.4.2 Present Actions

Except for regular maintenance and inspection activities, no major improvements or projects are anticipated to occur during Proposed Action construction.

3.4.3 Reasonably Foreseeable Future Actions

The geographic scope for the analysis of reasonably foreseeable impacts is considered the same as the affected environment for each resource and extends to include the coastline for each of the three communities. The temporal scope for the reasonably foreseeable impacts analysis is the 30-year design life of the ferry terminals. The reasonably foreseeable future actions that have been identified within the geographic and temporal scopes are provided below.

3.4.3.1 Chenega Small Boat Harbor Improvements

Improving the small boat harbor in Chenega is identified as a need in the *Tribal Transportation Safety Plan* because the existing small boat harbor lacks proper storm protection and is unsafe. Improvements to the small boat harbor would involve in-water work to construct a breakwater or wave attenuator to improve safety around the dock and harbor, repair the dock, construct a boat launch, and construct additional dock floats to increase marina boat capacity (Chenega 2023).

3.4.3.2 Chenega Bulk Fuel Storage

A bulk fuel storage facility is proposed in Chenega to modernize critical fuel storage in the community, reduce spill potential, and lessen the community's dependance on diesel fuel for electricity production. The facility would include a new 30,000-gallon bulk fuel storage facility and integrate a 160-kilowatt solar array with 250-deciwatt/ 648-kilowatt-hour battery energy storage system. The tanks would be sited on an existing gravel pad, and the solar panels and corresponding utility line would require excavation for their installation.

3.4.3.3 Cordova Tideline Fill Expansion

The City of Cordova has limited land available for growth and is exploring costs, benefits, strategies, and environmental impacts to expand filled tideland. Expanding the tideline within the shipyard area was listed as a priority in the *Cordova Comprehensive*

Plan. Placing additional fill at the shipyard would create space for new facilities and infrastructure. The City is also considering a South Fill expansion (Agnew::Beck 2019).

3.4.4 Conclusions Regarding Reasonably Foreseeable Impacts

The Proposed Action would add an incremental contribution to the combined environmental impacts of other past, present, and reasonably foreseeable future actions; however, those adverse impacts are expected to be mainly short-term, localized, and minor. While the reasonably foreseeable projects described herein would occur near the Chenega and Cordova Ferry Terminals, these projects would not likely overlap in time with impacts from the Proposed Action. In summary, incremental impacts of the Proposed Action, in combination with other actions, would be negligible.

4 Mitigation Measures

The BMPs and mitigation measures presented below are (1) components of the Proposed Action, and (2) requirements of contractors during construction of the Proposed Action. DOT&PF has been in active consultation with regulatory agencies as well as Proposed Action stakeholders to identify design changes that would reduce impacts on marine mammals, cultural resources, fish and EFH, and hatchery operations in PWS.

4.1 Best Management Practices

The contractor will develop site-specific measures such as a HMCP, SPCC Plan, and WQCP to mitigate impacts from the Proposed Action. If contaminated or hazardous materials are encountered, the contractor will suspend work within that area, notify ADEC, and develop an ADEC-approved Corrective Action Plan for an appropriate response. In addition, if hazardous materials are encountered, the construction contractor will practice proper hazardous material storage and handling, and follow DOT&PF emergency response procedures. Construction contractors will be required to meet all local, state, and federal regulatory requirements regarding the discovery and use of hazardous materials, as well as the storage and handling of construction materials and equipment, to avoid impacts on the surrounding area.

Permits and authorizations will be required for activities within the Proposed Action areas that involve the storage, handling, and transport of hazardous materials or that would require potential emergency response procedures. As such, these activities will be subject to local, state, and federal regulations and best practices specifically meant to mitigate adverse environmental impacts from accidental release. DOT&PF BMPs specific to reducing risks of hazardous material release will be incorporated throughout and after construction.

4.2 Mitigation Measures

During design of the Proposed Action at the Chenega, Cordova, and Tatitlek Ferry Terminals, the following changes were made to reduce the Proposed Action footprints

and environmental effects on marine mammals, fish and EFH, and wetlands and other WOTUS:

- If contaminated or hazardous materials are spilled or released during construction, all work in the vicinity of the contaminated site will be stopped until ADEC is contacted, and a corrective action plan is approved by ADEC and implemented.
- Fuel hoses, oil drums, oil or fuel transfer valves and fittings, and similar equipment will be checked regularly for drips or leaks and will be maintained and stored properly to prevent spills.
- The contractor will provide and maintain a spill cleanup kit onsite at all times to be implemented as part of the SPCC Plan, as well as the HMCP and WQCP, in the event of a spill or if any oil products are observed in the water.
- DOT&PF will incorporate language into its construction contracts that requires the contractor to remain compliant with Project permits and authorizations, which include the following:
    - BiOp and Incidental Take Statement under the ESA;
    - IHA under the MMPA;
    - ADEC CWA Section 401 Water Quality Certification; and
    - USACE Rivers and Harbors Act Section 10 permit and CWA Section 404 permission.

4.2.1 Marine Mammals

DOTP&F proposes to employ mitigation measures to minimize the number of marine mammals affected. Marine mammal monitoring and mitigation methods are described in more detail in the issued NMFS BiOp and IHA (Appendices G and H). DOT&PF would provide final monitoring reports to the Chugach Regional Resources Commission to inform its marine mammal management plan.

DOT&PF has included the following mitigation measures for pile installation and removal to reduce impacts on marine mammals:

- DOT&PF will inform NMFS of impending in-water activities a minimum of 1 week prior to the onset of those activities (email information to akr.prd.records@noaa.gov).
- If construction activities will occur outside of the time window specified in the BiOp (Appendix G), the applicant will notify NMFS of the situation at least 60 days prior to the end of the specified time window to allow for reinitiation of consultation.
- In-water work will be conducted at the lowest points of the tidal cycle when feasible.
- Consistent with Alaska Statute § 46.06.080, trash will be disposed in accordance with state law. DOT&PF will ensure that all closed loops (e.g., packing straps, rings, bands) will be cut prior to disposal. In addition, DOT&PF will secure all ropes, nets, and other marine mammal entanglement hazards so they cannot enter marine waters.
- Pile installation/removal will occur only during daylight hours, when visual monitoring of humpback whales and Steller sea lions can be conducted.

PSO Requirements

- At least one PSO will have either prior experience as a PSO in Alaska or will have taken a NMFS-approved PSO or marine mammal observer training course.
- PSO training will include:
    - Field identification of marine mammals and marine mammal behavior;
    - Ecological information on marine mammals, and specifics on the ecology and management concerns of those marine mammals;
    - ESA and MMPA regulations;
    - Proper equipment use;
    - Methodologies in marine mammal observation as well as data recording and property reporting protocols; and
    - An overview of PSO roles and responsibilities.
- PSOs will be individuals independent from DOT&PF and must have no other assigned tasks during monitoring periods.
- The action agency or its designated non-federal representative will provide resumes or qualifications of PSO candidates to consultation biologist and akr.prd.records@noaa.gov approval at least 1 week prior to in-water work. NMFS will provide a brief explanation of lack of approval in instances where an individual is not approved.
- PSOs will:
    - Collectively be able to effectively observe the entirety of the shutdown zone;
    - Be able to identify marine mammals and accurately record the date, time, and species of all observed marine mammals in accordance with Project protocols;
    - Be able to identify listed marine mammals that may occur within the Proposed Action areas, at a distance equal to the outer edge of the applicable shutdown zone and determine the marine mammal's location and distance from the sound source;
    - Have the ability to effectively communicate orally, by radio, or in person with Project personnel to provide real-time information on listed marine mammals;
    - Possess a copy of mitigation measures; and
    - Possess data forms.
- PSOs will not scan for marine mammals for more than 4 hours without at least a 1-hour break from monitoring duties between shifts. PSOs will not perform PSO duties for more than 12 hours in a 24-hour period.

PSO Procedures

- PSOs will have the ability, authority, and obligation to order appropriate mitigation response, including shutdown, to avoid takes of listed marine mammals.
- One or more PSOs will perform PSO duties onsite throughout the authorized activity.
- Where a team of three or more PSOs are required, a lead observer or monitoring coordinator will be designated.
- For each in-water activity, PSOs will monitor all marine waters within the indicated shutdown zone radius for that activity (see Appendix G Section 6.2.2).

