UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, AK 99802-1668

Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Concurrence and Section 7(a)(4) Conference Opinion

Whittier Small Boat Harbor (POA-1997-00210), Whittier, Alaska

NMFS Consultation Number: AKRO-2025-00707

Action Agencies: **NMFS Office of Protected Resources, Permits and Conservation Division and United States Army Corps of Engineers**

Affected Species and Determinations:

ESA-Listed and Proposed Species	Status	Is the Action Likely to Adversely Affect Species?	Is the Action Likely to Adversely Affect Critical Habitat?	Is the Action Likely to Jeopardize the Species?	Is the Action Likely to Destroy or Adversely Modify Critical Habitat?
North Pacific Right Whale *(Eubalaena japonica)*	Endangered	No	No	N/A	N/A
Humpback Whale, Mexico DPS (*Megaptera novaeangliae*)	Threatened	No	No	N/A	N/A
Humpback Whale, Western North Pacific DPS *(Megaptera novaeangliae)*	Endangered	No	No	N/A	N/A
Fin Whale (*Balaneoptera physalus*)	Endangered	No	N/A	N/A	N/A
Sperm Whale (*Physeter macrocephalus*)	Endangered	No	N/A	N/A	N/A
Steller Sea Lion, Western DPS (*Eumetopias jubatus)*	Endangered	Yes	No	No	N/A
Sunflower sea star (*Pycnopodia helianthoides*)	Proposed Threatened	Yes	N/A	No	N/A

Consultation Conducted By: National Marine Fisheries Service, Alaska Region

Issued By:

Jonathan M. Kurland
Regional Administrator

Date: July 8, 2025

Accessibility of this Document

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TERMS AND ABBREVIATIONS

Acronym/ Abbreviation	Definition
µPa	Micro Pascal
3D	Three-Dimensional
Ac	Acre
ADEC	Alaska Department of Environmental Conservation
ADFG	Alaska Department of Fish and Game
AKR	Alaska Region
ARRC	Alaska Railroad Corporation
AUD INJ	Auditory Injury
BA	Biological Assessment
BOEM	Bureau of Ocean Energy Management
BOEMRE	Bureau of Ocean Energy Management, Regulation and Enforcement
CSEL	Cumulative Sound Exposure Level
dB re 1µPa	Decibel referenced 1 microPascal
DEIS	Draft Environmental Impact Statement
District Court	U.S. District Court for the Norther District of California
DPS	Distinct Population Segment
EPA	Environmental Protection Agency
ESA	Endangered Species Act
°F	Fahrenheit
FR	Federal Register
FRC	Fast Response Cutter
ft	Feet
Hz	Hertz
IHA	Incidental Harassment Authorization
IPCC	Intergovernmental Panel on Climate Change
ITS	Incidental Take Statement
IWC	International Whaling Commission
kHz	Kilohertz
km	Kilometers
kn	Knots
L	Liter
m	Meter
mi	Mile
MMPA	Marine Mammal Protection Act
ms	Milliseconds

Acronym/ Abbreviation	Definition
MSY	Maximum Sustainable Yield
µPa	Micro Pascal
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollution Discharge Elimination System
NRC	National Research Council
NSC	National Security Cutter
OPC	Ocean Patrol Cutter
Opinion	Biological Opinion
Pa	Pascals
PAH	Polycyclic aromatic hydrocarbons
PCB	Polychlorinated biphenyls
PR1	Alaska Permits Division
PTS	Permanent Threshold Shift
RMS	Root Mean Square
s	Second
SAR	Search and Rescue
SEL	Sound Exposure Level
SONAR	Sound Navigation And Ranging
TTS	Temporary Threshold Shift
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Services
USGS	United States Geological Survey

1 INTRODUCTION

Section 7(a)(2) of the Endangered Species Act of 1973, as amended (ESA; 16 U.S.C. 1536(a)(2)) requires each Federal agency to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of such species. When a Federal agency's action "may affect" a protected species, that agency is required to consult with the National Marine Fisheries Service (NMFS) or the U.S. Fish and Wildlife Service (USFWS), depending upon the endangered species, threatened species, or designated critical habitat that may be affected by the action (50 CFR 402.14(a)). Federal agencies may fulfill this general requirement informally if they conclude that an action may affect, but "is not likely to adversely affect" endangered species, threatened species, or proposed species or designated critical habitat, and NMFS or the USFWS concurs with that conclusion (50 CFR 402.14(b)).

Section 7(b)(3) of the ESA requires that at the conclusion of consultation, NMFS and/or USFWS provide an opinion stating how the Federal agency's action is likely to affect ESA-listed and their critical habitat. If incidental take is reasonably certain to occur, section 7(b)(4) requires the consulting agency to provide an incidental take statement (ITS) that specifies the impact of any incidental taking, specifies those reasonable and prudent measures necessary or appropriate to minimize such impact, and sets forth terms and conditions to implement those measures.

Section 7(a)(4) of the ESA provides a mechanism for agencies to conference on species or critical habitat proposed to be listed or designated. While consultations are required when the proposed action may affect listed species, a conference is only required when the proposed action is likely to jeopardize the continued existence of a proposed species or destroy or adversely modify proposed critical habitat. However, Federal action agencies may request a conference on any proposed action that may affect proposed species or proposed critical habitat. Conferences follow the same procedures, contents, and format as a formal consultation and biological opinion. The incidental take statement provided with a conference opinion does not take effect until the Services adopt the conference opinion as a biological opinion on the proposed action, after the species is listed.

Updates to the regulations governing interagency consultation (50 CFR part 402) were effective on May 6, 2024 (89 FR 24268). We are applying the updated regulations to this consultation. The 2024 regulatory changes, like those from 2019, were intended to improve and clarify the consultation process, and, with one exception from 2024 (offsetting reasonable and prudent measures), were not intended to result in changes to NMFS' existing practice in implementing section 7(a)(2) of the Act (84 FR at 45015; 89 FR at 24268). We have considered the prior rules and affirm that the substantive analysis and conclusions articulated in this biological opinion and incidental take statement would not have been any different under the 2019 regulations or pre-2019 regulations.

In this document, the action agencies are NMFS Office of Protected Resources, Permits and Conservation Division (hereafter referred to as Permits Division) and U.S. Army Corps of

Engineers (USACE). The NMFS Permits Division plans to issue an incidental harassment authorization (IHA) pursuant to section 101(a)(5)(D) of the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1361 et seq.), to the City of Whittier for harassment of marine mammals incidental to the proposed action to replace three Whittier Harbor float systems and all the creosote timber piles currently in the harbor. The consulting agency for this proposal is NMFS's Alaska Region. This document represents NMFS's biological and conference opinion (opinion) as well as concurrence on the effects of this proposed action on endangered, threatened, and proposed species and designated critical habitat.

The opinion and Incidental Take Statement (ITS) were prepared by NMFS Alaska Region in accordance with section 7(b) of the ESA (16 U.S.C. 1536(b)), and implementing regulations at 50 CFR part 402.

The opinion and ITS are in compliance with the Data Quality Act (44 U.S.C. 3504(d)(1)) and underwent pre-dissemination review.

1.1 Background

This opinion is based on information provided in the Biological Assessment (BA), IHA application and the proposed IHA (90 FR 23891; June 5, 2025). Other sources of information relied upon include consultation communications (emails, phone calls, and virtual meetings), recent consultations completed in the same region, previous monitoring reports, and marine mammal surveys conducted in and around Prince William Sound and Passage Canal. A complete record of this consultation is on file at NMFS's Anchorage, Alaska, office. The proposed action will occur at the head of Passage Canal in the Whittier Harbor in Whittier, Alaska. (Figure 1). The project will include in-water improvements to replace three Whittier Harbor float systems and all creosote piles in the harbor serving Whittier, Alaska. The USACE, Alaska District, is proposing issuance of a Rivers and Harbors Act Section 10 and Clean Water Act Section 404 permit for the harbor rebuild and associated construction activities. NMFS is concurrently completing a biological opinion and IHA for the Whitter Cruise Ship Terminal/Deep Water Dock, also in Whittier (AKRO-2025-01890), which is a separate and independent project adjacent to this one (Figure 1).

This opinion considers the effects of in-water pile driving of steel piles and the removal and replacement of other harbor components in marine waters, construction vessel traffic, and support operations on the endangered Western DPS Steller sea lion (*Eumetopias jubatus*). The action agency requested a discretionary conference on the proposed threatened listing of the sunflower sea star (*Pycnopodia helianthoides*; 88 FR 16212; March 16, 2023) and requested concurrence with their determination of not likely to adversely affect for the endangered North Pacific right whale (*Eubalaena japonica*), threatened Mexico DPS and endangered Western North Pacific (WNP) DPS humpback whale (*Megaptera novaeangliae*), endangered fin whale (*Balaneoptera physalus*), or the endangered sperm whale (*Physeter macrocephalus*).

There is no designated critical habitat located within the action area. The nearest designated critical habitat for the Mexico or WNP DPS humpback whale is over 50 miles(mi) (80 kilometers [km]) east and 80 mi (144 km) southwest of the project area, respectively. The nearest

North Pacific right whale critical habitat is over 220 mi (355 km) southwest of the project area. The nearest designated critical habitat for Steller sea lions include Perry Island and Dutch Group haulouts, located approximately 25 mi (40 km) southwest of the project area (58 FR 45269 , August 27, 1993) . NMFS is not currently proposing designating critical habitat for the sunflower sea star.

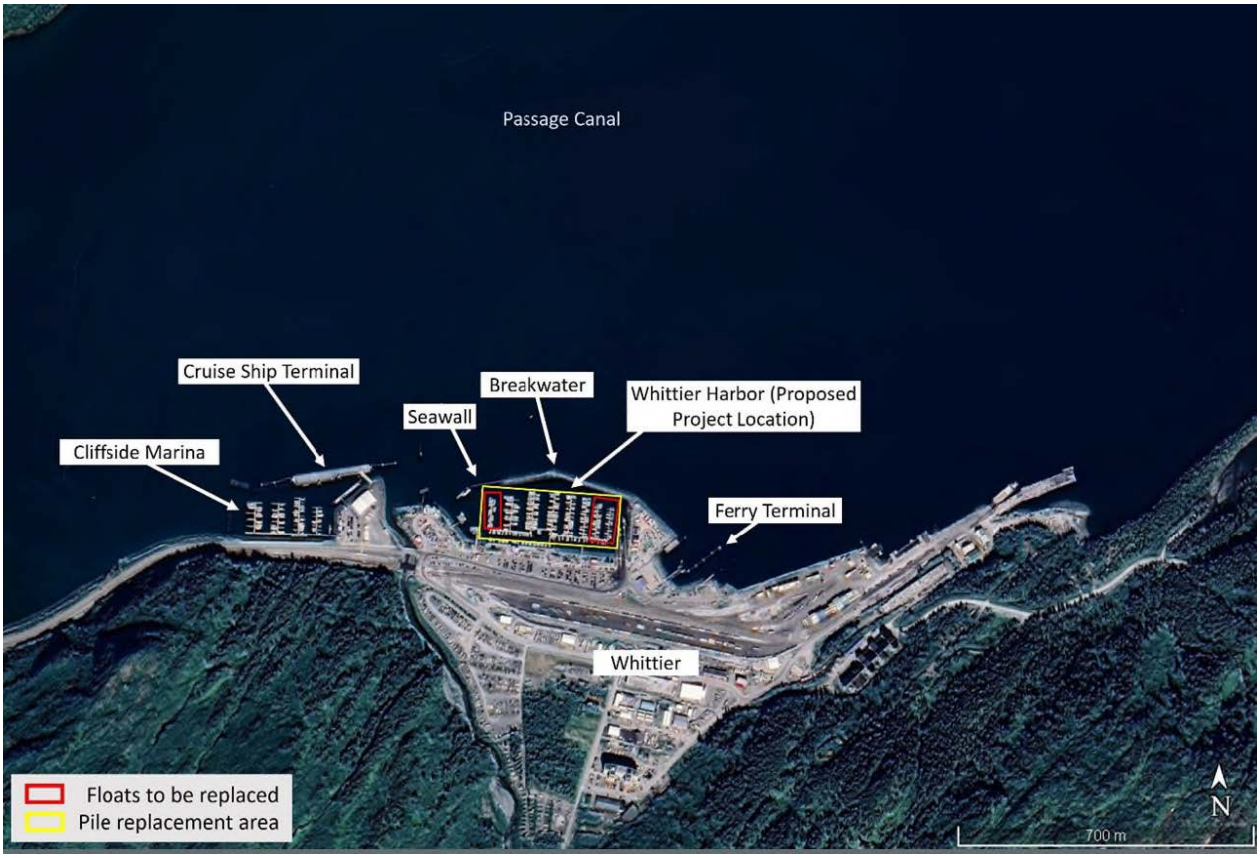

Figure 1. Whittier Small Boat Harbor project location at Whittier, Alaska showing adjacent cruise ship/ deep water dock (SolsticeAK 2025).

1.2 Consultation History

The consultation history of this opinion is outlined below:

November 4, 2024 – NMFS Alaksa Region received a request for consultation from the USACE's that also designated Solstice Alaska (SolsticeAK) as their non-federal representative.

January 14, 2025 – NMFS Permits Division received a draft IHA application from the City of Whittier and SolsticeAK.

January 21, 2025 – NMFS Permits Division notified NMFS Alaska Region that they had received a draft IHA application from the City of Whittier and SolsticeAK and requested coordination on the project.

March 7, 2025 - NMFS Permits Division and Alaska Region hold early review team (ERT) meeting to discuss the proposed action. After the ERT, Alaska Region sent Solstice AK a request for a BA.

March 7, 2025- NMFS Permits Division sent initial questions on IHA application and a request for a Biological Assessment (BA) to SolsticeAK

March 13, 2025 - NMFS Permits Division received responses to initial questions on IHA application.

March 14, 2025 - NMFS Alaska Region received a BA from SolsticeAK.

March 17, 2025 – NMFS Permits Division deems USACE's IHA application adequate and complete.

March 19, 2025- SolsticeAK sent the revised IHA to NMFS Permits Division and Alaska Region.

May 15, 2025 - NMFS Alaska Region initiated formal consultation with the USACE on the project.

June 5, 2025 – NMFS Permits Division submits request for consultation to Alaska Region with the draft IHA and proposed IHA Federal Register Notice.

June 5, 2025 – NMFS Permits Division publishes the proposed IHA Federal Register Notice (90 FR 23891).

2 DESCRIPTION OF THE PROPOSED ACTION AND ACTION AREA

2.1 Proposed Action

"Action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. 50 CFR 402.02.

NMFS Permits Division proposes to issue an IHA under the MMPA, for pile driving and construction activities. These federal actions will authorize the USACE and its permittee, the City of Whittier to conduct the activities described and analyzed in this document.

This opinion considers the effects of the authorized improvement activities to the Whittier Small Boat Harbor, specifically the effects of in-water pile driving of steel piles, removal of creosote treated piles and floats, construction vessel traffic, and support operations. Construction-related pile extraction and installation is anticipated to begin in mid-September 2025, and continue through spring 2026.

The City of Whittier proposes to remove the existing structure (dock and floats) and construct a

new set of docks and floats in the same footprint. The harbor has 360 slips ranging from 15-to-60 feet in size used for commercial and recreational vessels. The harbor is used by residents of Whittier and the surrounding area, and local businesses including those offering fishing charters and ocean cruises. The project will not increase the harbor capacity, but will address failing infrastructure that has limited use of some slips. The following description of the proposed action derives primarily from the IHA application and the BA prepared by SolsticeAK and the proposed IHA (90 FR 23891, June 5, 2025).

2.1.1 Proposed Activities

NMFS anticipates that the proposed IHA would be effective for a one-year period beginning in fall 2025. The final effective dates would be determined based upon when the USACE issues all permits and the City of Whittier is able to mobilize for construction.

The Proposed Action is located at the Whittier Small Boat Harbor, in Whittier, Alaska, Kenai Peninsula Borough, at the southwest end of Passage Canal. The harbor is located just north of the City of Whittier which is the major population center in the area. (Figure 1).

The project would involve removing all of the existing structure for A, G, and H float systems in their entirety, and installing piles and floats. Site plans showing the existing components to be removed and the proposed dock layout are provided in Figure 2 and Figure 3.

2.1.1.1 Existing Structure Removal Methods and Components

The project would remove:

- One hundred fifty-five existing 12-to-16-inch creosote-treated timber piles
- Ten existing 16-inch steel piles
- Three walkway floats (A, G, H)
- Forty-two float “fingers” (that make up boat slips on floats G and H)

2.1.1.2 Dock Construction Methods and Components

The project would install:

- Ninety 16-inch steel piles
- Three walkway floats (replaced in-kind)
- A float: 10-feet wide by 226-feet long
- G float: 6-feet wide by 272-feet long
- H float: 6-feet wide by 256-feet long
- Forty-two 2.5-feet, by 24-feet float “fingers” (on floats G and H; replaced in-kind)
- Fire suppression and water systems for new floats
- Float components installed outside of the water, such as mooring cleats, walers, fenders, and power pedestals

2.1.1.3 Construction Vessels and Equipment

The following vessels are expected to support construction and protected species monitoring:

- One 100- by 400-feet (or similar) supply barge carrying new replacement floats and piles. The barge will travel from Seattle, Washington, to Whittier, Alaska.
- Two construction crane barges: one, approximately 41- by 148-feet barge to support areas accessible by it and to carry removed A, G, and H floats and timber piles; and one, approximately 38- by 70-feet, barge to support construction in confined spaces. Both barges will travel from Valdez, Alaska, to Whittier, Alaska.
- One, approximately 25- by 26-feet, tug to transport and maneuver project barges
- Two skiffs, transported to the project site by barge, to support construction and potentially marine mammal monitoring activities

The following pile installation equipment, or similar, would be used and operated from the construction barges:

- Vibratory Hammer: ICE 44/Eccentric moment 4,400 inch-pounds (on the larger barge)
- Vibratory Hammer: ICE 28/ Eccentric moment 2,800 inch-pounds (on the smaller barge)

The proposed action would involve in-water construction and heavy machinery activities in addition to the activities described above. These include using standard barges and tug boats, positioning piles on the substrate using a crane (i.e., “stabbing the pile”), and removing and placing float systems.

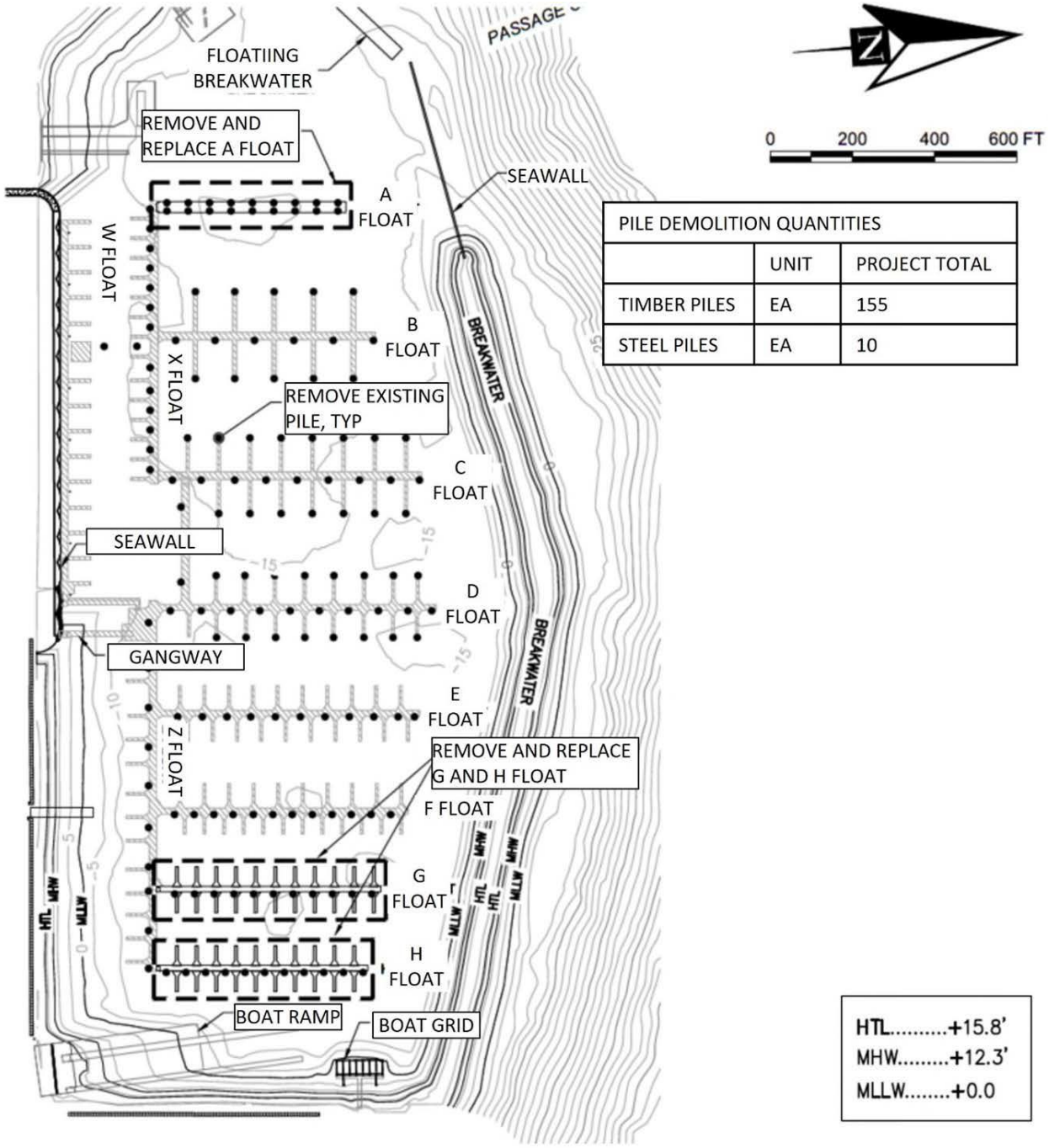

Figure 2. Site plan showing existing Whittier small boat harbor components to be removed and site layout (SolsticeAK 2025).

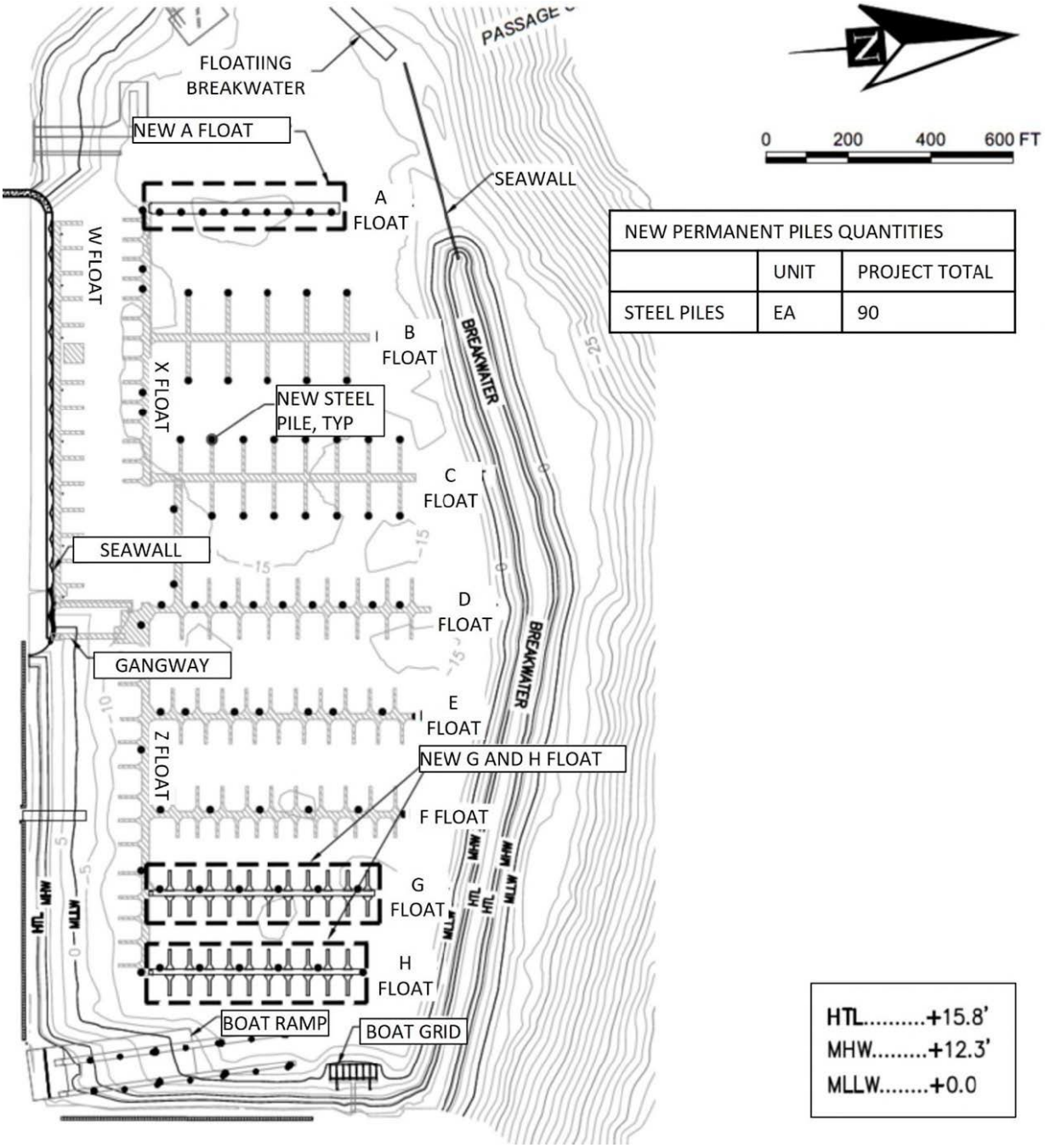

Figure 3. Proposed site plan for the reconstructed small boat harbor, Whittier, Alaska (SolsticeAK 2025).

2.1.1.4 Transport of Materials and Equipment

The supply barge would be towed from Seattle, Washington, and would follow established shipping lanes through the Inside Passage and across Prince William Sound to Whittier. The two construction barges would be towed from Valdez, Alaska. All barges would be towed at a speed of around 8 knots. These types of barges frequently travel within the Inside Passage and Prince

William Sound. Once at the project site, barges would be secured in place with below-surface anchors, as to not cause navigational hazards. Local barge movements would occur within the Whittier Harbor and adhere to all harbor safety regulations. Following demolition, the larger construction barge would tow the removed A, G, and H floats and timber piles to Valdez for disposal at the Valdez City Landfill.

2.1.1.5 Construction Sequence

Construction would begin in mid-September 2025 (after most boats have been removed from the harbor for the winter) and continue through spring 2026. In-water pile installation and removal activities are expected to occur for a total of approximately 104 hours over 29 (not necessarily consecutive) days (Table 2).

In-water construction would use the following sequence:

1. Remove all A float timber piles via vibratory hammer and remove existing float systems for disposal outside of Whittier.

2. Position the new A float system in the harbor (expected to be launched from the Whittier Harbor East Boat Launch Ramp).

3. Vibrate new A float 16-inch diameter steel piles to embedment depth (a minimum of 20 feet) within float rings.

4. Remove all G and H float timber piles via vibratory hammer and remove existing float systems for disposal outside of Whittier.

5. Remove existing piles from the east side of Z float.

6. Move new H float system (in several sections) into the harbor; position new H float system (expected to be launched from the Whittier Harbor East Boat Launch Ramp).

7. Vibrate new H float 16-inch diameter steel piles to embedment depth (a minimum of 20 feet) within float rings.

8. Repeat steps 6 and 7 for G float system.

9. Install float system “fingers” on H and G floats via barge crane.

10. Working from east to west, remove existing piles from B through F floats and W through Z floats; replace with new steel piles within float rings.

11. Install power and water systems on A, G, and H float systems.

2.1.1.6 Demolition and Construction

Figure 2 provides the layout and major components of the site plan for the proposed action.

Existing harbor piles would be removed using a vibratory hammer, loaded on a barge, and taken to Valdez for disposal. The existing slip "fingers" float walkways, and utility lines for A, G, and H floats would be removed, loaded on a barge, and taken to Valdez for disposal. Removed materials could be stockpiled on land before being loaded onto a barge and removed at the end of the construction.

New concrete floats filled with polystyrene foam would be installed where A, G, and H floats were removed. All floats would likely be launched from the Whittier Harbor East Boat Launch Ramp located at the east end of Whittier Harbor. The A float would be assembled completely on land, and towed into position by barge. The G and H floats would be launched in sections, towed into position by barge or skiff, and fully assembled once in position.

Permanent piles would be installed using a vibratory hammer only. Using float system pile guides, 16-inch steel piles would be vibrated to embedment depth (a minimum of 20 feet). Fiberglass bird caps would be installed on all new piles. Wooden walers with fenders would be installed along the sides of floats, and cleats would be installed on each float's surface. Fire water lines and potable water lines would be installed along the new float systems, and power pedestals would be installed on A and G floats.

2.1.1.7 Pile Removal and Installation

The number and type of piles for each component of the proposed Whittier Small Boat Harbor project are listed in Table 1. All piles will be removed and installed using a vibratory hammer. No impact pile driving is proposed.

Table 1. Summary of pile types for removal and installation for the proposed Whittier Small Boat Harbor project, Whittier, Alaska. All piles will be removed and installed using a vibratory hammer only.

	Existing Pile Removal	Existing Pile Removal	Permanent Pile Install
Diameter (inches)	12-16	16	16
Material	Timber	Steel	Steel
Number	155	10	90
Piles per day	12	10	6
Number of Days	13	1	15

2.1.1.8 Project Schedule

Construction would begin in mid-September 2025 and continue through spring 2026. Construction activities are expected to last approximately six to seven months. Pile installation activities are expected to occur for a total of approximately 104 hours over 29 (not necessarily consecutive) days.

The construction timeline takes into account the mobilization of materials and potential delays due to delayed material deliveries, equipment maintenance, inclement weather, and shutdowns.

2.1.2 Mitigation Measures

The USACE's representative, SolsticeAK notified NMFS Alaska Region via email on May 16, 2025, that they will implement the following mitigation measures:

2.1.2.1 General Mitigation Measures

1. The project proponent will inform NMFS of impending in-water activities a minimum of one week prior to the onset of those activities (email information to akr.prd.records@noaa.gov).

2. If construction activities will occur outside of the time window specified in this letter, 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.

3. In-water work will be conducted at the lowest points of the tidal cycle when feasible.

4. Consistent with AS 46.06.080, trash will be disposed of in accordance with state law. All trash bins will be properly secured with locked or secured lids that cannot blow open. The project proponent will ensure that all closed loops (e.g., packing straps, rings, bands, etc.) will be cut prior to disposal. In addition, the project proponent will secure all ropes, nets, and other marine mammal entanglement hazards so they cannot enter marine waters. Plastic monofilament netting (erosion control matting) or similar material will not be used as part of erosion control activities.

2.1.2.2 PSO Requirements

5. 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.

6. PSO training will include:
    a. field identification of marine mammals and marine mammal behavior;
    b. ecological information on marine mammals and specifics on the ecology and management concerns of those marine mammals;
    c. ESA and MMPA regulations;
    d. proper equipment use;
    e. methodologies in marine mammal observation and data recording and proper reporting protocols; and
    f. an overview of PSO roles and responsibilities.

7. PSOs will be individuals independent from the project proponent and must have no other assigned tasks during monitoring periods.

8. The action agency or its designated non-federal representative will provide resumes or qualifications of PSO candidates to the consultation biologist and

akr.prd.records@noaa.gov for approval at least one week prior to in-water work. NMFS will provide a brief explanation in instances where an individual is not approved.

9. PSOs will:
    a. collectively be able to effectively observe the entirety of the shutdown zone;
    b. be able to accurately record the date, time, and species of all observed marine mammals in accordance with project protocols;
    c. be able to identify listed marine mammals that may occur in the action area, 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;
    d. have the ability to effectively communicate orally, by radio or in person, with project personnel to provide real-time information on listed marine mammals;
    e. possess a copy of mitigation measures; and
    f. possess data forms (electronic or paper).

10. PSOs will not scan for marine mammals for more than four hours without at least a one-hour break from monitoring duties between shifts. PSOs will not perform PSO duties for more than 12 hours in a 24-hour period.

2.1.2.3 PSO Procedures

11. PSOs will have the ability, authority, and obligation to order the appropriate mitigation response, including shutdown, to avoid takes of listed marine mammals.

12. One or more PSOs will perform PSO duties onsite throughout the authorized activity.

13. Where a team of three or more PSOs are required, a lead observer or monitoring coordinator will be designated.

14. For each in-water activity, PSOs will monitor all marine waters within the indicated shutdown zone radius for that activity (Table 2).

Table 2. Shutdown and monitoring zones.