- PSOs will be positioned such that they will collectively be able to monitor the entirety of each activity's shutdown zone.
- Prior to commencing any activity listed in Appendix G Section 6.2.2, PSOs will scan waters within the appropriate shutdown zone and confirm no listed marine mammals are within the shutdown zone for at least 30 minutes immediately prior to initiation of the in-water activity. If one or more listed marine mammals are observed within the shutdown zone, the in-water activity will not begin until the listed marine mammals exit the shutdown zone of their own accord, or the shutdown zone has remained clear of listed marine mammals for 30 minutes immediately prior to the commencement of the activities listed in Appendix G Section 6.2.2.
- The on-duty PSOs will continuously monitor the shutdown zone and adjacent waters during any of the activities listed in Appendix G Section 6.2.2 for the presence of listed marine mammals.
- Activities listed in Appendix G Section 6.2.2 will only take place:
    - Between sunrise and sunset;
    - During conditions with a Beaufort Sea State of 4 or less; and
    - When the entire shutdown zone and adjacent waters are visible (e.g., monitoring effectiveness is not reduced due to rain, fog, snow, haze, or other environmental/atmospheric conditions).
- If visibility degrades such that PSOs can no longer ensure that the shutdown zone remains devoid of listed marine mammals during any of the activities listed in Appendix G Section 6.2.2, the crew will stop activities until the entire shutdown zone is visible and the PSOs has indicated that the zone remained devoid of listed marine mammals for 30 minutes.
- The PSOs will order ongoing activities listed in Appendix G Section 6.2.2 to immediately cease if one or more listed marine mammal(s) has entered, or appears likely to enter, the shutdown zone.
- If any of the activities listed in Appendix G Section 6.2.2 are shut down for less than 30 minutes due to the presence of listed marine mammals within the shutdown zone, the activities may commence when the PSOs provide assurance that listed marine mammals were observed exiting the shutdown zone. Otherwise, the activities may only commence after the PSO provides assurance that listed marine mammals have not been seen within the shutdown zone for 30 minutes (for cetaceans) or 15 minutes (for pinnipeds).
- If a listed marine mammal is observed within a shutdown zone, or is otherwise harassed, harmed, injured, or disturbed, the PSO will immediately report that occurrence to NMFS using the contact information specified in Appendix G Table 4.
- Prior to commencing any activity listed in Appendix G Section 6.2.2, or at changes in watch, PSOs will establish a point of contact with the construction crew. The PSO will brief the point of contact as to the shutdown procedures if the PSO observes that listed marine mammals are likely to enter the shutdown zone. If the point of contact goes "off shift" and delegates their duties, the point of contact must inform the PSO and brief the new point of contact.

Impact Pile Installation

- If no listed marine mammals are observed within the applicable shutdown zone (see Appendix G Section 6.2.2) for 30 minutes immediately prior to pile installation, soft-start procedures will be implemented immediately prior to activities. Soft-start procedures require contractors to provide an initial set of strikes at no more than half the operational power, followed by a 30-second waiting period, then two subsequent reduced-power-strike sets. A soft-start must be implemented:
    - At the start of each day's impact pile installation;
    - Any time pile installation has been shut down or delayed due to the presence of a listed marine mammal;
    - Whenever pile installation has temporarily stopped (less than or equal to 30 minutes) and PSO observation has also stopped; or
    - Whenever pile installation has temporarily stopped for more than 30 minutes and PSO observation has also stopped.
- Following the soft-start procedure, operational impact pile installation may commence and continue provided listed marine mammals remain absent from the shutdown zone.
- Following a lapse of impact pile installation activities of more than 30 minutes, the PSO will authorize resumption of impact pile installation only after the PSO provides assurance that listed species have not been present within the shutdown zone for at least 30 minutes immediately prior to resumption of operations.

Vibratory Pipe and Sheet Pile Removal and Installation

- If no listed marine mammals are observed within the applicable shutdown zone (see Appendix G Section 6.2.2) for 30 minutes immediately prior to pile removal or installation, vibratory pile removal or installation may commence. This pre-pile removal or installation observation period will take place at the start of each day's vibratory pile removal or installation, each time pile removal or installation has been shut down or delayed due to the presence of a listed species, and following a cessation of pile driving for a period of 30 minutes or longer.
- Following a lapse of vibratory pile removal or installation activities of more than 30 minutes, the PSO will authorize resumption of vibratory pile removal or installation only after the PSO provides assurance that listed marine mammals have not been present within the shutdown zone for at least 30 minutes immediately prior to resumption of operations.

DTH Drilling

- If no listed marine mammals are observed within the DTH pile driving shutdown zone immediately prior to pile driving or following a lapse of DTH activities of more than 30 minutes, the PSO will authorize the start or resumption of pile driving only after the PSO provides assurance that listed marine mammals have not been present within the shutdown zone for at least 30 minutes immediately prior to operations. No soft-start will be required for DTH pile driving.

Dredging/Screeding/Underwater Excavating Activities

- All vessels involved in dredging, screeding, and underwater excavating operations, including survey vessels, will transit at velocities less than or equal to 10 knots.
- Dredging, screeding, and underwater excavating activities will shut down whenever a listed marine mammal enters or appears likely to enter the applicable shutdown zone (see Appendix G Section 6.2.2).
- Following a lapse of dredging, screeding, and underwater excavating activities of more than 30 minutes, the PSO will authorize resumption of the activity only after the PSO provides assurance that listed marine mammals have not been present within the shutdown zone for at least 30 minutes immediately prior to resumption of operations.
- If dredged spoils are deposited at an in-water site, the site must have a current of greater than 3 knots, and the vessel making the deposit must keep moving at 3 knots or more throughout disposal.

Project-Dedicated Vessels

- Vessel operators will:
    - Maintain a watch for marine mammals at all times while underway;
    - Stay at least 91 m (100 yards) from listed marine mammals, except that they will remain at least 460 m (500 yards) from endangered North Pacific right whales;
    - Travel at less than 5 knots when within 274 m (300 yards) of a whale;
    - Avoid changes in direction and speed within 274 m (300 yards) of a whale, unless doing so is necessary for maritime safety;
    - Not position vessel(s) in the path of a whale, and not cut in front of a whale in a way or at a distance that causes the whale to change direction of travel or behavior (including breathing/surfacing pattern);
    - Reduce vessel speed to 10 knots or less when weather conditions reduce visibility to 1.6 km (1 mi) or less; and
    - Adhere to the Alaska Humpback Whale Approach Regulations when vessels are transiting to and from the Project site (see 50 CFR 216.18, 223.214, and 224.103(b); these regulations apply to all humpback whales). Specifically, pilot and crew will not:
        - Approach, by any means, including by interception (i.e., placing a vessel in the path of an oncoming humpback whale), within 91 m (100 yards) of any humpback whale;
        - Cause a vessel or other object to approach within 91 m (100 yards) of any humpback whale; or
        - Disrupt the normal behavior or prior activity of a humpback whale by any other act or omission.
- If a whale's course and speed are such that it will likely cross in front of a vessel that is underway, or approach within 91 m (100 yards) of the vessel, and if maritime conditions safely allow, the engine will be put in neutral and the whale will be allowed to pass beyond the vessel, except that vessels will remain 460 m (500 yards) from North Pacific right whales.

- Vessels will not allow lines to remain in the water unless both ends are under tension and affixed to vessels or gear.
- Project-specific barges will travel at 10 knots or less.

Vessel Transit, Western DPS Steller Sea Lions, and their Designated Critical Habitat

- Vessels will not approach within 5.5 km (3 nautical mi) of rookery sites listed in 50 CFR 224.103(d); and
- Vessels will not approach within 914 m (3,000 ft) of any Steller sea lion haulout or rookery.

Data Collection

- PSOs will record observations on data forms or into electronic data sheets.
- DOT&PF will ensure that PSO data will be submitted electronically in a format that can be queried, such as a spreadsheet or database (i.e., digital images of data sheets are not sufficient).
- PSOs will record the following:
    - Project name, date, shift start time, shift stop time, and PSO identifier;
    - Date and time of each reportable event (e.g., a listed marine mammal observation, operation shutdown, reason for operation shutdown, change in weather conditions);
    - Weather parameters (e.g., percent cloud cover, percent glare, visibility) and sea state where the Beaufort Wind Force Scale will be used to determine sea state (https://www.weather.gov/mfl/beaufort);
    - Species; numbers; and, if possible, sex and age class of observed listed marine mammal;
    - Predominant anthropogenic, sound-producing activities occurring during each listed marine mammal observation;
    - Observations of listed marine mammal behaviors, and reactions to anthropogenic sounds and presence;
    - Geographic coordinates of initial, closest, and last location of listed species, including distance from observer to the listed species, and minimum distance from the predominant sound-producing activity to listed species; and
    - Whether the presence of a listed species necessitated the implementation of mitigation measures to avoid acoustic impact (i.e., shutdown), and the duration of time that normal operations were affected by the presence of listed species.