Activity	Pile Size/Type	Sound Level at 10 m	Shutdown Zone (m)	Monitoring Zone[3] (m)
			Otariids	
Vibratory Installation and Removal	12-16-inch timber pipe	162 dB rms[1]	10	6,310
	16-inch steel pipe	155 dB rms[2]	10	2,154

[1] (CalTrans 2020)

[2] (Denes et al. 2016)

[3]For Level B in-water monitoring zones, the estimated maximum distance that sound would travel in water before being truncated by land is approximately 1,880 meters for the East Unit and 1,700 meters for the West Unit. See Section 6.2.2.

15. PSOs will be positioned such that they will collectively be able to monitor the entirety of each activity's shutdown zone and the monitoring zone to the greatest extent feasible.

16. Prior to commencing any activity listed in Table 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 Table 2.

17. The on-duty PSOs will continuously monitor the shutdown zone and adjacent waters during any of the activities listed in Table 2 for the presence of listed marine mammals.

18. Activities listed in Table 2 will only take place:
    a. between sunrise and sunset;
    b. during conditions with a Beaufort Sea State of 4 or less; and,
    c. 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).

19. 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 Table 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.

20. The PSOs will order ongoing activities listed in Table 2 to immediately cease if one or more listed marine mammals has entered, or appears likely to enter, the shutdown zone.

21. If any of the activities listed in Table 2 are shut down for less than 30 minutes due to the presence of listed marine mammals in the shutdown zone, the activities may commence when the PSOs provides 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 in the shutdown zone for 30 minutes for cetaceans or 15 minutes for pinnipeds.

22. 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 Table 3.

23. Prior to commencing any activity listed in Table 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 enter or 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.

2.1.2.4 Vibratory Pile Installation and Removal

24. If no listed marine mammals are observed within the applicable shutdown zone (see Table 2) for 30 minutes immediately prior to pile removal or installation, vibratory pile removal or installation may commence.

25. 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.

26. 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 in the shutdown zone for at least 30 minutes immediately prior to resumption of operations.

2.1.2.5 Wood Treated Pilings

The following mitigation measures were designed to avoid adverse effects to salmonids; however, they may be appropriate for listed species, especially salmonid-eating marine mammals.

Removal

27. If piles located within the project area have been abandoned or are no longer in use, they will be removed or cut off at the sediment line.

28. Piles slated for removal will be completely removed. Removal by vibratory pulling will be attempted, and if unsuccessful, piles will be dead pulled. Should pulling of piles be unsuccessful, they will be cut off at the sediment line.

29. Piles will be reused or disposed of in a manner that does not expose or affect aquatic or marine resources.

2.1.2.6 Project-dedicated Vessels (vessel and crew safety should never be compromised)

30. Vessel operators will:
    a. maintain a watch for marine mammals at all times while underway;
    b. stay at least 91 m (100 yards; yd) away from listed marine mammals, except that they will remain at least 460 m (500 yd) away from endangered North Pacific right whales;
    c. travel at less than 5 kt when within 274 m (300 yd) of a whale;

d. avoid changes in direction and speed within 274 m (300 yd) of a whale, unless doing so is necessary for maritime safety;

e. not position vessel(s) in the path of a whale, and will 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);

f. reduce vessel speed to 10 kt or less when weather conditions reduce visibility to 1.6 kilometers (km; 1 mile [mi]) or less; and

g. 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:

   i. approach, by any means, including by interception (i.e., placing a vessel in the path of an oncoming humpback whale), within 91 m (100 yd) of any humpback whale:

   ii. cause a vessel or other object to approach within 91 m (100 yd) of any humpback whale; or,

   iii. disrupt the normal behavior or prior activity of a humpback whale by any other act or omission.

31. 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 yd) 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 yd) from North Pacific right whales.

32. Vessels will not allow lines to remain in the water unless both ends are under tension and affixed to vessels or gear.

33. Project vessels in transit to the project site will travel at 12 kt or less.

34. Project vessels in transit to the project site will travel using established navigation channels or commonly recognized vessel traffic corridors and avoid alongshore travel in shallow water (< 20 m) whenever practicable.

35. All vessels engaged in project construction activities at the project site will transit at speeds below 10 kt.

2.1.2.7 Vessel Transit, North Pacific Right Whales

36. Vessels will remain at least 460 m (500 yd) from North Pacific right whales.

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

37. Vessels will not approach within 5.5 km (3 nautical miles; nm) of rookery sites listed in 50 CFR 224.103(d).

38. Vessels will not approach within 914 m (3,000 ft) of any Steller sea lion haulout or rookery.

2.1.2.9 Sunflower Sea Star

39. If possible, conduct sunflower sea star surveys prior to, but no more than 24 hrs. prior to, project activities. Survey transects should run roughly along isobaths, with 2 m separation between each transect line, until the area that will be modified/disturbed (i.e., covered with fill, dredged, pile driven, contacted by an anchor) is surveyed. Surveys may be done on foot at low tide or by divers, an ROV, or camera for areas where the substrate is not visible during low tide.

40. If sunflower sea stars are found during surveys, they will be collected and gently released into an intertidal location, submerged in seawater, outside of the disturbed area such that harm or injury cannot occur (see best handling practices section).

41. If a sunflower sea star is attached to a pile being removed from the water, the sunflower sea star will be gently removed from the pile by the Lead PSO, or a crew delegate due to possible safety concerns, and released into an intertidal location, submerged in seawater, outside of the disturbed area such that harm or injury cannot occur (see best handling practices section).

42. If it appears that a sunflower sea star has sea star wasting syndrome or if any dead sunflower sea stars are observed, pictures of the individuals will be taken and infected individuals will be counted. The infected sunflower sea stars will not be touched or moved. These and all sunflower sea star survey findings will be reported to NMFS, including latitude/longitude and transect line, size measurements, at akr.prd.records@noaa.gov .

Best handling/transporting practices

Sunflower sea stars are fairly tolerant to handling, but handling/moving them can be a major stressor if done incorrectly.

43. When transferring sunflower sea stars, make sure the main body disc and arms are fully supported when out of the water; arms can rip off from sheer weight if not properly supported; never pick up a sea star by its arm.

44. Transfers to and from natural substrate can be conducted with a sturdy hand-held net or bag net.

45. Removing sea stars off a hard/rocky substrate can damage their tube feet- they can be easily baited onto a flat bucket lid to prevent tearing of tube feet. The lids can then be used to support the sea stars as they are transferred to temporary holding.

46. If sunflower sea stars are being moved by a diver, they should be turned upside down to avoid their tube attaching to the diver and thus damaging the tube feet.

47. Sunflower sea stars can be temporarily held in a container such as a 5-gal bucket or a tub, such as a large Rubbermaid for up to 60 minutes; they must be completely submerged/covered in cold seawater.

48. Sunflower sea stars can be held together in a container, but there should be sufficient room such they are not on top of each other; do not stack sea stars on top of each other; sort sea stars into buckets/containers by size (juveniles can be eaten by adults).

49. Holding periods for longer than 60 minutes require monitoring of water quality (temperature, salinity, airflow); The use of a cooler with an aerator/bubbler, water pump/overflow (seawater only), ice packs, and frequent water changes is required for holding periods longer than 60 minutes.

2.1.2.10 Data Collection

PSOs have the following responsibilities for data collection:

50. PSOs will record observations on data forms or into electronic data sheets.

51. The project proponent will ensure that PSO data will be submitted electronically in a format that can be queried such as a spreadsheet or database. Digital images of data sheets are not sufficient.

52. PSOs will record the following:
    a. project name, date, shift start time, shift stop time, and PSO identifier;
    b. date and time of each reportable event (e.g., a listed marine mammal observation, operation shutdown, reason for operation shutdown, change in weather conditions);
    c. 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);
    d. species, numbers, and, if possible, sex and age class of observed listed marine mammal;
    e. the predominant anthropogenic sound-producing activities occurring during each listed marine mammal observation;
    f. observations of listed marine mammal behaviors and reactions to anthropogenic sounds and presence;

g. 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

h. 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.

2.1.2.11 Reporting

Unauthorized Take

53. 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 entering a shutdown zone before operations can be shut down, or is injured or killed as a direct or indirect result of the action), the PSO will report the incident to NMFS within one business day, with information submitted to akr.prd.records@noaa.gov. These PSO records will include:

    a. digital, queryable documents containing PSO observations and records, and digital, queryable reports;

    b. the date, time, and location of each event (provide geographic coordinates);

    c. description of the event;

    d. number of individuals of each listed marine mammal species affected;

    e. the 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;

    f. mitigation measures implemented prior to and after the animal was taken;

    g. if a vessel struck a listed marine mammal, the contact information for the PSO on duty on the vessel or the contact information for the individual piloting the vessel; and

    h. photographs or video footage of the animal(s), if available.

2.1.2.12 Stranded, Injured, Sick or Dead Listed Species (not associated with the project)

54. 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 photos 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.

2.1.2.13 Illegal Activities

55. 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 NMFS Alaska Region Office of Law Enforcement (Table 3; 1-800-853-1964).

56. Data submitted to NMFS will include date/time, location, description of the event, and any photos or videos taken.

2.1.2.14 North Pacific Right Whales

57. 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.

2.1.2.15 Extralimital Sightings

58. All observations of ESA-listed marine mammal species not considered in this consultation will be reported to NMFS within 24 hours. Photographs and/or video should be taken, if possible, to aid in photo identification. Reports will include all applicable information that will be included in a final report.

2.1.2.16 Monthly Reports

59. Submit interim monthly PSO monitoring reports, including digital, queryable documents. These reports will include a summary of marine mammal species and behavioral observations, shutdowns or delays, and work completed.

60. Monthly reports will be submitted to akr.prd.section7@noaa.gov by the 15th day of the month following the reporting period. For example, the report for activities conducted in November 2026 will be submitted by December 15, 2026.

2.1.2.17 Final Report

61. 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 the in-water activities.

62. The final report for projects will include:

    a. summaries of monitoring efforts, including dates and times of construction, dates and times of monitoring, dates and times and duration of shutdowns due to listed species presence;

    b. dates and times of listed species observations, geographic coordinates of listed

species at their closest approach to the project site, including date, water depth, species, age/size/sex (if determinable), and group sizes;

c. number of listed species observed, broken out by species, during periods with and without project activities (and other variables that could affect detectability);

d. observed listed marine mammal behaviors and movement types versus project activity at the time of observation;

e. numbers of listed species observations/individuals seen versus project activity at time of observation;

f. any photos or videos taken of listed species;

g. details of all sunflower sea star surveys and findings, including:

   i. dates, times, and transect lines of each survey conducted;

   ii. number of sunflower sea stars observed in each sighting; and,

   iii. number of sunflower sea stars observed to have sea star wasting syndrome in each sighting, or number of dead sunflower sea stars observed; and

h. digital, queryable documents containing PSO observations and records, and digital, queryable reports.

Table 3. Summary of agency contact information

Reason for Contact	**Contact Information**
Consultation Questions & Unauthorized Take	akr.prd.section7@noaa.gov
Reports & Data Submittal	akr.prd.records@noaa.gov
Stranded, Injured, or Dead Marine Mammals	Stranding Hotline (24/7 coverage) 1-877-925-7773
Oil Spill & Hazardous Materials Response	U.S. Coast Guard National Response Center: 1-800-424-8802 and AKRNMFSSpillResponse@noaa.gov
Illegal Activities *(not related to project activities; e.g., feeding, unauthorized harassment, or disturbance to marine mammals)*	NMFS Office of Law Enforcement (AK Hotline): 1-800-853-1964
In the event that this contact information becomes obsolete	NMFS Anchorage Main Office: 907-271-5006 or NMFS Juneau Main Office: 901-206-4342

2.2 Action Area

"Action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). For this reason, the action

area is typically larger than the project area and extends out to a point where no measurable effects from the proposed action occur.

NMFS defines the action area for this consultation to include the area within which project-related noise levels exceed 120 dB re 1 µPa root mean square (rms), and are expected to approach ambient noise levels (i.e., the point where no measurable effect from the project will occur). NMFS updated their 2018 Technical Guidance for Assessing the Effects of Anthropogenic Sounds on Marine Mammal Hearing (NMFS 2018) and released draft updated guidance in May 2024 for public review (NMFS 2024). The guidance document, "2024 Update to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 3.0): Underwater and In-Air Criteria for Onset of Auditory Injury and Temporary Threshold Shifts" was finalized in October 2024. To that end, NMFS updated the Level A harassment zones and finalized Level A take calculations, based on the updated guidance. NMFS updated the marine mammal hearing groups, marine mammal auditory weighting functions, and auditory injury (AUD INJ) onset criteria. AUD INJ includes, but is not limited to, a permanent threshold shift (PTS). Acoustic thresholds for Level A harassment are presented here based on the draft updated guidance. Level B harassment thresholds have not been updated.

The action area is within the Whittier Harbor, located in downtown Whittier. The action area also includes transit routes for construction and supply barges to the project site. The action area for this project extends from the project site to where noise levels from pile installation of various pile types surpass acoustic thresholds. In this case, the action area for this project extends to where noise levels from vibratory hammer removal of 16-inch timber piles (the farthest-reaching noise associated with the project) are expected to decline to 120 dB. The action area would be truncated where the breakwater and other harbor structures obstruct underwater sound transmission. According to modeling based on the NMFS acoustic guidance as applied to the Alaska shoreline mapper[1], the action area extends approximately 1.7 km across Passage Canal and encompasses approximately 1.3 square km (Figure 4).

Passage Canal is an approximately 12-mile-long fjord. At its widest point, it measures less than 3.21 km (2 mi) across and at its entrance near Decision Point and Blackstone Bay, reaches depths over 305 m (1,000 ft). At 0.6 to five m (two to 16 feet), harbor depths are much shallower. Outside the harbor, water depths reach approximately 30 to 61m (100 to 200 ft).

The expected transit routes to be taken by the material and construction barges are also considered a part of the action area due to the noise impacts of large vessels on the marine environment (Figure 5 and Figure 6).

[1] NOAA Alaska Shoreline Mapper, https://alaskafisheries.noaa.gov/mapping/sz/ , accessed June 20, 2024

Figure 4. Action Area map for the Whittier Small Boat Harbor project construction activities (SolsticeAK 2025).

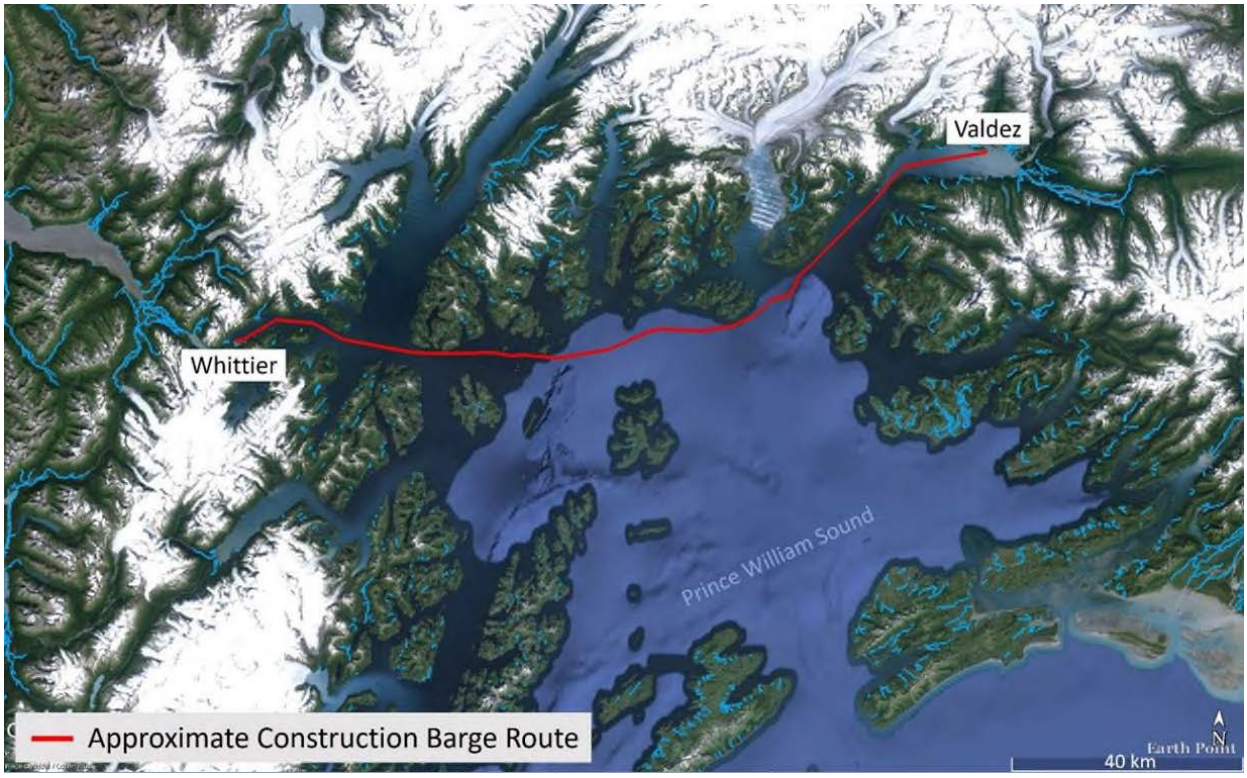

Figure 5. Expected construction barge route to the Whittier Small Boat Harbor project location (SolsticeAK 2025).