Reporting

- Unauthorized take:
    - If a listed marine mammal is determined by the PSO to have been disturbed, harassed, harmed, injured, or killed (e.g., a listed marine mammal is observed in a harassment zone, entering a shutdown zone before operations can be shut down, or is injured or killed as a direct or indirect result of the action) without authorization, the PSO will report the incident to NMFS within 1 business day, with information submitted to akr.prd.records@noaa.gov. These PSO records will include:

  - Digital, query-able documents containing PSO observations and records, and digital, query-able reports;
  - Date, time, and location of each event (provide geographic coordinates);
  - Description of the event;
  - Number of individuals of each listed marine mammal species affected;
  - Time the animal(s) was first observed or entered the shutdown zone, and, if known, the time the animal was last seen or exited the zone, and the fate of the animal;
  - Mitigation measures implemented prior to and after the animal was taken;
  - Contact information for the PSO on duty on the vessel or the contact information for the individual piloting the vessel if a vessel struck a listed marine mammal; and
  - Photographs or video footage of the animal(s), if available.

- Stranded, injured, sick, or dead listed species (not associated with the Project):
  - If the PSO observes an injured, sick, or dead marine mammals (i.e., stranded), they will notify the Alaska Marine Mammal Stranding Hotline at 877-925-7773. The PSOs will submit photographs and available data to aid NMFS in determining how to respond to the stranded animal. If possible, data submitted to NMFS in response to stranded marine mammals will include date/time, location of stranded marine mammal, species and number of stranded individuals, description of the stranded marine mammal's condition, event type (e.g., entanglement, dead, floating), and behavior of live-stranded marine mammals.
- Illegal Activities:
  - If the PSO observes listed marine mammals or other marine mammals being disturbed, harassed, harmed, injured, or killed (e.g., feeding or unauthorized harassment), these activities will be reported to the NMFS Alaska Region Office of Law Enforcement (Appendix G Table 4; 800-853-1964).
  - Data submitted to NMFS will include date/time, location, description of the event, and any photographs or videos taken.
- North Pacific right whales:
  - All observations of North Pacific right whales will be reported to NMFS within 24 hours. Photographs and/or video should be taken, if possible, to aid in photo identification of individual animals. Reports will include all applicable information that will be included in a final report.
- Extralimital sightings:
  - All observations of ESA-listed marine mammal species not considered in this consultation will be reported to NMFS within 72 hours. Photographs and/or video should be taken, if possible, to aid in photo identification of individual animals. Reports will include all applicable information that would be included in a final report.

- Final report:
  - A final report will be submitted to NMFS within 90 calendar days of the completion of the Project summarizing the data recorded by emailing it to akr.prd.records@noaa.gov. The report will summarize all in-water activities associated with the Proposed Action, and results of PSO monitoring conducted during in-water activities.
  - The final report will include:
    - Summaries of monitoring efforts, including dates and times of construction; dates and times of monitoring; and dates, times, and duration of shutdowns due to listed marine mammal presence;
    - Dates and times of listed marine mammal observations, geographic coordinates of listed marine mammals at their closest approach to the Project site, including date, water depth, species, age/size/gender (if determinable), and group sizes;
    - Number of listed marine mammals observed (by species) during periods with and without Project activities (and other variables that could affect detectability);
    - Observed listed marine mammal behaviors and movement types, and Project activity at the time of observation;
    - Numbers of marine mammal observations/individuals seen, and Project activity at the time of observation;
    - Any photographs or videos taken of marine mammals; and
    - Digital, query-able documents containing PSO observations and records, and digital, query-able reports.

In addition, as part of the NMFS BiOp (Appendix G), NMFS recommended the following conservation measures, which DOT&PF has incorporated:

- Project vessel crews (construction and materials barges and tugs) should participate in the Whale Alert program to report real-time sightings of whales while transiting the waters of Southeast Alaska and to minimize the risk of vessel strikes. More information is available at https://www.fisheries.noaa.gov/resource/tool-app/whale-alert
- Without approaching whales, Project vessel crews should attempt to photograph humpback whale flukes and record Global Positioning System (GPS) coordinates of the sightings during transit. These data should be included in the final report submitted to the NMFS Alaska Region Office.
- Without approaching whales, Project vessel crews should attempt to photograph and/or video North Pacific right whales and record GPS coordinates of the sightings during transit. These data should be submitted to the NMFS Alaska Region Office as soon as possible.
- Without approaching sea lions, Project vessel crews should attempt to photograph Steller sea lions when brand numbers are visible and record GPS coordinates of the sightings during transit. These data should be included in the final report submitted to NMFS Alaska Region Office.

4.2.2 Sunflower Sea Stars

DOT&PF will require and provide the following to all construction crew members if sunflower sea stars are listed under the ESA at the time of construction.

- Sunflower sea star and sea star wasting syndrome identification training for construction crew members
- Voluntary sunflower sea star observation forms for crew members
- Visual inspections without needing the use of additional equipment
- Relocation of sunflower sea stars from piles that have been removed to an area outside the construction footprint:
    - Due to safety concerns, completed once a pile is removed and set down on accessible uplands/a barge deck, when feasible
- A single, pre-construction survey at the start of the Project to document presence or absence of sunflower sea stars in the immediate construction area:
    - Survey will note if sea star wasting syndrome is observed on any sighted individuals

4.2.3 Fish and Essential Fish Habitat

DOT&PF has included the following mitigation measures to reduce Proposed Action impacts on fish and EFH:

- Light transmitting decking will be used to prevent submerged aquatic vegetation loss and bed fragmentation due to lighting.
- Creosote-treated timber piles will be disposed in an upland location to prevent reuse in the marine environment. All debris, including attached contaminated sediments, will be disposed in an approved upland facility.
- A vibratory hammer will be used when driving hollow steel piles. Where impact hammers are required, piles will be driven as deep as possible with a vibratory hammer first, then be driven into their final position with an impact hammer.
- Piles will be driven when the current is reduced within areas of strong current to minimize the number of fish exposed to adverse levels of underwater sound.
- Piles will be removed completely instead of cutting them off at the mudline.
- Reflective materials will be used instead of materials that absorb light on the underside of the dock to reflect ambient light in Tatitlek.
- Impact hammering will not be used in Sawmill Bay between March and June.
- The total number of piles driven will be reduced as much as practicable.
- The contractor will be encouraged to limit in-water pile driving of temporary piles as much as possible.
- Piles will be removed using a vibratory hammer to reduce noise impacts on fish and hatchery operations.
- A vibratory hammer will be used to break the bond between the sediment and the pile to reduce the amount of sediment sloughing off the pile in the water column.
- The contractor will be encouraged to limit in-water pile driving of temporary piles as much as possible.

- The dredged area at the Cordova Ferry Terminal will be the smallest practicable to achieve the Proposed Action purpose.
- Sediments dredged from the Cordova Ferry Terminal will be tested prior to placing the dredged material in the disposal site.
- Existing structures will be replaced in largely the same location in Cordova.
- The Chenega Proposed Action will be designed to use a steel ramp rather than a marine fill-supported causeway and ramp.

4.2.4 Wetlands, Waters of the United States, and Vegetation

DOT&PF has included the following mitigation measures to avoid impacts on vegetation, wetlands, and WOTUS:

- Placing fill material into wetlands will be avoided.
- Vegetation will be removed only within areas where vegetation has been previously removed or disturbed.
- The Proposed Action will be designed to reduce the number of piles that would be placed within WOTUS to the greatest extent practicable.

5 Agency Coordination and Public Involvement

Agency and public stakeholders have been involved throughout the Proposed Action planning process. Coordination on the Proposed Action is ongoing and will include outreach to regulatory agencies, Tribes and Native corporations, and the public throughout construction.

Appendix T (Agency Coordination and Public Involvement) provides details of all coordination efforts that have occurred, while Appendix U (Public Notices, Scoping Letters, and Comments) provides copies of public notices, scoping letters, and comments received during scoping.

5.1 Agency Coordination

Scoping letters were sent to agencies on September 24, 2024, and an agency scoping meeting was held on October 10, 2024, to introduce and seek agency comments on the Proposed Action. Responses were received from USEPA, ADNR, USFWS, ADEC, Chenega Regional Development Group, and USACE. Details on the scoping meetings and a summary of agency scoping comments can be found in Appendices T and U.

All necessary agency coordination has been completed or is currently underway for the Proposed Action. Coordination with the Alaska SHPO concluded on July 23, 2025, when it sent a letter stating that DOT&PF and MARAD had provided sufficient information to support a finding of “no adverse effect” for the Proposed Action and concurring with this finding of effect (Appendix R Section 106 Consultation/ Coordination). Coordination with NMFS regarding impacts to endangered species concluded on July 24, 2025, with the issuance of their ESA Section 7(a)(2) Biological and Conference Opinion (Appendix G). Additional coordination with NMFS regarding

impacts to all marine mammals concluded on July 25, 2025, with issuance of IHAs for each Project location (Appendix N). Coordination with NOAA regarding EFH concluded on April 10, 2025, with a letter from MARAD agreeing to implement the conservation recommendations made by NOAA (Appendix I Essential Fish Habitat Assessment). Coordination with USFWS regarding impacts to sea otters under the MMPA is ongoing and will be concluded prior to the start of in-water construction. Coordination with USACE will be ongoing during the Section 10/404 permit application process; this will be concluded prior to the start of in-water construction. On September 25, 2025, USACE issued a Nationwide Permit authorization for geotechnical investigations to verify ground conditions for the engineering of the proposed Cordova Ferry Terminal dock improvements (Appendix V); the permit authorization expires September 24, 2026.

An Agency and Interested Party meeting to review the EA was held on October 28, 2025. Details on the meeting and a summary of comments received during the public comment period can be found in Appendices T and U.

5.2 Tribal Consultation

Scoping letters were sent to Tribes and Native corporations on September 24, 2024; letters were sent to representatives of the Native Village of Eyak, Eyak Corporation, Chenega IRA Council, Chenega Corporation, Chenega Village, Tatitlek Corporation, and Tatitlek IRA Council. DOT&PF sent Section 106 initiation letters to Tribes on October 7, 2024, starting a 30-day comment period (see Appendix R Section 106 Consultation/Coordination). Details regarding Tribal scoping comments can be found in Appendix T Agency Coordination and Public Involvement.

Section 106 letters were sent to Tribes on June 3, 2025, starting a 30-day comment period, which was extended until July 11, 2025 (see Appendix R Section 106 Consultation/Coordination). A response was received from the Chenega Corporation that they agreed with the finding of “no historic properties affected” for the Chenega Ferry Terminal Proposed Action and had no other comments. No other comments were received from Tribes and Native corporations.

Tribes and Native corporations were invited to an Agency and Interested Party meeting to review the EA on October 28, 2025. A response was received from the Chenega IRA Council expressing general support for the Project and its construction.

5.3 Public Involvement

Outreach activities included a *Public Involvement Plan* and various materials and methods, including two in-person comment sessions on the EA held in Cordova in November 2025. A comprehensive list of key public outreach activities can be found in Appendix T Agency Coordination and Public Involvement.

5.4 Permits

Table 5-1 provides a list of potential permits or environmental clearances that would be required to construct the Proposed Action.

Table 5-1. Required permits or environmental clearances.

Agency	Permit/Authorization	Permit No.	Status	Issuance Date	Expiration Date
Federal	—	—	—	—	—
USACE	CWA Section 404/10 Nationwide Permit Authorization (Cordova Geotechnical Investigations)	POA-2025- 00545	Issued	September 25, 2025	September 24, 2026
USACE	Section 10 Rivers and Harbors Act Authorization	TBD	TBD; must be secured prior to in-water construction.	TBD	TBD
USFWS	Bald and Golden Eagle Protection Act Permit	TBD	TBD until pre-construction survey determines if nearby active nest may be disturbed	TBD	TBD
USFWS	MMPA, LOA	—	TBD; consultation ongoing for northern sea otters	—	—
NMFS	ESA, Section 7 Consultation (Biological and Conference Opinion)	AKRO-2024-02972	Biological and Conference Opinion and Incidental Take Statement issued	July 24, 2025	N/A
NMFS	ESA, Section 7, Letter of Concurrence	AKRO-2025-01564	Letter of Concurrence issued	June 24, 2025	N/A
NMFS	MMPA, IHAs	90 *Federal Register* 35845	IHAs received for Chenega, Cordova, and Tatitlek	July 25, 2025	July 25, 2027
NMFS	MSA, EFH Consultation	AKRO-2025-00686	Adverse impacts on EFH; conservation recommendations adopted	April 9, 2025	N/A
State	—	—	—	—	—
ADEC	Section 401 Certificate of Reasonable Assurance	TBD	TBD; ADEC 401 approval required for issuance of a 404 permit	TBD	TBD
ADEC	CWA Section 402	TBD	TBD	TBD	TBD
ADNR – SHPO	NHPA, Section 106	3130-1R MARAD/ 2025-00604	SHPO concurrence received June 13, 2025: *No Historic Properties Affected* for Chenega and Tatitlek; SHPO concurrence received July 23, 2025: *No Adverse Effect* for Cordova	June 13 and July 23, 2025	N/A
Local	—	—	—	—	—
City of Cordova	Floodplain Development Permit	TBD	TBD	TBD	TBD

Notes: N/A = not applicable; TBD = to be determined

6 List of Preparers

Table 6-1 lists preparers of this EA.

Table 6-1. List of preparers.

Name	Organization	Role
Christy Gentemann	DOT&PF	Regional Environmental Manager
Nate Geary	DOT&PF	Project Manager
Erin Kendle	MARAD	Environmental Protection Specialist
Taylor Horne	HDR	Project Manager
Simon Wigren	HDR	NEPA Document Lead; Sr. Environmental Scientist
Aziz Atallah	HDR	Environmental Analyst, Human
Brett Carrothers	HDR	Sr. Environmental Scientist, Biological
Josh Buza	HDR	Environmental Scientist, Physical, Biological
Laurie Cummings	HDR	Sr. Environmental Analyst, Human
Tamara Holman	HDR	Cultural Resources Specialist
Stephanie Hernandez McGavin	HDR	Environmental Analyst, Human
Robyn Miller	HDR	Sr. Cultural Resources Specialist
Julie Jessen	HDR	Strategic Communications and Public Involvement
Li Philips	HDR	Environmental Analyst
Virgil St. Aime	HDR	Environmental Analyst
Valerie Watkins	HDR	Environmental Analyst
Zoe Stroebele	HDR	GIS Analyst
Elizabeth Grover	HDR	Technical Editor

Notes: Sr. = Senior

7 References

Able, K.W., and J. Fodrie
2014 *Distribution and Dynamics of Habitat Use by Juvenile and Adult Flatfishes. Flatfishes: Biology and Exploitation*. doi.org/10.1002/9781118501153.

ADEC (Alaska Department of Environmental Conservation)
No Date-a Contaminated Sites database. Accessed at https://www.arcgis.com/apps/mapviewer/index.html?webmap=315240bfbaf84aa0b8272ad1cef3cad3.
No Date-b Spills database. Accessed at https://dec.alaska.gov/Applications/SPAR/PublicMVC/PERP/SpillSearch/.
2025 Alaska State Game Refuges, Critical Habitat, Sanctuaries website. Accessed at https://gis.data.alaska.gov/datasets/ADEC::alaska-state-game-refuges-critical-habitat-sanctuaries-1/explore on January 2025.

Adelfio, Luca
2016 Geomorphic and Climatic Controls on Water Temperature and Streambed Scour, Copper River Delta, Alaska: Implications for Understanding Climate Change Impacts to the Pacific Salmon Egg Incubation Environment. Master's thesis, Oregon State University, Corvallis. Accessed at https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd768787.pdf.

ADF&G (Alaska Department of Fish and Game)
2024 *2024-2025 Alaska Hunting Regulations Effective July 1, 2024 – June 30, 2025*. Anchorage, Alaska.
2025a Personal Communications. ADF&G Fishery Biologist. February 7, 2025.
2025b Short-tailed Albatross. Accessed at https://www.adfg.alaska.gov/index.cfm?adfg=shorttailedalbatross.main on September 24,2025.