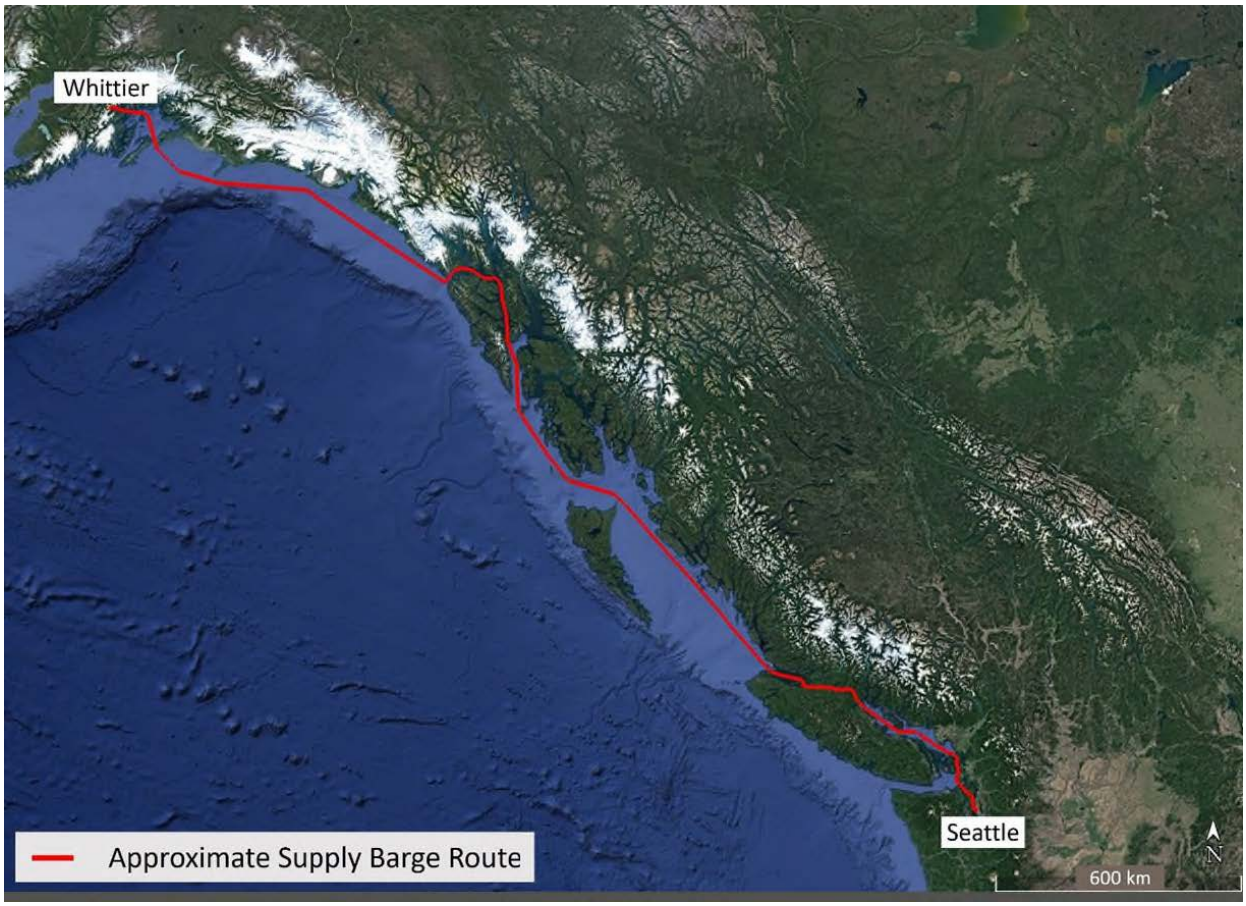

Figure 6. Expected supply barge route to the Whittier Small Boat Harbor project location (SolsticeAK 2025).

3 APPROACH TO THE ASSESSMENT

Section 7(a)(2) of the ESA requires Federal agencies, in consultation with NMFS, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their designated critical habitat. The jeopardy analysis in this consultation considers both survival and recovery of the species. The adverse modification analysis considers the impacts to the conservation value of the designated critical habitat.

To jeopardize the continued existence of a listed or proposed species means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR 402.02). As NMFS explained when it promulgated this definition, NMFS considers the likely impacts to a species' survival as well as likely impacts to its recovery. Further, it is possible that in certain, exceptional circumstances, injury to recovery alone may result in a jeopardy opinion (51 FR 19926, 19934; June 3, 1986).

Under NMFS's regulations, the destruction or adverse modification of critical habitat means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species (50 CFR 402.02). However, there is no designated critical habitat located within the action area. The nearest designated critical habitat for the Mexico or WNP DPS humpback whale is over 50 miles(mi) (80 kilometers [km]) east and 80 mi (144 km) southwest of the project area, respectively. The nearest North Pacific Right whale critical habitat is over 220 mi (355 km) southwest of the project area. The nearest designated critical habitat for Steller sea lions is Cape Resurrection B and C haulouts, located approximately 27 kilometers (km) southwest of the project area (58 FR 45269, August 27, 1993). NMFS is not currently proposing designating critical habitat for the sunflower sea star. Therefore, critical habitat will not be discussed further.

We use the following approach to determine whether the proposed action described in Section 2 of this opinion is likely to jeopardize the species listed above:

- Identify those aspects (or stressors) of the proposed action that are likely to have effects on listed or proposed species. As part of this step, we identify the action area – the spatial and temporal extent of these effects.

- Identify the range wide status of the species likely to be adversely affected by the proposed action. This section describes the current status of each listed and proposed species relative to the conditions needed for recovery. Species status are discussed in Section 4 of this opinion.

- Describe the environmental baseline including: past and present impacts of Federal, state, or private actions and other human activities *in the action area*; anticipated impacts of proposed Federal projects that have already undergone formal or early section 7 consultation, and the impacts of state or private actions that are contemporaneous with the consultation in process. The environmental baseline is discussed in Section 5 of this opinion.

- Analyze the effects of the proposed action. Identify the listed and proposed species that are likely to co-occur with these effects in space and time and the nature of that co-occurrence (these represent our *exposure analyses*). In this step of our analyses, we try to identify the number, age (or life stage), and sex of the individuals that are likely to be exposed to stressors and the populations or subpopulations those individuals represent. The effects of the action are described in Section 6 of this opinion with the exposure analysis described in Section 6.2 of this opinion. Once we identify which listed and proposed species are likely to be exposed to an action's effects and the nature of that exposure, we examine the scientific and commercial data available to determine whether and how those listed and proposed species are likely to respond given their exposure (these represent our *response analyses*). Response analysis is considered in Section 6.3 of this opinion.

- Describe any cumulative effects. Cumulative effects, as defined in NMFS's implementing regulations (50 CFR 402.02), are the effects of future state or private

activities, not involving Federal activities, that are reasonably certain to occur within the action area. Future Federal actions that are unrelated to the proposed action are not considered because they require separate section 7 consultation. Cumulative effects are considered in Section 7 of this opinion.

- Integrate and synthesize the above factors to assess the risk that the proposed action poses to species. In this step, NMFS adds the effects of the action (Section 6) to the environmental baseline (Section 5) and the cumulative effects (Section 7) to assess whether the action could reasonably be expected to appreciably reduce the likelihood of both survival and recovery of the species in the wild by reducing its numbers, reproduction, or distribution. These assessments are made in full consideration of the status of the species (Section 4). Integration and synthesis with risk analyses occurs in Section 8 of this opinion.

- Reach jeopardy conclusions. Conclusions regarding jeopardy and the destruction or adverse modification of critical habitat are presented in Section 9. These conclusions flow from the logic and rationale presented in the Integration and Synthesis Section 8.

- If necessary, define a reasonable and prudent alternative to the proposed action. If, in completing the last step in the analysis, NMFS determines that the action under consultation is likely to jeopardize the continued existence of listed or proposed species, NMFS must identify a reasonable and prudent alternative to the action.

4 RANGEWIDE STATUS OF THE SPECIES

Six species of ESA-listed marine mammals (including three DPSs) and one proposed invertebrate species under NMFS's jurisdiction may occur in the action area. This opinion and concurrence consider the effects of the proposed action on the species specified in Table 4.

Table 4. Listing status designation for species considered in this opinion.

Species	Status	Listing	Critical Habitat
North Pacific Right Whale *(Eubalaena japonica)*	Endangered	NMFS 2008, 73 FR 12024	NMFS 2008, 73 FR 19000
Humpback Whale, Mexico DPS *(Megaptera novaeangliae)*	Threatened	NMFS 2016, 81 FR 62260	NMFS 2021 86 FR 21082
Humpback Whale, Western North Pacific DPS *(Megaptera novaeangliae)*	Endangered	NMFS 2016, 81 FR 62260	NMFS 2021 86 FR 21082
Fin Whale (*Balaneoptera physalus*)	Endangered	NMFS 1970, 35 FR 18319	Not designated
Sperm Whale (*Physeter macrocephalus*)	Endangered	NMFS 1970, 35 FR 18319	Not designated

Species	Status	Listing	Critical Habitat
Steller Sea Lion, Western DPS *(Eumetopias jubatus)*	Endangered	NMFS 1997, 62 FR 24345	NMFS 1993, 58 FR 45269
Sunflower Sea Star (*Pycnopodia helianthoides*)	Proposed Threatened	NMFS 2023, 88 FR 16212	Not designated

4.1 Species Not Likely to be Adversely Affected by the Action

NMFS uses two criteria to identify those endangered, threatened, or proposed species or critical habitat that are likely to be adversely affected by the proposed action. The first criterion is exposure or some reasonable expectation of a co-occurrence between one or more potential stressors associated with the proposed action and a listed or proposed species. The second criterion is an assessment of the potential response given exposure.

We applied these criteria to the species listed above. The following species may be exposed to stressors from the vessel transit and construction activity associated with the proposed action, but we have concurred that they are not likely to be adversely affected: North Pacific right whale, Mexico DPS humpback whale, Western North Pacific DPS humpback whale, fin whale, and sperm whale. Below we discuss our rationale for those determinations.

4.1.1 North Pacific Right Whale, Mexico DPS Humpback Whale, Western North Pacific DPS Humpback Whale, Fin Whale, and Sperm Whale

4.1.1.1 Vessel Traffic

The tug and barges will deploy from Seattle and/or Valdez and will have a short-term presence in the North Pacific and Gulf of Alaska. All barges will be towed at a speed of 10 kt or less; the typical transit speed is between 6 and 9 kt. The proposed routes overlap with the ranges of the North Pacific right whale, Mexico DPS humpback whale, Western North Pacific DPS humpback whale, fin whale, and sperm whale, and these species may be encountered during vessel transit. Potential effects from project vessel traffic on these ESA-listed species includes auditory and visual disturbance and vessel strike.

Mitigation measures (Section 2.1.2) will be implemented to minimize or avoid auditory and visual disturbance and potential vessel collisions with marine mammals during project activities. These mitigation measures include, but are not limited to, maintaining a vigilant watch aboard vessels for listed marine mammals and avoiding potential interactions with whales by implementing a 5 kt speed restriction when within 274 m (300 yd) of observed whales. Project vessels will also be maneuvered to keep at least 460 m (500 yd) away from any observed North Pacific right whales, 91 m (100 yd) from other marine mammals, and avoid approaching whales in a manner that causes them to change direction or separate from other whales in their group.

Although some marine mammals could receive sound levels in exceedance of the acoustic threshold of 120 dB from the project vessels or be disturbed by the visual presence of tug and

barges, disturbances rising to the level of harassment are extremely unlikely to occur. NMFS has interpreted the term "harass" under the ESA as to "create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering" (Wieting 2016). While listed marine mammals will likely be exposed to acoustic stressors from barging activities, the nature of the exposure (primarily vessel noise) will be low-frequency, with much of the acoustic energy emitted by project vessels at frequencies below the best hearing ranges of many large baleen whales. In addition, the duration of the exposure to ship noise will be brief as the vessels will be in transit. The project vessels will emit continuous sound while in transit, which may alert marine mammals before the received sound level exceeds 120 dB. Slight deflection and avoidance are expected to be common responses, in those instances where there is any response at all. The implementation of mitigation measures is expected to further reduce the amount of potential disturbance to marine mammals from transiting vessels.

The factors discussed above, when considered as a whole, make it extremely unlikely that transiting vessels will elicit behavioral responses from, or have adverse effects on, the North Pacific right whale, Mexico DPS humpback whale, Western North Pacific DPS humpback whale, fin whale, or sperm whale that rise to the level of harassment under the ESA (Wieting 2016). We expect any effects to listed species to have little consequence and not to significantly disrupt normal behavioral patterns, and conclude that auditory and visual disturbance from project-related vessel traffic will be insignificant.

Vessel strike is an ongoing source of mortality for large cetaceans (Vanderlaan and Taggart 2007; Schoeman et al. 2020) and vessel speed is a principal factor in whether a strike results in death (Laist et al. 2001; Vanderlaan and Taggart 2007). From 1978 to 2022, there were 151 vessel strikes reported involving humpback whales, three strikes involving sperm whales, and one strike each of a gray whale, killer whale, and beluga whale in Alaska waters (Neilson et al. 2012; Helker et al. 2019; Freed et al. 2023; Brower et al. 2024). There were also 15 reported ship strikes of unidentified whales (Neilson et al. 2012; Helker et al. 2019; Freed et al. 2023; Brower et al. 2024). There have been no reported strikes of North Pacific right whales in Alaska since 1978; however, the reported unidentified whale strikes could potentially include these species (Neilson et al. 2012; Helker et al. 2019; Freed et al. 2023; Brower et al. 2024).The vast majority of reported strikes occurred in Southeast Alaska between May and September, where and when commercial vessel traffic coincides with large aggregations of humpback whales in narrow straits and passageways. However, the probability of strike events depends on the frequency, speed, and route of the marine vessels, and the distribution and density of marine mammals in the area, as well as other factors. With the low number of vessel trips, transitory nature of project-related vessel traffic, slow transit speeds, implementation of the mitigation measures, and the low occurrence of these whale species over the majority of the route, we conclude the probability of a project vessel striking a North Pacific right whale, Mexico DPS humpback whale, Western North Pacific DPS humpback whale, fin whale, or sperm whale is extremely low and any adverse effects due to vessel strikes are extremely unlikely to occur, and thus discountable.

In summary, we conclude that vessel traffic associated with the proposed action is not likely to

adversely affect North Pacific right whales, Mexico DPS humpback whale, Western North Pacific DPS humpback whale, fin whale, or sperm whale.

4.1.1.2 Pile Driving Activities

The project is located in Whittier, Alaska, at the head of Passage Canal. The action area for pile driving activities extends the full width across Passage Canal (Figure 4).

We are unaware of any records of North Pacific right whales or fin whales in inner Passage Canal or within Prince William Sound in the past five years[2]. These species may occur farther south in the offshore waters of the Gulf of Alaska or along the Aleutian Islands, but they are not expected to occur in the construction action area. There are two incidences of a sperm whale being sighted in Prince William Sound.[1] One observation occurred in April 2025 in Unakwik Inlet to the northwest of the project and a second observation was recorded south of Knight Island in 2023. Both sightings were verified with photographs. However, both sperm whale observations were more than 80 km (49 mi) from the project area. Therefore, adverse effects to North Pacific right whales, fin whales, and sperm whales from pile driving activities are extremely unlikely, and thus discountable.

Humpback whales are frequently seen in Passage Canal and often come close enough to Whittier to be observed from the harbor area. However, humpbacks feeding in Alaska waters primarily belong to the Hawaii DPS, with small numbers from the Mexico DPS and Western North Pacific DPS (Wade 2021). The action area will be truncated by the breakwaters to the northwest and sound will propagate primarily out to the northeast across Passage Canal in a limited area (Figure 4) where humpbacks have not been observed in the past five years.[3] No humpback whales were observed within Passage Canal during the Whittier Ferry Terminal Modification Project in April 2020 (Leonard and Wisdom 2020a). During monitoring efforts for the two IHAs for the Whittier Head of the Bay Cruise Ship Dock Project (132 days of monitoring; May 2023-March 2024 and 90 days of monitoring; April 2024-February 2025), 10 individual humpback whales were sighted or resighted for a total of 29 sightings (Solstice 2025). All whale sightings occurred in June and August. The applicant will have PSOs stationed where they will be able to effectively monitor the entire area of potential noise impacts and alert the operator if a large whale approaches the action area. This project will occur largely from fall through spring months, so we do not expect many, if any, humpbacks to be in or near the action area. Further, should humpbacks be nearby, we do not expect them to enter the action area and should they do so, mitigation measures are in place to mitigate potential impacts. Therefore, adverse effects to humpback whales from pile driving activities are extremely unlikely, and thus discountable.