ADNR (Alaska Department of Natural Resources)
2024 Alaska Heritage Resources Survey. Restricted access database maintained by ADNR, Office of History and Archaeology, Anchorage, Alaska.
2025 Water rights map. Accessed at https://dnr.alaska.gov/mlw/water/data/map/ on January 8, 2025.

ADOH (Alaska Department of Health)
2023 Valdez Public Health Center webpage. Updated July 12, 2023. Accessed at https://health.alaska.gov/dph/Nursing/Pages/Valdez-Public-Health-Center.aspx.

ADOLWD (Alaska Department of Labor and Workforce Development)
No Date Alaska Population Estimates. Accessed at https://live.laborstats.alaska.gov/data-pages/alaska-population-estimates.

ADPS (Alaska Department of Public Safety)
2022 *Crimes in Alaska 2022. Uniform Crime Reporting Program, Summary Reporting System, Annual Report*. October 2023. Accessed at https://dps.alaska.gov/getmedia/143c5db6-6206-4fd8-b45e-7a0cbb7f611e/Crime-in-Alaska-2022.
2025a Village Public Safety Officers, Frequently Asked Questions webpage. Accessed at https://dps.alaska.gov/ast/vpso/faq in January 2025.
2025b Fire Department Registration Status webpage. Accessed at https://dps.alaska.gov/Fire/fdregistrationstatus in January 2025.

Agnew::Beck (Agnew::Beck Consulting)
2019 *Cordova Comprehensive Plan*. Update – FINAL. December 4, 2019. Accessed at https://www.cityofcordova.net/wp-content/uploads/2021/08/2019-Cordova-Comprehensive-Plan.pdf.pdf.

Alaska Business
2024 "Rebuilt Cordova Small Boat Harbor Opening for Summer," *Alaska Business*. July 8, 2024. Accessed at https://www.akbizmag.com/industry/construction/rebuilt-cordova-small-boat-harbor-opening-for-summer/.

AMHS (Alaska Marine Highway System)
2009 AMHS Fleet EPA Emissions Study. Presented October 6, 2009.
2025 Schedules webpage. AMHS website. Accessed at https://dot.alaska.gov/amhs/schedules.shtml in February 2025.

Aurora Consulting
2008 Chenega Bay Community Profile 2000–2010. Accessed at https://apps-afsc.fisheries.noaa.gov/REFM/Socioeconomics/Projects/communityprofiles/Chenega_Bay_Profile_2000_2010.pdf.

Bailey, K.M., H. Nakata, and H.W. Van der Veer
2005 The planktonic stages of flatfishes: physical and biological interactions in transport processes. *Flatfishes: Biology and Exploitation*. doi.org/10.1002/9781118501153

Barron, M.G., D.N. Vivian, R.A. Heintz, and U.H. Yim
2020 Long-term ecological impacts from oil spills: Comparison of Exxon Valdez, Hebei Spirit, and Deepwater Horizon. *Environmental Science Technology*.

Birket-Smith, Kaj, and Frederica de Laguna
1938 *The Eyak Indians of the Copper River Delta, Alaska*. Levin & Munksgaard, E. Munksgaard, København.

Black, Lydia
2004 *Russians in Alaska, 1732–1867*. University of Alaska Press, Fairbanks, Alaska.

BLM (Bureau of Land Management)
2025 Alaska Administered Lands. Geographic Information Systems online data. Accessed at https://gbp-blm-egis.hub.arcgis.com/datasets/BLM-EGIS::blm-ak-administered-lands/about.

BOEM (Bureau of Ocean Energy Management)
2011 Shipwrecks Off Alaska's Coast, Shipwreck Table. Available at https://www.boem.gov/about-boem/shipwrecks-alaskas-coast, accessed October 12, 2024.

Botz, J., H. Scannell, M. Olson, J. Morella, and R. Ertz
2024 *2023 Prince William Sound Area Finfish Management Report*. Fisheries Management Report No. 24-15. ADF&G. May 2024. Anchorage, Alaska.

Buzzell, Rolfe G.
2002 *Cordova Historic Building Survey for the First Street Sidewalk Improvement Project and the Copper River Highway Bicycle and Pedestrian Path, Mile 0-10.7*. Office of History and Archaeology Report Number 85. Submitted to ADNR, Office of History and Archaeology. Copies available from ADNR, Office of History and Archaeology, Anchorage, Alaska.

Buzzell, Rolfe G., Steven R. Posgate, David McMahan, and Mark E. Pipkin
1993 *Copper River Highway Cultural Resources Reconnaissance Survey*. Office of History and Archaeology Report Number 35. Submitted to ADNR, Office of History and Archaeology. Copies available from ADNR, Office of History and Archaeology, Anchorage, Alaska.

Caltrans (California Department of Transportation)
2016 *Technical Guidance for the Assessment and Mitigation of the Effects of Traffic Noise and Road Construction Noise on Birds*. CTHWANP-RT-15-306.04.2. Sacramento, California.

Campbell, R.W.
2018 Hydrographic Trends in Prince William Sound, Alaska, 1960–2016. *Deep Sea Research Part II: Topical Studies in Oceanography* 147:43–57. doi.org/10.1016/j.dsr2.2017.08.014

Case, J.E., D.F. Barnes, G. Plafker, and S.L. Robbins
1966 *Gravity survey and regional geology of the Prince William Sound epicentral region, Alaska*. USGS Professional Paper, 543–C.

Chenega (Chenega Regional Development Group)
2023 *Native Village of Chenega Tribal Transportation Safety Plan*. September 2023

Chugachmiut
2025 Health Service webpage. Accessed at https://www.chugachmiut.org/health-social-services/clinics/ in January 2025.

City of Cordova
2015 City of Cordova, Alaska, Official Zoning Map. August 2015. Accessed at https://www.cityofcordova.net/wp-content/uploads/2021/01/2015-Cordova-Official-Zoning-Map.pdf.
2024a Public Works. Accessed at https://www.cityofcordova.net/public-works/ on January 8, 2025.
2024b Cordova Economy webpage. Accessed at https://www.cityofcordova.net/cordova-economy/.

2024c Cordova Volunteer Fire Department webpage. Accessed at https://www.cityofcordova.net/cordova-volunteer-fire-dept/ in January 2025.
2024d Parks, Trails, & Open Spaces webpage. Accessed at https://www.cityofcordova.net/parks/ in February 2025.

Clark, Donald W.
1984 Pacific Eskimo: Historical Ethnography. In *Handbook of North American Indians*, Vol. 5: Arctic, edited by David Damas, pp. 185–197. Smithsonian Institution, Washington, D.C.
2001a Ocean Bay. In *Encyclopedia of Prehistory*, Vol. 2, Arctic and Subarctic, edited by Peter N. Peregrine, and Melvin Ember, pp. 152–164. Springer Science + Business Media, New York.
2001b Kodiak. In *Encyclopedia of Prehistory*, Vol. 2, Arctic and Subarctic, edited by Peter N. Peregrine, and Melvin Ember, pp. 71–86. Springer Science + Business Media, New York.

CONSOR (CONSOR Engineers, LLC.)
2022a *Chenega Dock Structure No. 0184 – AMHS Shore Facilities Condition Survey Report; NBI Routine Bridge & Fracture Critical Inspection Report*. Final. Inspection Date: August 13, 2022. Report Date: October 03, 2022. Prepared for DOT&PF, Juneau, Alaska. Tigard, Oregon.
2022b *Chenega Ramp Structure No. 0185 – AMHS Shore Facilities Condition Survey Report; NBI Routine Bridge & Fracture Critical Inspection Report*. Final. Inspection Date: August 13, 2022. Report Date: October 03, 2022. Prepared for DOT&PF, Juneau, Alaska. Tigard, Oregon.
2022c *Tatitlek Ferry Terminal Structure No. 0183 - AMHS Shore Facilities Condition Survey Report; NBI Routine Bridge & Fracture Critical Inspection Report*. Final. Inspection Date: August 14, 2022. Report Date: October 03, 2022. Prepared for DOT&PF, Juneau, Alaska. Tigard, Oregon.

Davis, Nancy Yaw
1984 Contemporary Pacific Eskimo. In *Handbook of North American Indians*, Vol. 5: Arctic, edited by David Damas, pp. 197–204. Smithsonian Institution, Washington, D.C.

DCRA (Alaska Division of Community and Regional Affairs)
2024a Tatitlek, Alaska. In Community Profiles. State of Alaska, Department of Commerce, Community, and Economic Development. Available at https://dcced.maps.arcgis.com/apps/MapJournal/index.html?appid=be29276cb75b4216aef34f8515e477d9.
2024b Chenega, Alaska. In Community Profiles. State of Alaska, Department of Commerce, Community, and Economic Development. Available at https://dcced.maps.arcgis.com/apps/MapJournal/index.html?appid=f36a54af78f144aea0415c6dbf412c26.
2024c Cordova, Alaska. In Community Profiles. State of Alaska, Department of Commerce, Community, and Economic Development. Available at https://dcced.maps.arcgis.com/apps/MapJournal/index.html?appid=be29276cb75b4216aef34f8515e477d9.

de Laguna, Frederica
1956 *Chugach Prehistory: The Archaeology of Prince William Sound, Alaska*. University of Washington Press, Seattle, Washington.
1990 Eyak. In *Handbook of North American Indians*, Vol. 7: Northwest Coast, edited by Wayne Suttles, pp. 189–196. Smithsonian Institution, Washington, D.C.

de Laguna, Frederica, and Catharine McClellan
1981 Ahtna. In *Handbook of North American Indians*, Vol. 6: Subarctic, Vol 6, edited by June Helm, pp. 641–663. Smithsonian Institution, Washington, D.C.

Dickerson, C., K.J. Reine, and D.G. Clarke
2001 *Characterization of underwater sounds produced by bucket dredging operations*. DOER Technical Notes Collection, U.S. Army Engineer Research and Development Center Technical Notes – Dredging Operations and Environmental Research Program-E14, U.S. Army Engineer Research and Development Center, Vicksburg, Mississippi.

Dorava, J.M., and J.M. Sokup
1994 *Overview of Environmental and Hydrogeologic Conditions at the Merle K. "Mudhole" Smith Airport near Cordova, Alaska.* USGS Open-File Report 94-328.

Doser, Diane I., Alejandro de la Peña, and Annette M. Veilleux
2008 *Seismicity of the Prince William Sound Region and Its Relation to Plate Structure and the 1964 Great Alaska Earthquake*. Active Tectonics and Seismic Potential of Alaska Geophysical Monograph Series. The American Geophysical Union.

DOT&PF (Alaska Department of Transportation and Public Facilities)
2022 *Cordova Ferry Terminal No. 0180 - AMHS Shore Facilities Condition Survey Report; NBI Routine Bridge & Fracture Critical Inspection Report.* January 10, 2022. State Project No.: SAMHS00298. NBI Federal Project No.: HFHWY00189.
2023 *Alaska Marine Highway System 2023 Annual Traffic Volume Report*. Accessed at https://dot.alaska.gov/amhs/doc/ATVR/atvr_2023.pdf.

EVOSTC (Exxon Valdez Oil Spill Trustee Council)
2014 Status of Injured Resources and Services. Accessed at https://evostc.state.ak.us/media/4119/2014irsupdate.pdf.
2024 Commercial Fishing. Accessed at https://evostc.state.ak.us/status-of-restoration/commercial-fishing/ on September 20, 2024.

Fall, J.A., and G. Zimpelman
2016 *Update on the Status of Subsistence Uses in Exxon Valdez Oil Spill Area Communities, 2014*. ADF&G Technical Paper No. 412. June 2016. ADF&G, Anchorage, Alaska. Accessed at https://www.adfg.alaska.gov/TechPap/TP412.pdf.

Federal Subsistence Board
2024 *Federal Subsistence Management Regulations for the Harvest of Wildlife on Federal Public Lands in Alaska Effective 1 July 2024 – 30 June 2026*. Anchorage, Alaska.

FEMA (Federal Emergency Management Agency)
2025 Flood Map Service Center. Accessed at https://msc.fema.gov/portal/home on January 10, 2025.

Forest Service (U.S. Department of Agriculture Forest Service)
2020 *Chugach National Forest Land Management Plan*. Accessed at https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd725270.pdf.

Gay, Shelton M.
2013 *Estuarine Conditions and Water Exchange in Fjords of Prince William Sound, Alaska*. PhD dissertation, Texas A&M University.

GDM (GDM, Inc.)
2008 *Chenega Bay Master Plan*. Updated July 2008. Accessed at https://www.commerce.alaska.gov/dcra/admin/PlanMgmt/ViewFile/c0f12bb7-ef0b-470a-9c63-2d251cb40f31.

Giefer, J. and S. Graziano
2024 *Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes – Southcentral Region, Effective June 2024*. Special Publication No. 24-03. ADF&G. June 2024. Anchorage, Alaska.

Gray, Connie, and Shawna Rider
2024 *Cordova Ferry Terminal Improvements Project - Cultural Resources Evaluation.* Prepared by Jacobs, Inc. for DOT&PF. Copies available from DOT&PF, Anchorage, Alaska.

Gulf Watch Alaska
2025 Oceanic Conditions in Prince William Sound. Accessed at https://gulfwatchalaska.org/monitoring/environmental-drivers/oceanographic-conditions-in-prince-william-sound/ on January 28, 2025.

Halvorsen, M.B., B.M. Casper, C.M. Woodley, T.J. Carlson, and A.N. Popper
2011 *Predicting and mitigating hydroacoustic impacts on fish from pile installations*. NCHRP Research Results Digest 363, Project 25-28, National Cooperative Highway Research Program, Transportation Research Board, National Academy of Sciences, Washington, D.C.

Harris, Olen
2025 Personal communications with Olen Harris, Executive Director of NPRHA, regarding land ownership in Chenega and Tatitlek. January 24, 2025.

HDR (HDR Engineering, Inc.)
2024a *Air Quality Data Gap Technical Memorandum*. PWS Ferry Terminal Project. October 12, 2024. Prepared for DOT&PF.

2024b *Office-Based Wetland and Waterbody Delineation Report*. PWS Ferry Terminal Improvements: Chenega, Cordova, and Tatitlek. October 2, 2024. Prepared for DOT&PF.

Henley, W., M. Patterson, R. Neves, and A.D. Lemly
2000 Effects of sedimentation and turbidity on lotic food webs: A concise review for natural resource managers. *Reviews in Fisheries Science* 8:125–139.

Holman, Tamara
2025 *Prince William Sound Ferry Terminal Projects – Cultural Resources Desktop Study. Chenega, Cordova, and Tatitlek Ferry Terminals, Alaska Federal Project*. Prepared by HDR Alaska, Inc., for DOT&PF, Southcoast Region, Juneau, Alaska.

Isleib, M.E., and B. Kessel
1973 *Birds of the North Gulf Coast – Prince William Sound Region, Alaska*. Biological Papers of the University of Alaska Number 14. November 1973. Fairbanks, Alaska.

Johnson, Jean M., Kenji Satake, Sanford R. Holdahl, and Jeanne Sauber
1996 The 1964 Prince William Sound earthquake: Joint inversion of tsunami and geodetic data. *Journal of Geophysical Research* 101(B1):523–532.

Johnson, S.W., J.F. Thedinga, A.D. Neff, P.M. Harris, M.R. Lindeberg, J.M. Maselko, and S.D. Rice
2010 *Fish Assemblages in Nearshore Habitats of Prince William Sound*. NOAA, Alaska Fisheries Science Center. Juneau, Alaska.

Kaplan, M., T. Mooney, J. Partan, and A. Solow
2015 Coral reef species assemblages are associated with ambient soundscapes. *Marine Ecology Progress Series* 533:93–107.

Kaplan, M.B., T. Mooney, M.O. Lammers, and E. Zang
2016 Temporal and spatial variability in vessel noise on tropical coral reefs. *Proceedings of Meetings on Acoustics* 27:005002.

Keating, J.M., D. Koster, and J.M. Van Lanen
2020 *Recovery of a Subsistence Way of Life: Assessments of Resource Harvests in Cordova, Chenega, Tatitlek, Port Graham, and Nanwalek, Alaska since the Exxon Valdez Oil Spill.* ADF&G Technical Paper No. 471. December 2020. Accessed at https://www.pwsrcac.org/wp-content/uploads/filebase/programs/environmental_monitoring/Recovery-of-a-Subsistence-Way-of-Life.pdf.

Knight, R.L., and K.J. Gutzwiller
1995 *Wildlife and Recreationists: Coexistence Through Management and Research*.

Lanckneus, Jean, Vera Van Lancker, Geert Moerkerke, Dries Van Den Eynde, Michael Fettweis, Marc De Batist, and Patric Jacobs
2001 *Investigation of the natural sand transport on the Belgian continental shelf (BUDGET)*. Final Report, 104. Federal Office for Scientific, Technical and Cultural Affairs (OSTC), Brussels (Annex).