In summary, NMFS concludes that pile driving activities associated with the proposed action are not likely to adversely affect the North Pacific right whales, Mexico DPS humpback whale, Western North Pacific DPS humpback whale, fin whale, or sperm whale. These species will not be discussed further.

[2] Happy whale observation search https://happywhale.com/browse accessed May 13, 2025
[3] Happy whale observation search https://happywhale.com/browse accessed May 13, 2025; iNaturalist query https://www.inaturalist.org/observations?subview=map&taxon_id=41565 accessed May 13, 2025.

4.2 Climate Change

One threat common to all the species we discuss in this opinion is global climate change. Because of this commonality, we present an overview here rather than in each of the species-specific narratives. A vast amount of literature is available on climate change and for more detailed information we refer the reader to these websites, which provide the latest data and links to the current state of knowledge on the topic.

https://www.ipcc.ch/reports/

https://climate.nasa.gov/evidence/

http://nsidc.org/arcticseaicenews/

https://arctic.noaa.gov/Report-Card

Increased air temperatures, increased ocean temperatures, and ocean acidification are the three facets of climate change presented here as they have the most direct impact on marine mammals and their prey.

Air temperature

Recording of global temperatures began in 1850, and the last 10 years (2015–2024) have ranked as the 10 warmest years in the 175-year record. The yearly temperature for North America has increased at an average rate of 0.27°F per decade since 1910; however, the average rate of increase since 1975 is more than double the century-scale rate (0.59°F).[4]

The Arctic (latitudes between 60ºN and 90ºN) has been warming at more than two times the rate of lower latitudes since 2000. This is due to "Arctic amplification", a characteristic of the global climate system influenced by changes in sea ice extent, albedo, atmospheric and oceanic heat transports, cloud cover, black carbon, and many other factors (Serreze and Barry 2011; Richter-Menge et al. 2017; Richter-Menge 2019). The average annual temperature is now 3-4°F warmer than during the early and mid-century (Figure 7). The average annual temperature for Alaska in 2024 was 28.9°F, 2.9°F above the long-term average, ranking in the warmest third of the historical record for the state.[5] Some of the most pronounced effects of climate change in Alaska include disappearing sea ice, shrinking glaciers, thawing permafrost, and changing ocean temperatures and chemistry (Chapin et al. 2014).

[4] https://www.ncei.noaa.gov/access/monitoring/monthly-report/global/202413 accessed March 2025.
[5] https://www.ncei.noaa.gov/access/monitoring/monthly-report/national/202413 accessed March 2025.

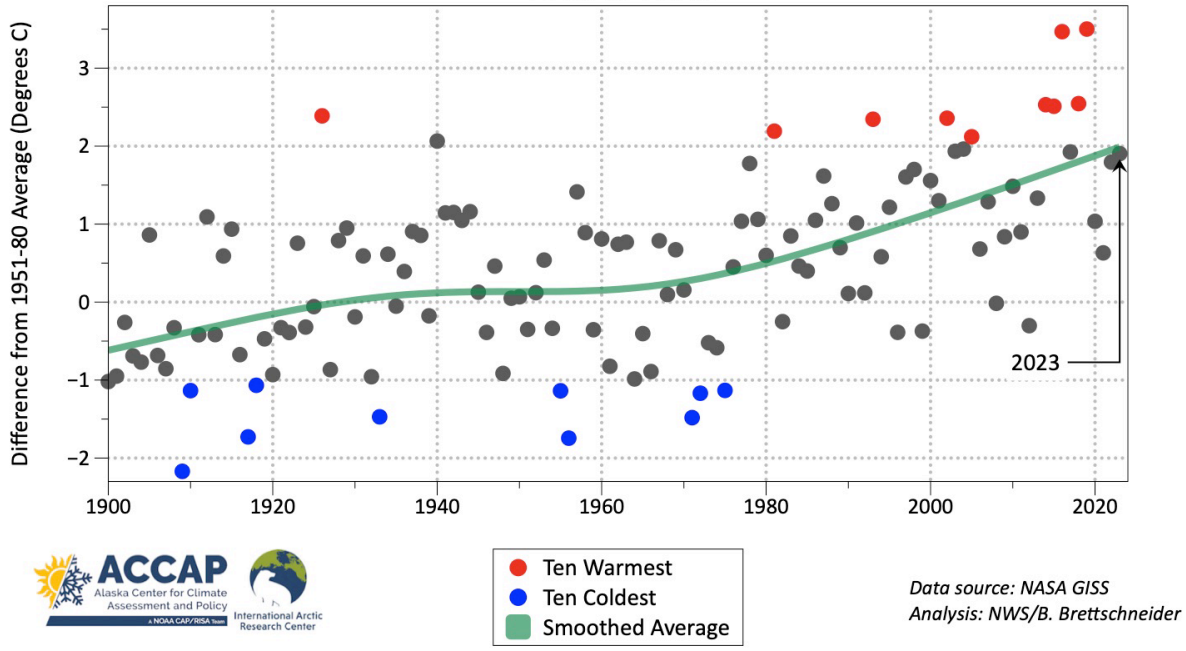

Figure 7. Alaska annual average temperature 1900 to 2023.[6]

Marine water temperature

Higher air temperatures have led to higher ocean temperatures. More than 90 percent of the excess heat created by global climate change is stored in the world's oceans, causing increases in ocean temperature (IPCC 2019; Cheng et al. 2020). The 2024 global ocean heat content (OHC), which is the amount of heat stored in the ocean, in the upper 700 meters and upper 2000 meters was a record high. The five highest 2000-meter OHC measurements have all occurred in the past five years and five highest 700-meter OHC have all occurred since 2019. The Atlantic and Indian Oceans had their highest OHC in the upper 700 meters since the 1950s, while the Pacific had its third highest.[7]

The seas surrounding Alaska have been unusually warm in recent years, with unprecedented warmth in some cases (Thoman and Walsh 2019). This effect is observed throughout the Alaska region, including the Bering, Chukchi, and Beaufort seas (Figure 8). Warmer ocean water affects sea ice formation and melt. In the first decade of the 21st century, Arctic sea ice thickness and annual minimum sea ice extent began declining at an accelerated rate and continues to decline at a rate of approximately 2.7 percent per decade (Stroeve et al. 2007; Stroeve and Notz 2018).

[6] https://www.flickr.com/photos/alaskaclimategraphics/albums/72177720310047711/with/53724340701 accessed November 2024.
[7] https://www.ncei.noaa.gov/access/monitoring/monthly-report/global/202413 accessed March 2025.

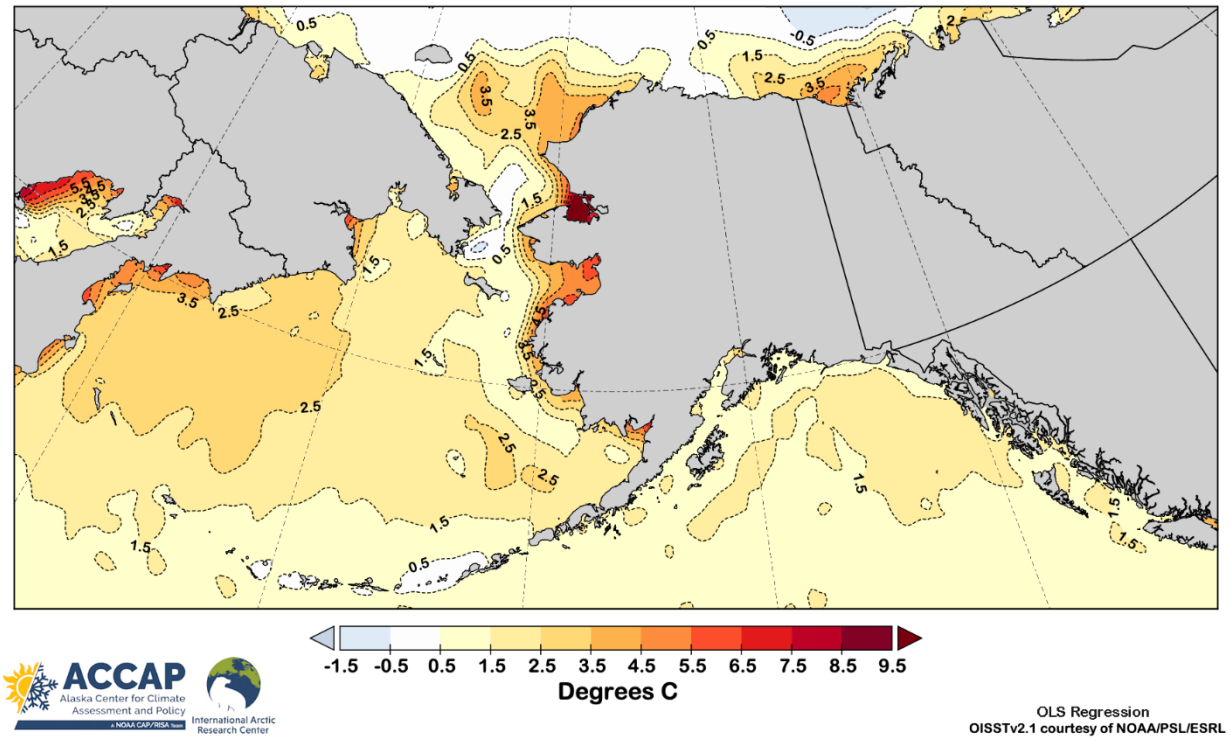

Figure 8. Change in average sea surface temperature, July 1982-2023.[8]

With the reduction in the cold-water pool in the northern Bering Sea, large scale northward movements of commercial fish stocks are underway, as previously cold-dominated ecosystems warm and fish move northward to higher latitudes (Grebmeier et al. 2006; Eisner et al. 2020). Not only fish, but plankton, crabs, and sessile invertebrates like clams are affected by these changes in water temperature (Grebmeier et al. 2006; Fedewa et al. 2020).

The marine heat wave, a coherent area of extreme warm temperature at the sea surface that persists, is another ocean water anomaly (Frölicher et al. 2018). Marine heatwaves are a key ecosystem driver and nearly 70 percent of global oceans experienced strong or severe heatwaves in 2016, compared to 30 percent in 2012 (Suryan et al. 2021). The largest recorded marine heat wave occurred in the northeast Pacific Ocean, appearing off the coast of Alaska in the winter of 2013-2014 and extending south to Baja California by the end of 2015 (Frölicher et al. 2018). The Pacific marine heatwave began to dissipate in mid-2016, but warming re-intensified in late-2018 and persisted through 2021 (Suryan et al. 2021; Hastings et al. 2023). Consequences of this event included an unprecedented harmful algal bloom that extended from the Aleutian Islands to southern California, mass strandings of marine mammals, shifts in the distribution of invertebrates and fish, and shifts in abundance of several fish species (Cavole et al. 2016). Cetaceans, forage fish such as capelin and herring, Steller sea lions, adult cod, and Chinook and sockeye salmon in the Gulf of Alaska were all impacted by the Pacific marine heatwave (Bond et al. 2015; Peterson et al. 2016; Sweeney et al. 2018).

[8] https://www.flickr.com/photos/alaskaclimategraphics/albums/72177720310434651/with/53535707176 accessed November 2024.

The 2018 Gulf of Alaska Pacific cod stock assessment estimated that the female spawning biomass of Pacific cod (an important prey species for Steller sea lions) was at its lowest point in the 41-year time series, following three years of poor recruitment and increased natural mortality as a result of the 2014-2016 Pacific marine heatwave.[9] The spawning stock biomass dropped below 20 percent of the unfished spawning biomass in 2020; 20 percent is a minimum spawning stock size threshold instituted to help ensure adequate prey availability for the endangered Western DPS of Steller sea lions. The federal Pacific cod fishery in the Gulf of Alaska was closed by regulation to directed Pacific cod fishing in 2020 as a result (Barbeaux et al. 2020). Pacific cod abundance remains at reduced levels; however, the spawning stock biomass is above the 20 percent minimum spawning stock size threshold (Hulson et al. 2024).

Ocean Acidification

For 650,000 years or more, the average global atmospheric carbon dioxide (CO_2) concentration varied between 180 and 300 parts per million (ppm). Since the beginning of the industrial revolution in the late 1700s, atmospheric CO_2 concentrations have been increasing rapidly, primarily due to anthropogenic inputs (Fabry et al. 2008; Lüthi et al. 2008). The world's oceans have absorbed approximately one-third of the anthropogenic CO_2 released, which has buffered the increase in atmospheric CO_2 concentrations (Feely et al. 2004; Feely et al. 2009). Despite the ocean's role as a large carbon sink, the CO_2 level continues to rise and the global monthly mean for November 2024 was 423.64 ppm.[10]

As the oceans absorb CO_2, the buffering capacity and pH of seawater is reduced. This process is referred to as ocean acidification. Ocean acidification reduces the saturation states of certain biologically important calcium carbonate minerals like aragonite and calcite that many organisms use to form and maintain shells (Bates et al. 2009; Reisdorph and Mathis 2014). When seawater is supersaturated with these minerals, calcification (growth) of shells is favored. Likewise, when the seawater becomes undersaturated, dissolution is favored (Feely et al. 2009).

High latitude oceans have naturally lower saturation states of calcium carbonate minerals than more temperate or tropical waters, making Alaska's oceans more susceptible to the effects of ocean acidification (Fabry et al. 2009; Jiang et al. 2015). Model projections indicate that aragonite undersaturation was expected to start to occur by about 2020 in the Arctic Ocean, and by 2050 all of the Arctic will be undersaturated with this mineral (Feely et al. 2009; Qi et al. 2017). Large inputs of low-alkalinity freshwater from glacial runoff and melting sea ice contribute to the problem by reducing the buffering capacity of seawater to changes in pH (Reisdorph and Mathis 2014). As a result, seasonal undersaturation of aragonite was already detected in the Bering Sea at sampling stations near the outflows of the Yukon and Kuskokwim Rivers and the Chukchi Sea (Fabry et al. 2009). Models and observations indicate that rapid sea ice loss will increase the uptake of CO_2 and exacerbate the problem of aragonite undersaturation in the Arctic (Yamamoto et al. 2012; DeGrandpre et al. 2020).

Undersaturated waters are potentially highly corrosive to any calcifying organism, such as corals,

[9] https://apps-afsc.fisheries.noaa.gov/REFM/Docs/2018/GOA/GOApcod.pdf accessed November 2024.
[10] https://gml.noaa.gov/ccgg/trends/global.html accessed November 2024.

bivalves, crustaceans, echinoderms and many forms of zooplankton, and, consequently, may affect Arctic food webs (Fabry et al. 2008; Bates et al. 2009). Pteropods, which are often considered an indicator species for ecosystem health, are prey for many species of carnivorous zooplankton, fishes including salmon, mackerel, herring, and cod, and baleen whales (Orr et al. 2005). With their thin shells and dependence on aragonite, pteropods may not be able to grow and maintain shells under increasingly acidic conditions (Lischka and Riebesell 2012). It is uncertain if these species, which play a large role in supporting many levels of the Alaskan marine food web, will be able to adapt to changing ocean conditions (Fabry et al. 2008; Lischka and Riebesell 2012).

Climate change is projected to have substantial direct and indirect effects on individuals, populations, species, and the structure and function of marine, coastal, and terrestrial ecosystems in the foreseeable future (Hinzman et al. 2005; Burek et al. 2008; Doney et al. 2012; Huntington et al. 2020). The physical effects on the environment described above have impacted marine species in a variety of ways, including shifting abundances, changes in distribution, changes in timing of migration, and changes in periodic life cycles of species (IPCC 2019). For example, cetaceans with restricted distributions linked to water temperature may be particularly susceptible to range restriction (Learmonth et al. 2006; Isaac 2009). Macleod (2009) estimated that, based on expected shifts in water temperature, 88 percent of cetaceans will be affected by climate change, 47 percent will be negatively affected, and 21 percent will be put at risk of extinction. Of greatest concern are cetaceans with ranges limited to non-tropical waters and preferences for shelf habitats (Macleod 2009).

4.3 Status of Listed Species Likely to be Adversely Affected by the Action

This opinion examines the status of each species that is likely to be adversely affected by the proposed action. Species status is determined by the level of extinction risk that the listed or proposed species face, based on parameters considered in documents such as recovery plans, status reviews, and listing decisions. This informs the description of the species' likelihood of both survival and recovery. The species status section also helps to inform the description of the species' current "reproduction, numbers, or distribution" as described in 50 CFR 402.02.

For each species, we present a summary of information on the population structure and distribution of the species to provide a foundation for the exposure analyses that appear later in this opinion. Then we summarize information on the threats to the species and the species' status given those threats to provide points of reference for the jeopardy determinations we make later in this opinion. That is, we rely on a species' status and trend to determine whether an action's effects are likely to increase the species' probability of becoming extinct.

4.3.1 Western DPS Steller Sea Lion

4.3.1.1 Population Structure and Status

On November 26, 1990, NMFS published a final rule to list Steller sea lions as threatened (55 FR 49204). In 1997, NMFS reclassified Steller sea lions as two DPSs (62 FR 24345; May 5, 1997); the Eastern DPS was listed as threatened and the Western DPS was listed as endangered.

On November 4, 2013, NMFS published a final rule to delist the Eastern DPS (78 FR 66140). Information on Steller sea lion biology and habitat (including critical habitat) is available in the revised Steller Sea Lion Recovery Plan (NMFS 2008) and five-year Status Review (NMFS 2020).

The Western DPS of Steller sea lions decreased from an estimated 220,000 to 265,000 animals in the late 1970s to fewer than 50,000 in 2000 (Young et al. 2024). Factors that may have contributed to this decline include incidental take in fisheries, competition with fisheries for prey, legal and illegal shooting, predation, exposure to contaminants, disease, and ocean regime shift-driven climate change (NMFS 2008). The most recent comprehensive surveys of Western DPS Steller sea lions estimated a total Alaska population (both pups and non-pups) of 52,727 (Sweeney et al. 2025). Between 2009 and 2024, Western DPS Steller sea lion pups increased by 0.90 percent per year and non-pups increased by 0.96 percent per year (Sweeney et al. 2025). While the data show the overall population trend is positive, abundance and trends are highly variable across regions and age classes.

Pup counts declined in the eastern and central Gulf of Alaska between 2015 and 2017, counter to the increases observed in both regions since 2002 (Sweeney et al. 2017). These declines may have been due to changes in prey availability from the marine heatwave that occurred in the northern Gulf of Alaska from 2014 to 2016 (Bond et al. 2015; Petersen et al. 2016; Young et al. 2024). Pup counts rebounded to 2015 levels in 2019; however, non-pup counts in the eastern, central, and western Gulf of Alaska regions declined (Sweeney et al. 2019). The eastern Gulf of Alaska region non-pups count remained low in 2021, the central Gulf of Alaska increased to 2010 levels, and the western Gulf of Alaska showed the first signs of decline in 2021 after increasing since the early 2000s (Sweeney et al. 2022). As of 2024, the eastern Gulf of Alaska region non-pup count significantly decreased, the central Gulf of Alaska region continued to increase, and the western Gulf of Alaska remained stable (Sweeney et al. 2025).

4.3.1.2 Distribution

Steller sea lions range along the North Pacific rim from northern Japan to California, with centers of abundance in the Gulf of Alaska and Aleutian Islands (Figure 11; Loughlin et al. 1984). Although Steller sea lions seasonally inhabit coastal waters of Japan in the winter, breeding rookeries outside of the U.S. are only located in Russia (Burkanov and Loughlin 2005). Steller sea lions are not known to migrate annually, but individuals may widely disperse outside of the breeding season (late May to early July; Jemison et al. 2013; Young et al. 2024).

Land sites used by Steller sea lions are referred to as rookeries and haulouts (Figure 9). Rookeries are used by adult sea lions for pupping, nursing, and mating; most adults occupy rookeries during the reproductive season (Pitcher and Calkins 1981; Gisiner 1985), and exhibit high site fidelity (Sandegren 1970). Some juveniles and non-breeding adults occur at or near the rookeries during the breeding season, but most are on haulouts (Rice 1998; Ban 2005; Call and Loughlin 2005). Haulouts are used by all age classes of both sexes but are generally not where sea lions reproduce. At the end of the reproductive season, some females may move with their pups to other haulout sites and males may migrate to distant foraging locations (Spalding 1964; Pitcher and Calkins 1981). Sea lions may make semi-permanent or permanent one-way

movements from one site to another (Chumbley et al. 1997; Burkanov and Loughlin 2005). Round trip migrations of greater than 6,500 km have been documented for individual Steller sea lions (Jemison et al. 2013).

Most adult Steller sea lions occupy rookeries during the pupping and breeding season (Pitcher and Calkins 1981; Gisiner 1985), and exhibit high site fidelity (Sandegren 1970). During the breeding season some juveniles and non-breeding adults occur at or near the rookeries, but most are on haulouts (Rice 1998; Ban 2005; Call and Loughlin 2005).

The Western DPS and Eastern DPS are characterized by a formerly distinct break in mitochondrial DNA (mtDNA) lineage distributions (Bickham et al. 1996; O'Corry-Crowe et al. 2006) at 144° W. longitude (Figure 9). This population break is likely ancient and is consistent with a pattern of geographic isolation in one or more glacial refugia in the northern Pacific (Harlin-Cognato et al. 2006). Steller sea lions west of the 144° longitudinal line are almost exclusively Western DPS, although research has shown that some straying occurs and a small percentage of Steller sea lions east of the 144° line may be from the Western DPS (Hastings et al. 2020).

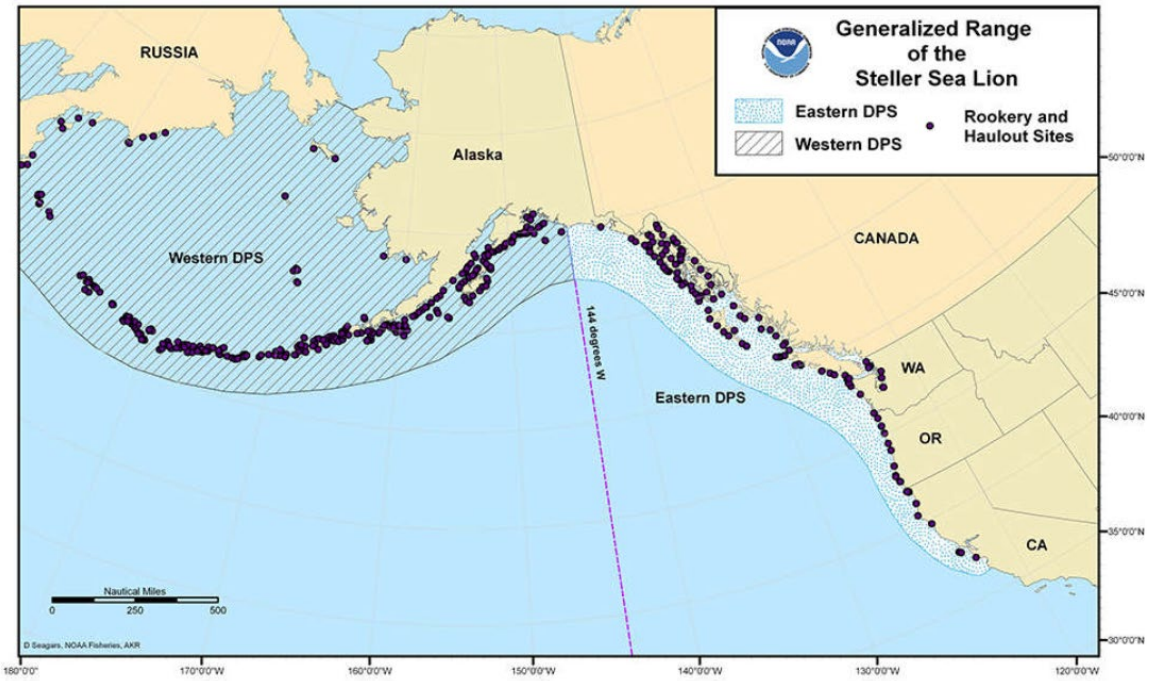

Figure 9. Ranges, rookeries, and haulout sites of Western and Eastern DPS Steller sea lions.

4.3.1.3 Presence in the Action Area

Since Prince William Sound and the project site are west of 144° longitude, it is reasonable to assume that Steller sea lions near the project will be from the Western DPS.

Marine Transit Routes

Given the wide dispersal of individuals, the Western DPS of Steller sea lions will likely be encountered along the transit routes. An area of high occurrence extends from the shore to water depths of 500 m. In the Gulf of Alaska, foraging habitat is primarily shallow, nearshore, and continental shelf waters 8 to 24 km offshore with a secondary occurrence inshore of the 1,000 m isobath, and a rare occurrence seaward of the 1,000 m isobath.

Prince William Sound and Passage Canal

Steller sea lions are distributed throughout Southcentral Alaska, with patterns loosely correlated to aggregations of spawning and migrating prey species(Sinclair and Zeppelin 2002; Sinclair et al. 2013). Although there are no documented haulouts or rookeries within Passage Canal, a small number of Steller sea lions have been reported hauling out year-round on a mooring buoy in Shotgun Cove, approximately 10 km (6.2 mi) from the project site, and were noted during the project review for the Whittier Ferry Terminal Modification Project in 2019 (84 FR 72321).

Steller sea lions are drawn to fish processing plants and high forage value areas such as anadromous streams. Passage Canal has several anadromous streams that support salmon species[11]. There is one fish processing plant with an Alaska Department of Environmental Conservation (ADEC) permitted outfall that also attracts Steller sea lions in the area (ADEC 2024). There were nine Steller sea lion groups (representing about 27 individuals) sighted during marine mammal monitoring of the Whittier Ferry Terminal Modification Project in April 2020. Groups ranged from one to seven animals. Sightings occurred over a period of six days and approximately 86 hours of monitoring time (Leonard and Wisdom 2020a).

During monitoring efforts for the two IHAs for the Whittier Head of the Bay Cruise Ship Dock Project (132 days of monitoring; May 2023-March 2024; 90 days of monitoring; April 2024-February 2025), 65 Steller sea lions were sighted, primarily as solo individuals or groups of two, and infrequently in groups of three (Solstice 2025)(Figure 10). Steller sea lions are known to be present in the project area during the proposed construction timeline.

[11] Alaska Department of Fish and Game. 2024. Alaska Fish Resource Monitor Mapper. Accessed June 23, 2025 https://experience.arcgis.com/experience/1a4eb07b42ff4ebb8c71ba45adaedf0c/

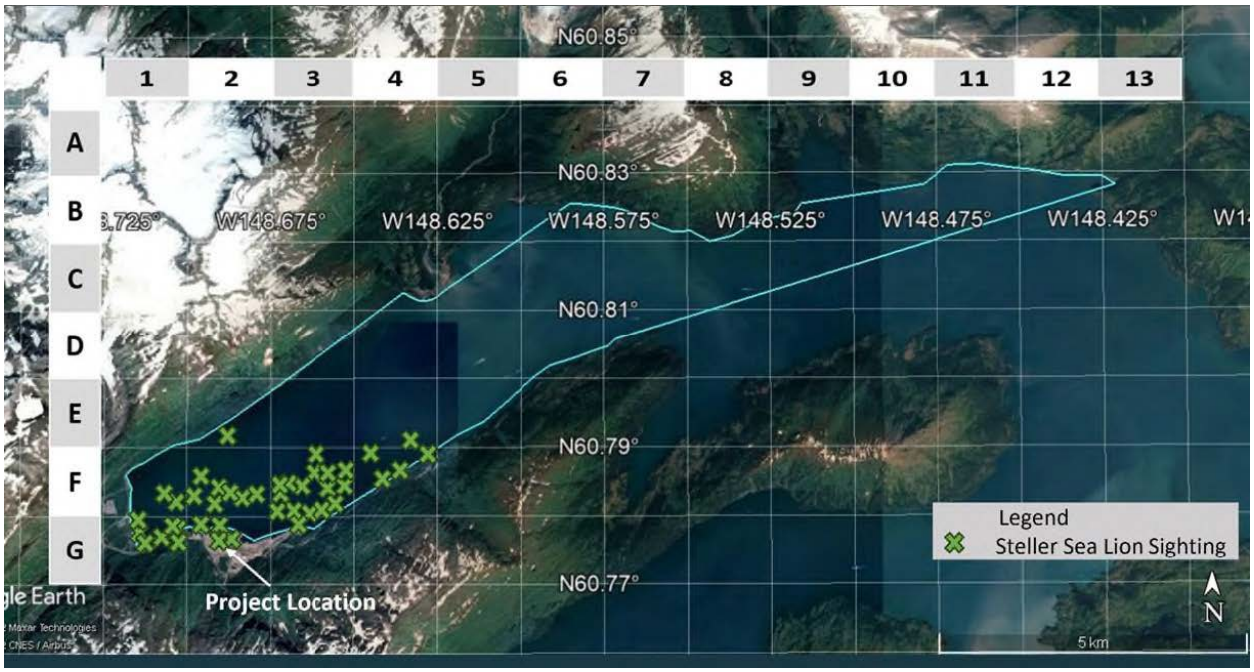

Figure 10. Steller Sea Lion Sightings During Whittier Head of the Bay Project (First IHA)(Solstice 2025).

4.3.1.4 Feeding, Diving, Hauling Out, and Social Behavior

The foraging strategy of Steller sea lions is strongly influenced by seasonality of sea lion reproductive activities on rookeries and the seasonal presence of many prey species. Steller sea lions are generalist predators that eat a variety of fishes and cephalopods (Pitcher and Calkins 1981; Calkins and Goodwin 1988; NMFS 2008), and occasionally other marine mammals and birds (Pitcher and Fay 1982; NMFS 2008).

During summer, Steller sea lions feed mostly over the continental shelf and shelf edge. Females attending pups forage within 37 km of breeding rookeries (Merrick and Loughlin 1997), and begin a regular routine of alternating foraging trips at sea with nursing their pups on land a few days after birth. Steller sea lions tend to make shallow dives of less than 250 m but are capable of deeper dives (NMFS 2018). Female foraging dives during summer tend to be closer to shore and are shallower (Merrick and Loughlin 1997). Winter foraging trips tend to be longer in duration, farther from shore, and with deeper dives.

Steller sea lions are gregarious animals that often travel in large groups of up to 45 individuals (Keple 2002), and rafts of several hundred animals are often observed adjacent to haulouts. Individual rookeries and haulouts may be comprised of hundreds of animals. At sea, groups usually consist of females and subadult males, as adult males are usually solitary (Loughlin 2002).

4.3.1.5 Reproduction

Male Steller sea lions reach sexual maturity between ages three and seven, but do not reach

physical maturity and participate in breeding until about 8 to 10 years of age (Pitcher and Calkins 1981). Female Steller sea lions reach sexual maturity and first breed between 3 and 8 years of age, and the average age of reproductive females is about 10 (Pitcher and Calkins 1981; Calkins and Pitcher 1982; York 1994).

After reaching maturity, females normally ovulate and breed annually. There is a high rate of reproductive failure but, when successful, females give birth to a single pup between May and July. The sex ratio of pups at birth is assumed to be about 1:1, or slightly biased toward males. Newborn pups are dependent upon their mother for milk during at least the first three months, and observations suggest they continue to be highly dependent through their first winter (Trites et al. 2006).

4.3.1.6 Vocalization, Hearing, and Other Sensory Capabilities

The ability to detect sound and communicate underwater is important for a variety of Steller sea lion life functions, including reproduction and predator avoidance. NMFS categorizes Steller sea lions in the otariid pinniped functional hearing group, with an applied frequency range between 60 Hz and 68 kHz in water (NMFS 2024a). Studies of Steller sea lion auditory sensitivities have found that this species detects sounds underwater between one and 25 kHz (Kastelein et al. 2005), and in air between 250 Hz and 30 kHz (Mulsow and Reichmuth 2010).

4.3.1.7 Threats

Natural Threats

Killer whale predation on the Western DPS, under reduced population size, may cause significant reductions in the stock (NMFS 2008). Steller sea lions are also vulnerable to predation from sleeper sharks. Juvenile Steller sea lions were found to underutilize foraging habitats and prey resources based on predation risk by killer whales and sleeper sharks (Frid et al. 2009).

Steller sea lions have tested positive for several pathogens, and parasites are common; however, disease levels and mortality resulting from infestation are unknown. Significant negative effects of these factors may occur in combination with stress, which may compromise the immune system. If other factors, such as disturbance, injury, or difficulty feeding occur, it is more likely that disease and parasitism can play a greater role in population reduction

The female spawning biomass of Pacific cod, an important prey species for Steller sea lions, was at its lowest point in 2018.[12] The federal Pacific cod fishery in the Gulf of Alaska was closed by regulation to directed Pacific cod fishing in 2020 (Barbeaux et al. 2020). Abundance has remained at reduced levels since the 2014-2016 marine heatwave; however, the spawning stock biomass is above the 20 percent minimum spawning stock size threshold (Hulson et al. 2024).