Limpinsel, D.E., M.P. Eagleton, and J.L. Hanson
2017 *Impacts to Essential Fish Habitat from Non-fishing Activities in Alaska. EFH 5 Year Review: 2010 through 2015*. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-F/AKR-14.

Lindeberg, Mandy R., Jacek Maselko, Ron A. Heintz, Corey J. Fugate, and Larry Holland
2018 Conditions of persistent oil on beaches in Prince William Sound 26 years after the *Exxon Valdez* spill. *Deep-Sea Research Part II: Topical Studies in Oceanography* 147:9–19.

Logan, J.M., A. Boeri, J. Carr, T. Evans, E.M. Feeney, K. Frew, F. Schenck, and K.H. Ford
2021 A Review of Habitat Impacts from Residential Docks and Recommended Best Management Practices with an Emphasis on Northeastern United States. *Estuaries and Coasts*. doi.org/10.1007/s12237-021-01006-0.

MARAD (U.S. Maritime Administration)
2023 United States Marine Highway Route Designations.

Marshall, N.R.
2015 *Signature of Recent Sediment Accumulating in Prince William Sound, Alaska: A Record of Storms, Earthquakes, and Seasonal Inputs*. Paper 1539617952. Virginia Institute of Marine Science. doi:10/25773/v5-ft7r-7291.

McInnes, A.S., C.C. Nunnally, G.T. Rowe, R.W. Davis, and A. Quigg
2015 Undetected Blooms in Prince William Sound: Using Multiple Techniques to Elucidate the Base of the Summer Food Web. *Estuaries and Coasts* 38(2015):2227–2239. DOI 10.1007/s12237-014-9924-0.

McKinley (McKinley Research Group, LLC)
2021 *Prince William Sound Comprehensive Economic Development Strategy (2021-2025)*. Prepared by McKinley for Prince William Sound Development District. September 2021. Accessed at https://www.pwsedd.org/wp-content/uploads/2024/11/20210927-PWS-CEDS-Final.pdf.

Moffit, Fred H.
1954 *Geology of the Prince William Sound Region, Alaska*. Geological Survey Bulletin 989-E. USGS.

Munsch, S.H., J.R. Cordell, and J.D. Toft
2017 Effects of shoreline armouring and overwater structures on coastal and estuarine fish: opportunities for habitat improvement. *Journal of Applied Ecology* 54(5):1373–1384.

Naske, Claus M., and Herman E Slotnick
2014 *Alaska: A History*. University of Oklahoma Press, Norman, Oklahoma.

Nightingale, B., and C.A. Simenstad
2001 *Overwater Structures: Marine Issues*. White Paper. Washington State Transportation Commission, Planning and Capital Program Management. Olympia, Washington.

Nixon, Zachary, and Jacqueline Michel
2018 A Review of distribution and quantity of lingering subsurface oil from the *Exxon Valdez* Oil Spill. *Deep-Sea Research Part II: Topical Studies in Oceanography* 147:20–26.

NOAA (National Oceanic and Atmospheric Administration)
2016 Tsunami Historical Series: Alaska – 1964 – Science On a Sphere. National Oceanic and Atmospheric Administration. Last modified March 22, 2016. Accessed at https://sos.noaa.gov/catalog/datasets/tsunami-historical-series-alaska-1964/.
2024 Alaska ShoreZone. Accessed at https://www.fisheries.noaa.gov/alaska/habitat-conservation/alaska-shorezone on December 18, 2024.

NOAA Fisheries (National Oceanic and Atmospheric Administration National Marine Fisheries Service)
2018 Alaska Endangered Species and Critical Habitat Mapper Web Application. NOAA Fisheries. Last modified January 29, 2018. Available at https://www.fisheries.noaa.gov/resource/data/alaska-endangered-species-and-critical-habitat-mapper-web-application.
2024 Multi-Species Pile Driving Calculator. Version 2.0 Multi-Species: October 2024.

Noll, C.J., T.M. Dellapenna, A.K. Krause, and R.W. Davis
2008 A High-Resolution Geophysical Investigation of Sediment Distribution Controlled by Catchment Size and Tides in a Multi-Basin Turbid Outwash Fjord: Simpson Bay, Prince William Sound, Alaska. *Geo-Marine Letters* 29(1):1–16. DOI: 10.1007/s00367-008-0120-8.

NPFMC (North Pacific Fishery Management Council)
2018 *Fishery Management Plan for the Salmon Fisheries in the EEZ off Alaska*. October 2018. Anchorage, Alaska.
2020 *Fishery Management Plan for Groundfish of the Gulf of Alaska*. November 2020. Anchorage, Alaska.

NPS (National Park Service)
2025 TractsNet AGOL Public website. Authoritative Land Status Data. Accessed at https://www.arcgis.com/apps/webappviewer/index in January 2025.

NRT (The National Response Team)
1989 *The Exxon Valdez Spill – A Report to the President*. The National Response Team, May 1989. Accessed at https://library.oarcloud.noaa.gov/noaa_documents.lib/NOAA_related_docs/oil_spills/ExxonValdez_NRT_1989_report_to_president.pdf.

Palanques, Albert, Jorge Guillén, Pere Puig, and Ruth Durán
2022 Effects of long-lasting massive dumping of dredged material on bottom sediment and water turbidity during port expansion works. *Ocean and Coastal Management* 223:106113.

Pine, M.K., A.G. Jeffs, D. Wang, and C.A. Radford
2016 The potential for vessel noise to mask biologically important sounds within ecologically significant embayments. *Ocean & Coastal Management* 127:63–73.

Plafker, George
1965 Tectonic Deformation Associated with the 1964 Alaska Earthquake. *Science* 148:1675–1687.

PND (PND Engineers, Inc.)
2011 *Statter Harbor Improvements Sound Study DH08-081*. Prepared for City and Borough of Juneau, Docks and Harbors Department, Juneau, Alaska. November 2008; revised March 2011. Prepared by PND Engineers, Inc., Juneau, Alaska.

Poe, A., R. Gimblett, and M. Burcham
2009 *Evaluating the Subsistence eService Recovery: Spatial and Temporal Characterization of Prince William Sound Subsistence Harvest Activities, Exxon Valdez Oil Spill Restoration Project Final Report*. Anchorage, Alaska.

Popper, A.N., A.D. Hawkins, R.R. Fay, D.A. Mann, S. Bartol, T.J. Carlson, S. Coombs, W.T. Ellison, R.L. Gentry, M.B. Halvorsen, S. Løkkeborg, P.H. Rogers, B.L. Southall, D.G. Zeddies, and W.N. Tavolga
2014 *Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report*. Prepared by ANSI-Accredited Standards Committee S3/SC1. Springer, New York.

Popper, A.N., A.D. Hawkins, A.D., and M.B. Halvorsen, M.B.
2019 *Anthropogenic Sound on Fishes*. WA-RD 891.1. Washington State Department of Transportation. February 2019.

PWSEDD (Prince William Sound Economic Development District)
No Date Sound Opportunities. Economic Growth for the Prince William Sound Region, Vision-Strategy-Action, 2016-2021. Accessed at https://www.pwsedd.org/wp-content/uploads/2024/11/PWS_CEDS.pdf.
2022 FY 2022 Port Infrastructure Development Program Grant Application AMHS Prince William Sound Ferry Terminals. May 16, 2022.

Richardson, W. John, Charles R. Greene, Jr., Charles I. Malme, and Denis H. Thomson
1995 *Marine Mammals and Noise.* Academic Press, Inc. San Diego, California.

Roman-Sierra, Jorge, Marina Navarro, Juan J. Muñoz-Perez, and Gregorio Gomez-Pina
2011 Turbidity and Other Effects Resulting from Trafalgar Sandbank Dredging and Palmar Beach Nourishment. *Journal of Waterway, Port, Coastal, and Ocean Engineering,* 137(6):332–343.

Rumble, J., E. Russ, and J. Loboy
2021 *Prince William Sound Registration Area E Groundfish Fisheries Management Report, 2017–2020*. Fisheries Management Report No. 21-03. ADF&G. January 2021. Anchorage, Alaska.

Schmidt, George M.
1977 The Exchange of Water Between Prince William Sound and the Gulf of Alaska. Master's thesis, University of Alaska, Fairbanks. Accessed at https://scholarworks.alaska.edu/bitstream/handle/11122/5284/Schmidt.George.1977.pdf?sequence=1.