[12] https://apps-afsc.fisheries.noaa.gov/REFM/Docs/2018/GOA/GOApcod.pdf accessed December 2024.

Anthropogenic Threats

Subsistence hunters removed 218 Western DPS Steller sea lions between 2017 and 2021 in controlled and authorized harvests (Young et al. 2024). Between 2018 and 2022, human-caused mortality and injury of Western DPS Steller sea lions (n=159) was primarily caused by entanglement in fishing gear, in particular, commercial trawl gear (n=109; Brower et al. 2024). Illegal shooting continues to be a threat to Steller sea lions in certain areas of Alaska.

Concern also exists regarding competition between commercial fisheries and Steller sea lions for the same resource: stocks of pollock, Pacific cod, and Atka mackerel. Limitations on fishing grounds, duration of fishing season, and monitoring have been established to prevent Steller sea lion nutritional deficiencies as a result of inadequate prey availability.

Metal and contaminant exposure remains a focus of ongoing investigation. Total mercury concentrations measured in hair samples collected from pups in the western-central Aleutian Islands were detected at levels that cause neurological and reproductive effects in other species (Rea et al. 2013).

4.3.2 Sunflower Sea Star

4.3.2.1 Population Structure and Status

On August 18, 2021, the Center for Biological Diversity petitioned NMFS to list the sunflower sea star (*Pycnopodia helianthoides*) under the ESA. NMFS determined that the proposed action may be warranted (86 FR 73230; December 27, 2021) and completed a full status review to evaluate overall extinction risk for the species. NMFS issued a proposed rule to list the species as threatened on March 16, 2023, (88 FR 16212). NMFS has not proposed to designate critical habitat at this time.

The global abundance of sunflower sea stars was estimated at several billion animals prior to 2013, but sea star wasting syndrome (SSWS) reached pandemic levels from 2013–2017, killing an estimated 90 percent or more of the population (Lowry et al. 2022). Sunflower sea stars are currently estimated to number approximately 600 million (Lowry et al. 2022). No specific populations of sunflower sea stars have been delineated and they are assumed to be genetically homogenous throughout their range (Lowry et al. 2022).

4.3.2.2 Distribution

The sunflower sea star is a fast-moving (up to 160 centimeters/minute) echinoderm native to the west coast of North America (Lowry et al. 2022). The species occupies waters from the intertidal zone to at least 435 m deep, but is most common at depths less than 25 m and rare in waters deeper than 120 m (Lambert 2000; Hemery et al. 2016; Gravem et al. 2021). Sunflower sea stars occur over a broad array of soft-, mixed-, and hard-bottom habitats from the Aleutian Islands in Alaska to Baja California, Mexico (Figure 11), but are most abundant in waters off eastern Alaska and British Columbia (Gravem et al. 2021). They are found along the outer coasts and inside waters, which have complex geophysical features including glacial fjords, sounds,

embayments, and tidewater glaciers. Preferring temperate waters, they inhabit kelp forests and rocky intertidal shoals (Shivji et al. 1983; Lowry et al. 2022), and are regularly found in eelgrass meadows (Gravem et al. 2021).

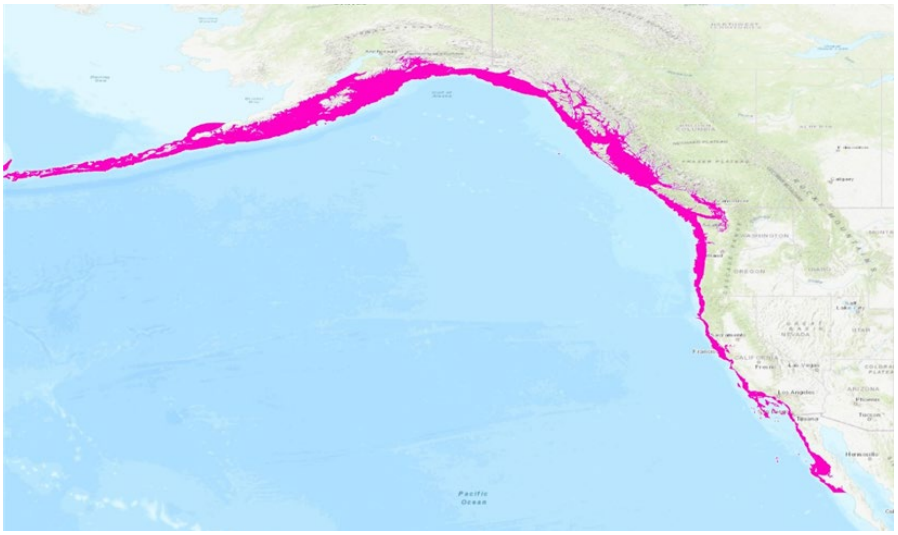

Figure 11. Sunflower sea star distribution in habitats shallower than 435 m.

4.3.2.3 Presence in the Action Area

As habitat generalists, sunflower sea starts occupy a diverse range of habitats and are distributed throughout intertidal and subtidal areas all along the southern Alaska coast. Water depths in the Whittier Harbor range from around two to 14 feet, and sunflower sea stars may occur within these depths (Lambert 2000; Hemery et al. 2016; Gravem et al. 2021). Sunflower sea stars have been documented within Passage Canal, including along the breakwater between the Whittier Harbor and the ferry terminal and along the shoreline approximately one mile east of the Whittier Harbor. Densities in nearby western Prince William Sound were considered high with an average of 0.233 sunflower sea stars/m^2 (Konar et al. 2019); however, post-SWSS pandemic densities in the area are now much lower at 0.04 sunflower sea stars/m^2 (Traiger et al. 2022). Sunflower sea stars have been observed and reported in and around Whittier Harbor,[13] but there have been no recent surveys conducted in the project area.

4.3.2.4 Feeding and Prey Selection

The sunflower sea star hunts a range of bivalves, gastropods, crustaceans, and other invertebrates using chemosensory stimuli and will dig for preferred prey in soft sediment (Mauzey et al. 1968; Paul and Feder 1975; Herrlinger 1983). It preys on sea urchins and plays an important role in controlling sea urchin numbers in kelp forests (Lowry et al. 2022).

[13] https://www.inaturalist.org/observations?nelat=60.796770691637654&nelng=148.59451615151664&subview=map&swlat=60.77029313972434&swlng=-148.74214493569633&taxon_id=47673 accessed May 2025.

4.3.2.5 Reproduction and Growth

While generally solitary, sunflower sea stars are known to seasonally aggregate, perhaps for spawning purposes. The species has separate sexes and is a broadcast spawner with a planktonic larval stage (Lundquist and Botsford 2011). Females can release a million eggs or more (Strathmann 1987; Chia and Walker 1991; Byrne 2013). Reproduction also occurs via larval cloning, enhancing potential reproductive output beyond female fecundity (Bosch et al. 1989; Balser 2004).

Sea stars also have the ability to regenerate lost rays/arms and parts of the central disc (Chia and Walker 1991). Rays may detach when a sea star is injured or as a defense reaction when attacked by a predator. Sunflower sea star longevity in the wild is unknown, as is the age at first reproduction and the period over which a mature individual is capable of reproducing (Lowry et al. 2022).

4.3.2.6 Threats

SSWS is the primary threat and stressor to sunflower sea stars across their range. Declines in the northern portion of its range (i.e., Alaska and British Columbia) were less pronounced than in the southern portion, but still exceeded 60 percent. Species-level impacts from SSWS, both during the pandemic and on an ongoing basis, have been identified as the major threat affecting the long-term persistence of the sunflower sea star (Lowry et al. 2022).

Additional threats to the sunflower sea star include fisheries bycatch, especially in fisheries that use bottom contact gear; habitat degradation and destruction, especially in nearshore, urbanized areas of the species' range; inadequate regulatory mechanisms in some jurisdictions that allow for harvest of the species, even under limited circumstances; and, both direct and indirect (i.e., ecological) consequences of anthropogenic climate change (Lowry et al. 2022). SSWS is thought to be exacerbated by warming ocean temperatures and other climate-change-related characteristics.

5 ENVIRONMENTAL BASELINE

The "environmental baseline" refers to the condition of the listed species in the action area, without the consequences to the listed species caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action areas that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation process. The consequences to listed species from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR 402.02).

This section focuses on existing anthropogenic and natural activities within the action area and

their influences on the listed and proposed species that may be adversely affected by the action. Focusing on the impacts of activities specifically within the action area allows us to assess the prior experience and condition of the animals that will be exposed to effects from the actions under consultation. This focus is important because individual animals may exhibit, or be more susceptible to, adverse responses to stressors in some life history stages or in certain areas within their distribution. These localized stress responses or baseline stress conditions may increase the severity of the adverse effects expected from the action. Although some of the activities discussed below may occur outside of the action area, they may still impact listed or proposed species in the action area. Listed and proposed species may be affected by multiple threats concurrently, compounding the impacts of individual threats. The factors that have likely had the greatest impact are discussed below.

5.1 Recent Section 7 Consultations in the Action Area

NMFS Alaska Region has issued several Section 7 consultations for construction projects in Passage Canal near Whittier in recent years, including:

Table 5. Recent letters of concurrence and biological opinions issued by NMFS AKR for projects within a 25-mile radius of the proposed project.

Record ID	Project Title	Consultation Type	Activities
AKRO-2020-01011	Main Bay Hatchery dock replacement	Informal	Infrastructure/ Transportation
AKRO-2022-02953	Whittier Head of Bay Cruise Ship Dock	Formal	Infrastructure/ Transportation
AKRO-2024-01312	Passage Canal Geotech Survey- Princess Cruise Lines	Informal, Expedited	Survey
AKRO-2024-01313	Lake Bay- PWS Salmon Aquaculture	Informal	Infrastructure/ Transportation
AKRO-2024-03296	Whittier Barge Dock Dredging	Informal	Infrastructure/ Transportation
AKRO-2025-01890	Whittier Deep Water Dock (in process)	Formal	Infrastructure/ Transportation

5.2 Climate and Environmental Change

Since the 1950s, the atmosphere and oceans have warmed, snow and sea ice have diminished, sea levels have risen, and concentrations of greenhouse gases have increased (IPCC 2023). While both natural and anthropogenic factors have influenced this warming, human influence has been the dominant cause of the observed warming since the mid-20th century (IPCC 2023). In marine ecosystems, shifts in temperature, ocean circulation, stratification, nutrient input, oxygen content, and ocean acidification are associated with climate change and increased atmospheric carbon dioxide (Doney et al. 2012), and these shifts have potentially far-reaching biological effects. The impacts of climate change are especially pronounced at high latitudes and in polar regions.

In the past 70 years, the average air temperatures across Alaska have increased by approximately

4.3°F and winter temperatures have increased by 7°F.[14] Some of the most pronounced effects of climate change in Alaska include disappearing sea ice, shrinking glaciers, thawing permafrost, and changing ocean temperatures and chemistry (Chapin et al. 2014). Climate change is projected to have substantial direct and indirect effects on individuals, populations, species, and the structure and function of marine, coastal, and terrestrial ecosystems in the foreseeable future (Houghton 2001; McCarthy et al. 2001). The impacts of these changes and their interactions on listed and proposed species in Alaska are hard to predict.

Indirect threats associated with climate change include increased human activity as a result of regional warming. Less ice could mean increased vessel activity and risk of ship strike or construction activities with an associated increase in sound and pollution. Human fishing pressure could change the abundance, seasonality, or composition of prey species. Fisheries in Alaska are managed with the goal of sustainability; however, not all fish stocks are assessed, and it is unknown whether management of fisheries for optimal returns provides sufficient densities in feeding areas for efficient foraging by ESA-listed marine mammal species.

The Gulf of Alaska is subjected to large-scale forcing mechanisms that can lead to basin-wide shifts in the marine ecosystem resulting in significant changes to physical and biological characteristics, including sea surface temperature, salinity, and sea ice extent and amount. Physical forcing affects food availability and can change the structure of trophic relationships by impacting climate conditions that influence reproduction, survival, distribution, and predator-prey relationships at all trophic levels. Warmer waters could favor productivity of some species of forage fish, but the impact on recruitment of important prey fish is unpredictable. Climate change, increasing temperatures, and heat waves likely played a role in exacerbating the effects of SSWS (Harvell et al. 2019), highlighting the potential for non-linear risks to this, and possibly other, species.

Temperature is the most important abiotic factor influencing the physiology of fishes and the pathogenicity of their disease organisms (Brett 1971; Marcogliese 2001). Fish are particularly vulnerable to mortality during periods of increased water temperatures, and mortality may occur through several mechanisms, including increased virulence of pathogens, increases in metabolic rate that outstrip energy resources, and an oxygen demand that exceeds the heart's capacity to deliver oxygen (von Biela et al. 2020).

The Pacific marine heatwave, one of the strongest El Niño weather patterns on record, is likely responsible for poor growth and survival of Pacific cod, an important prey species for marine mammals. The spawning stock biomass dropped below 20 percent of the unfished spawning biomass in 2020 and the Federal Pacific cod fishery in the Gulf of Alaska was closed to directed Pacific cod fishing by regulation (Barbeaux et al. 2020). Pacific cod abundance remains at reduced levels; however, the spawning stock biomass is above the 20 percent minimum spawning stock size threshold (Hulson et al. 2024).

Effects to the North Pacific ecosystem are very pronounced, widespread, and well documented. While a changing climate may create opportunities for range expansion for some species, the life

[14] https://akclimate.org/climate-change-in-alaska/ accessed December 2024.

cycles and physiological requirements of many specialized polar species are closely linked to the annual cycles of sea ice and photoperiod and they may be less adaptable (Doney et al. 2009; Wassmann et al. 2011). Species in the North Pacific successfully adapted to changes in the climate in the past; however, some species may not be able to adapt at the current accelerated rate of change.

5.2.1 Biotoxins

As temperatures in Alaska waters warm and sea ice diminishes, marine mammal health may be compromised through nutritional and physiological stress, toxins from harmful algal blooms, and exposure to new pathogens. An unprecedented harmful algal bloom extended from the Aleutian Islands to southern California as a result of the Pacific marine heatwave and was linked to mass strandings of marine mammals (Cavole et al. 2016). The neurotoxins domoic acid and saxitoxin are two of the most common biotoxins found along the west coast of North America (Lefebvre et al. 2016). These toxins can have sublethal effects, including reproductive failure and chronic neurological disease, and can also cause death (Broadwater et al. 2018).

Domoic acid and saxitoxin have been documented in zooplankton, clams, worms, planktivorous fish, marine mammals, and seabirds in Alaska. Lefebvre et al. (2016) detected domoic acid in all 13 Alaskan marine mammal species examined, saxitoxin in 10 of the 13 species, and both toxins were present in five percent of the animals tested. It is unknown if exposure to multiple toxins suppresses immunity or results in additive or synergistic effects for marine mammals (Broadwater et al. 2018). As opportunistic predators that prey on filter feeding species that can bioaccumulate biotoxins, sunflower sea stars may be susceptible to their effects, possibly increasing their vulnerability to other stresses, such as SSWS. With declining sea ice, warmer water temperatures, and changes in ocean circulation patterns, more frequent and intense harmful algal blooms are likely.

5.2.2 Disease

In addition to influencing animal nutrition and physiological stress, environmental shifts caused by climate change may foster exposure to new pathogens in Alaskan marine mammals. Through altered animal behavior and the absence of physical barriers, loss of sea ice may create new pathways for animal movement and introduction of infectious diseases.

New open water routes through the Arctic suggest that opportunities for pathogens, such as phocine distemper virus, to cross between North Atlantic and North Pacific marine mammal populations may become more common (VanWormer et al. 2019). Phocine distemper virus is a pathogen responsible for extensive mortality in European harbor seals in the North Atlantic. The virus was first detected in the North Pacific Ocean in 2004 in sampled northern sea otters (VanWormer et al. 2019). Brucella and Phocid herpesvirus-1 have also been found in Alaskan marine mammals (Zarnke et al. 2006); herpesviruses have been implicated in fatal and nonfatal infections of harbor seals in the North Pacific (Zarnke et al. 2006).