Sharma, Ghanshyam D.
1979 Prince William Sound. In *The Alaskan Shelf.* Springer, New York.

Sherrill, Troy
2025 Personal Communication from Troy Sherrill, Marine Engineering Manager, DOT&PF, to Christy Gentemann, Regional Environmental Manager, DOT&PF, regarding Prince William Sound Ferry Terminal Improvement Projects Climate Change Analysis. Email dated January 3, 2025.

Smith, M.E., A.B. Coffin, D.L. Miller, and A.N. Popper
2006 Anatomical and functional recovery of the goldfish (*Carassius auratus*) ear following noise exposure. *The Journal of Experimental Biology* 209:4193–4202.

Smith, M.E., and J.D. Monroe
2016 Causes and consequences of sensory hair cell damage and recovery in fishes. In *Fish hearing and bioacoustics*, edited by J. Sisneros, pp. 393–417. Springer, New York.

Steffian, Amy F., Patrick G Saltonstall, and Linda Finn Yarborough
2016 Maritime Economies of the Central Gulf of Alaska After 4000 BP. In *The Oxford Handbook of the Prehistoric Arctic*, edited by T. Max Friesen and Owen K. Mason, pp. 303-322. Oxford University Press, New York.

Steffian, Amy F., Marnie A. Leist, Sven D. Haakanson, Patrick G. Saltonstall, Museum Alutiiq, and Repository Archaeological
2015 *Kal'unek from Karluk: Kodiak Alutiiq History and the Archaeology of the Karluk One Village Site*. University of Alaska Press, Fairbanks, Alaska.

Stover, Carl, and Jerry L. Coffman
1993 *Seismicity of the United States, 1568–1989*. Revised. USGS Professional Paper 1527.

Suryan, R.M., G.R. Balogh, and K.N. Fischer
2007 *Marine Habitat Use of North Pacific Albatrosses during the Non-breeding Season and Their Spatial and Temporal Interactions with Commercial Fisheries in Alaska*. North Pacific Research Board Final Report 322.

Tatitlek Village IRA Council
2001 *Native Village of Tatitlek Community Strategic Plan*. Accessed at https://www.commerce.alaska.gov/dcra/admin/PlanMgmt/ViewFile/6f50b6b0-dc32-44b0-9f8d-1e1fac333cdb.

Thalhauser, M.
2014 *Recreational Fisheries in the Prince William Sound Management Area, 2011–2013*. Fishery Management Report No. 14-44. ADF&G. Anchorage, Alaska.

TTC (Tatitlek Corporation)
2024 Lands webpage. Accessed at https://tatitlek.com/lands/ in December 2024.

USACE (U.S. Army Corps of Engineers)
2007 *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual, Alaska Region*. ERDC/EL TR-07-24. U.S. Army Engineer Research and Development Center. Vicksburg, Mississippi.
2021 *Dredge Material Evaluation and Disposal Procedures. User Manual*. Dredge Material Management Program. U.S. Army Corps of Engineers, Seattle District. July 2021.
2024 *Alaska Dredge Material Evaluation Framework*. Prepared by U.S. Army Corps of Engineers, Alaska District and USEPA Region 10. May 2024

USCG (U.S. Coast Guard)
2017 *U.S. Coast Guard Vessel Traffic Service, Prince William Sound, User's Manual*. May 2017. Accessed at https://www.commerce.alaska.gov/web/portals/5/pub/2017VTSPWSUseRManual12thEdition.pdf.

USDA-NRCS (U.S. Department of Agriculture Natural Resources Conservation Service)
No Date Soil Data Access (SDA) Prime and Other Important Farmlands. Accessed at https://www.nrcs.usda.gov/publications/Legend%20and%20Prime%20Farmland%20-%20Query%20by%20Soil%20Survey%20Area.html in September 2025.

USEPA (U.S. Environmental Protection Agency)
2024a Alaska Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants. Accessed at https://www3.epa.gov/airquality/greenbook/anayo_ak.html.
2024b Learn the Basics of Hazardous Waste. Accessed at https://www.epa.gov/hw/learn-basics-hazardous-waste.

USFWS (U.S. Fish and Wildlife Service)
2002 *Final Environmental Impact Statement Chugach National Forest Land Management Plan Revision*. R10-MB-480a. Anchorage, Alaska.
2021 Birds of Conservation Concern 2021. Migratory Bird Program.

2025 U.S. Fish and Wildlife Service National Realty Tracts website. Accessed at https://gis-fws.opendata.arcgis.com/datasets/9c49bd03b8dc4b9188a8c84062792cff_0/explore in January 2025

USGS (U.S. Geological Survey)
2016 50-Year-Old Mystery Solved: Seafloor Mapping Reveals Cause of 1964 Tsunami that Destroyed Alaskan Village. Last modified February 1, 2016. Accessed at https://www.usgs.gov/news/state-news-release/50-year-old-mystery-solved-seafloor-mapping-reveals-cause-1964-tsunami.

Van Parjis (Parys), Marcel, G. Dumon, A. Pieters, S. Claeys, J. Lanckneus, V. van Lancker, M. Vangheluwe, P. van Sprang, L. Speleers, and C. Janssen
2002 Milieugerichte monitoring van baggerwerkzaamheden MOBAG 2000. [Environmental monitoring of dredge operations MOBAG 2000]. In Symposium "Coastal Zone Management from a Geo-Ecological and Economical Perspective," May 16–17 2002, Oostende, Vol. 10. Special Publication, edited by V. van Lancker et al., pp. 1–22. VLIZ.

VFDA (Valdez Fisheries Development Association)
2024 *2024 Annual Management Plan Solomon Gulch Hatchery*.

Wenger, A.S., E. Harvey, S. Wilson, C. Rawson, S.J. Newman, D. Clarke, B.J. Saunders, N. Browne, M.J. Travers, J.L. Mcilwain, and P.L. Erftemeijer
2017 A critical analysis of the direct effects of dredging on fish. *Fish and Fisheries* 18(5):967–985.

Westing, C.
2018 *Deer Management Report and Plan, Game Management Unit 6: Report Period 1 July 2011 – 30 June 2016, and Plan Period 1 July 2016 – 30 June 2021*. Species Management Report and Plan ADF&G/DWC/SMR&P-2018-41. Juneau, Alaska.
2022a *Wolf Management Report and Plan, Game Management Unit 6: Report Period 1 July 2015 – 30 June 2020, and Plan Period 1 July 2020 – 30 June 2025*. Species Management Report and Plan ADF&G/DWC/SMR&P-2022-11. Juneau, Alaska.
2022b *Black Bear Management Report and Plan, Game Management Unit 6: Report Period 1 July 2013 – 30 June 2018, and Plan Period 1 July 2018 – 30 June 2023*. Species Management Report and Plan ADF&G/DWC/SMR&P-2022-3. Juneau, Alaska.
2022c *Brown Bear Management Report and Plan, Game Management Unit 6: Report Period 1 July 2014 – 30 June 2019, and Plan Period 1 July 2019 – 30 June 2024*. Species Management Report and Plan ADF&G/DWC/SMR&P-2022-13. Juneau, Alaska.

Wilson, Frederic H., and Chad P. Hults
2012 Geology of the Prince William Sound and Kenai Peninsula region, Alaska. USGS Scientific Investigations Map 3110, pamphlet, scale 1:350,000. Accessed at https://pubs.usgs.gov/sim/3110/.

WMO (World Meteorological Organization)
2011 Manual on Flood Forecasting and Warning. WMO-NO. 1072. ISBN 978-92-63-11072-5

Wolfe, Douglas A.
1996 *Exxon Valdez Oil Spill – State/Federal Natural Resource Damage Assessment Final Report*. NOAA, Office of Ocean Resources Conservation and Assessment, March 1996. Accessed at https://www.arlis.org/docs/vol1/EVOS/NRDA/ST/ST4-3.pdf.

WSDOT (Washington State Department of Transportation)
2020 *Hydroacoustic Biological Assessment Guidance (Assessment of Underwater Sound Pressure)*. May 2020. Accessed at https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/hydroacoustic-ba-guidance-ally.pdf.

Yarborough, Michael R., and Linda Finn Yarborough
1998 Prehistoric Maritime Adaptations of Prince William Sound and the Pacific Coast of the Kenai Peninsula. *Arctic Anthropology* 35(1):132–145.