5.3 Unusual Mortality Events

Several UMEs have occurred within Alaskan waters, and these are likely linked to climate change and the associated changes in prey. For example, increased gray whale strandings along the west coast of North America ranging from Mexico to Alaska resulted in two UMEs. The first gray whale UME occurred in 1999–2000. The cause of the UME was not determined; however, the carcasses were in poor body condition, suggesting starvation following the 1997–1998 El Niño event (Le Boeuf et al. 2000; Gulland et al. 2005; Moore et al. 2022). Several likely contributors were identified during the second gray whale UME, which occurred from 2019 to 2023. Ecological changes affected the benthic and water-column-inhabiting invertebrates; prey availability for gray whales in the Arctic and sub-Arctic shifted, and resulted in malnutrition in some whales (Moore et al. 2022). The changes in the structure and function of the Arctic ecosystem may help explain the 'boom and bust' cycles in gray whale populations and how climate change may impact gray whales in the future (Stewart et al. 2023).

An unusual mortality event of large cetaceans occurred in Alaska waters in 2015–2016 (Savage 2017). Reports of dead whales included 22 humpback, 12 fin, two gray, one sperm, and six unidentified whales. There was an unusually large number of dead whales found in British Columbia during this time as well. Sonar/seismic testing, radiation, and predation likely did not contribute to the UME (Savage 2017). A definitive cause could not be determined, but ecological factors were a contributory cause (i.e., 2015 El Niño and Pacific Coast domoic acid bloom). The strandings were concurrent with the Pacific marine heatwave, decreasing ice extent in the Bering Sea, and, one of the warmest years on record in Alaska in terms of air temperature.

5.4 Vessel Activity

Ferries, cruise ships, tankers, ore carriers, commercial fishing vessels, and recreational vessels transit or operate within Alaska state and EEZ waters. Much of the vessel traffic is concentrated in coastal areas of southeastern and southcentral Alaska where recreational vessels, charter vessels, commercial whale watch vessels, tour boats, and cruise ships are prevalent during the summer months. Large vessel traffic is more likely to occur year-round statewide, in both nearshore and offshore waters, and includes commercial fishing vessels, freighters/tankers, and passenger ferries.

The action area experiences high levels of marine vessel traffic year-round with the highest volumes occurring April through October. Marine vessels that use the action area include cruise ships, passenger ferries, whale watching tour boats, charter and commercial fishing vessels, barges, freight vessels, recreational vessels, and kayaks (Catalyst Consulting 2020). The Alaska Railroad Corporation (ARRC) began freight operations out of Whittier's deep-water port in 1964 and now approximately 25% of ARRC's freight cargo for Southcentral Alaska comes through Whittier (Catalyst Consulting 2020). Alaska Marine Lines operates a barge from Seattle to Whittier one to two times per week[15]. Cruise ships stop in Whittier approximately two to three times per week, May through September with a projected increase of one to two more ships per

[15] https://www.lynden.com/aml/resources/sailing-schedules/ Accessed May 2025

week when the Whittier Head of the Bay Cruise Ship Dock is complete[16]. Alaska Marine Highway System (AMHS) ferries stop in Whittier five to seven times per week from August through mid-October, with a break in service from mid-October through mid-December[17]. Currently, the Whittier Harbor has space for 360 vessels and is at full capacity while Cliffside Marina has space for 99 vessels (Catalyst Consulting 2020). Vessels similar to those that would be used for the proposed project frequently travel the estimated construction and supply barge routes.

5.4.1 Vessel Noise

Anthropogenic sources of noise have increased ambient noise levels in the ocean over the last 50 years (Richardson et al. 1995; NRC 2003; Horowitz and Jasny 2007). Much of this increase is due to increased shipping as ships become more numerous and of larger tonnage world-wide (NRC 2003). Research suggests that low frequency ambient sound levels have increased by as much as 20 dB (more than a three-fold increase in terms of sound pressure level) in the world's ocean from pre-industrial periods, and that most of these increases are from distant shipping (Hildebrand 2009). The primary underwater sound associated with vessel operations is the continuous cavitation sound produced by the propeller arrangement. Other vessel sound sources include onboard diesel generators and the main engine; however, both are subordinate to the thruster and main propeller blade rate harmonics (Gray and Greeley 1980).

Shipping sounds are often at source levels of 150 to 190 dB re 1 µPa rms (Greene and Moore 1995). Kipple and Gabriele (2007) measured sounds emitted from 38 vessels ranging in size from four to 293 m traveling at speeds of 10 kt in Glacier Bay, Southeast Alaska. Sound levels ranged from a minimum of 157 to a maximum of 182 dB re 1 µPa rms, with sound levels showing an increasing trend with both increasing vessel size and vessel speed. Vessel sound levels also showed dependence on propulsion type and horsepower.

Some baleen whales have adjusted their communication frequencies, intensity, and call rate to limit masking effects from anthropogenic sounds such as shipping traffic. Baleen whales may also exhibit behavioral changes in response to vessel noise. Marine mammals that have been disturbed by anthropogenic noise and vessel approaches are commonly reported to shift from resting behavioral states to active behavioral states, suggesting an energetic cost to the affected animal. Humpback cow-calf pairs significantly reduced the amount of time spent resting and milling when vessels approached, as compared to undisturbed whales (Morete et al. 2007). Fin whales were observed to respond to vessels at a distance of about one kilometer (Edds and Macfarlane 1987) and when closely approached by vessels, fin whales stopped feeding, swam away, spent less time at the surface, and increased respiration rates (Jahoda et al. 2003). Responding to vessels is likely stressful, but the biological significance of that stress is unknown (Bauer and Herman 1986).

Potential impacts of vessel disturbance on Steller sea lions have not been well studied, and the responses likely depend on the season and stage in the reproductive cycle (NMFS 2008). Steller

[16] https://claalaska.com/?page_id=1551 Accessed May 2025
[17] https://bookamhs.alaska.gov/timetable/ Accessed May 2025

sea lions are more likely to be disturbed at haulouts and near rookeries, where in-air vessel noise or visual presence could cause behavioral responses such as avoidance of the sound source, spatial displacement from the immediate surrounding area, trampling, and abandonment of pups (Calkins and Pitcher 1982; Kucey 2005). Repeated disturbances that result in abandonment or reduced use of rookeries by lactating females could negatively affect body condition and survival of pups through interruption of normal nursing cycles (NMFS 2008). Increases in ambient noise from vessel traffic, however temporary, also have the potential to mask communication between sea lions and affect their ability to detect predators (Richardson and Malme 1993; Weilgart 2007).

5.4.2 Vessel Strike

Ship strikes can cause major wounds or death to marine mammals, and are of greatest risk for large whales. The probability of a strike depends on the frequency, speed, and route of the marine vessels, and the distribution and density of marine mammals in the area, as well as other factors. As noted previously, the action area experiences moderate to high levels of marine vessel traffic year-round

Ship strikes are a source of injury and death for whales and other marine mammals in Alaska. Small recreational vessels traveling at speeds over 13 kt were most commonly involved in ship strike encounters; however, all types and sizes of vessels were reported (Neilson et al. 2012). In more recent years (2012–2022), reported strikes in Alaska include 58 humpback whales, four fin whales, and two sperm whales (Helker et al. 2019; Freed et al. 2023; Brower et al. 2024). There were also nine reported ship strikes of unidentified whales (Helker et al. 2019; Freed et al. 2023; Brower et al. 2024). Previous research also found that the majority of vessel strikes involved humpback whales (93 whales; 86 percent) and the number of humpback strikes increased annually by 5.8 percent from 1978 to 2011 (Neilson et al. 2012). During the same time period, three fin whales, one gray whale, one sperm whale, and six unidentified whales were reported (Neilson et al. 2012).

From 2007 to 2013, there were four documented cases of Steller sea lions killed or injured by vessel strikes in Alaska (NMFS 2020). There have also been two additional vessel strikes of humpback whales in the same area where the Steller sea lions were killed that occurred between 2012 and 2020 (NMFS Alaska Regional Office Stranding Database). Potential impacts of vessel disturbance on Steller sea lions have not been well studied, and the responses likely depend on the season and stage in the reproductive cycle (NMFS 2008). Steller sea lions may be more susceptible to ship strike mortality or injury in harbors or in areas where animals are concentrated, e.g., near rookeries or haulouts (NMFS 2008).

5.5 Tourism

Tourism is a large industry in Whittier and Prince William Sound. Cruise ships are scheduled to stop in Whittier between one and five times per week, April through September, this year. Alaska's summer 2019 cruise ship visitor volume was 44 percent higher than in 2010, and 15 percent of cruise ship passengers in 2019 stopped in Whittier (McDowell Group 2020). Whittier experienced a 15 percent increase in cruise passenger volume between 2019 and 2023, from

193,800 to 223,500 passengers. Approximately 1.9 million cruise ship passengers are expected to visit Alaska in 2025. The influx of visitors suggests an increasing demand for tourism in the area, including vessel-based activities like whale-watching and sport-fishing. Whittier is a popular whale watch destination in Alaska. Larger cruise ships, longer tourist seasons, and increased port calls are expected to bring many more visitors to Whittier in the future.

5.6 Coastal Development

Construction projects in the Gulf of Alaska are primarily in state waters and usually occur within one mile of shore. Projects that interact with listed and proposed species include construction, enhancement or removal of mooring floats, docks, marine access points, shipping terminals, and ferry terminals. The stressors most commonly associated with these projects include underwater noise caused by pile driving, injury due to vessel traffic, pollution, and disturbance to the seafloor, marine habitat, or prey resources.

Coastal development results in the loss and alteration of nearshore marine mammal and sunflower sea star habitat and changes in habitat quality. Increased development may prevent listed and proposed species from reaching or using important feeding, breeding, and resting areas. Continued development of the waterfront could impact shallow subtidal and intertidal habitat that is highly productive habitat for sunflower sea star prey species. If areas of marine macroalgae or kelp forests are developed, it would negatively affect sea urchins, a preferred prey item for sunflower sea stars, though on a local scale and affecting a tiny fraction of such habitat throughout their range. While some habitat for sunflower sea stars may be lost to development, installation of in-water infrastructure (e.g., dock pilings) may create additional feeding areas for this species.

The shoreline at the proposed project site has been previously disturbed and is highly developed, with man-made structures including a breakwater and sea walls, paved roads and parking lots, and structures (Figure 1). The harbor also contains a boat launch ramp, several docks, and the float systems and associated piles that make up the main harbor infrastructure. Outside of the Whittier Harbor, the shoreline to the east is developed with industrial waterfront infrastructure, including the Whittier Ferry terminal, railyard, and barge dock, for approximately 0.75 miles. The remaining shoreline east of the project areas is relatively undeveloped, with Shotgun Cove Road stretching 2.25 miles east along the shore from Whittier.

Within the action area as a whole, past and on-going development in Passage Canal has resulted in some modifications to shoreline and nearshore habitat, which may affect prey species for ESA-listed species to a small extent. In-water development, such as the Whittier cruise ship dock and Cliffside Marina, road, railroad tracks, and airport, has impacted action area shoreline. Approximately 1 mile (1.5 km) west of the Whittier Harbor, the Whittier Head of the Bay Cruise Ship Dock is under construction. The City of Whittier is in the process of creating a Waterfront and Economic Development Plan which would encompass the Whittier Harbor and areas to the east and west[18]. Potential projects included in the plan are the construction of a new harbor area, new boat launch ramp, additional parking areas, residential buildings, and further upgrades to

[18] https://www.whittieralaska.gov/projects/page/waterfront-and-economic-development-plan accessed May 2025

infrastructure along the Whittier waterfront. The shoreline outside of Whittier and the immediate vicinity around the western end of Passage Canal, is largely undeveloped.

5.7 Pollutants and Discharges

Marine ecosystems receive pollutants from local, regional, and international sources, and their levels and sources are often difficult to identify and monitor. Sources of pollutants in the action area include atmospheric loading of pollutants (e.g., polychlorinated biphenyls [PCBs]); storm water runoff from coastal towns, cities, and villages; runoff into rivers emptying into bays; groundwater discharges; discharges from vessels such as cruise ships; sewage treatment plant effluents; air pollution; and, oil spills.

The Clean Water Act of 1972 has several sections or programs applicable to activities in offshore waters. Section 402 of the Clean Water Act authorizes the U.S. Environmental Protection Agency (EPA) to administer the National Pollutant Discharge Elimination System (NPDES) permit program to regulate point source discharges into waters of the United States. Section 403 of the Clean Water Act requires that the EPA conduct an ocean discharge criteria evaluation for discharges of pollutants from point sources into the territorial seas, contiguous zones, and the oceans. The Ocean Discharge Criteria (40 CFR Part 125, Subpart M) sets forth specific determinations of unreasonable degradation that must be made before permits may be issued.

The EPA issued a NPDES vessel general permit authorizing several types of discharges incidental to the normal operation of vessels, such as grey water, black water, coolant, bilge water, ballast, and deck wash (EPA 2013). The permit applies to owners and operators of non-recreational vessels that are at least 24 m in length, as well as to owners and operators of commercial vessels less than 24 m that discharge ballast water.

The U.S. Coast Guard (USCG) has regulations related to pollution prevention and discharges from vessels carrying oil, noxious liquid substances, garbage, municipal or commercial waste, and ballast water (33 CFR Part 151). The Vessel Incidental Discharge Act, which requires the EPA to develop new national standards of performance for commercial vessel incidental discharges and the USCG to develop corresponding implementing regulations, was signed into law in 2018.

Until these new national standards and regulations are published (anticipated in 2026), the following interim requirements apply:

- For large, non-fishing commercial vessels: The existing vessel discharge requirements established through the EPA 2013 Vessel General Permit and the USCG ballast water regulations, and any applicable state and local government requirements.
- For small vessels and fishing vessels of any size: The existing ballast water discharge requirements established through the EPA 2013 Vessel General Permit and the USCG ballast water regulations, and any applicable state and local government requirements.[19]

[19] https://www.epa.gov/vessels-marinas-and-ports/vessels-vgp accessed December 2024.

As visitors to Whittier and the use of Passage Canal continue to grow, an increase in pollutants entering the Whittier Harbor is likely to occur. The Alaska Department of Environmental Conservation (ADEC) monitors wastewater discharges and has documented increasing water-quality violations with increasing cruise ship visitation. There were generally about 20 to 25 exceedances a year found in samples from both large and small ships from 2015 to 2018.[20] Detected exceedances have ranged from about 60 to about 75 a year in the past few years.

NMFS completed an ESA Section 7 consultation on the effects of activities associated with the Alaska Federal/State Preparedness Plan for Response to Oil & Hazardous Substance Discharge/Releases (NMFS 2015). The biological opinion reviewed oil and other hazardous materials spills in Alaska marine waters from 1995–2012; spills occurred throughout the marine waters of Alaska, but primarily in coastal, nearshore areas. The State of Alaska regulates water quality standards within three miles of the shore.

The ADEC Statewide Oil Spills Database provides public access to data on all reported spills, including those as little as one gallon. The types of spills recorded include jet fuel, crude oil, ethylene glycol, and produced water. From January 2014 through May 2025, a total of 23,954 spills were reported in Alaska; 121 of which were reported in Whittier.[21]

Sunflower sea stars may be directly affected by chemical pollutants and microbes released into the water column. Persistent pollutants that bioaccumulate pose an added risk, because sunflower sea stars are opportunistic predators that feed on filter-feeding species such as sea urchins, mussels, barnacles, and clams that bioaccumulate pollutants. Additionally, sublethal effects from pollutants may increase their susceptibility to other stressors such as biotoxins, SSWS, or other diseases.

5.8 Contaminants

Persistent organic pollutants (POPs), which have been used in industrial applications and as flame retardants, have a long lifetime in the environment, are transported over long distances, enter food-webs, and often biomagnify in wildlife and humans (Burkow and Kallenborn 2000; Rigét et al. 2019). Although far from the pollution sources, the Arctic is a receptor of POPs transported from temperate regions via air and water currents (Mossner and Ballschmiter 1997; Burkow and Kallenborn 2000). Studies have found significant levels of these contaminants in the tissues of marine mammals across Alaska. The use of POPs such as DDT, PCBs, and polybrominated diphenyl ethers have been banned or regulated, greatly reducing inputs into the environment (Rigét et al. 2019; Bolton et al. 2020). As a result, there are declining trends of the major classes of POPs in Arctic animals, with reductions of about two to 10 percent per year since reaching a peak in the early 1980s (Bolton et al. 2020).

Heavy metals, in particular mercury, are of concern to marine mammals. Heavy metals can enter marine mammals through uptake from the atmosphere through the lungs, absorption through the

[20] https://www.adn.com/alaska-news/2025/02/25/more-cruise-traffic-in-alaska-is-followed-by-more-wastewater-violations-officials-say/ accessed February 2025.
[21] https://dec.alaska.gov/Applications/SPAR/PublicMVC/PERP/SpillSearch accessed May 20925.

skin, across the placenta before birth, via milk during lactation, ingestion of sea water, and ingestion of food (Vos et al. 2003). The major route of heavy metal contamination for marine mammals seems to be via feeding. Mercury biomagnifies and being a top predator in the food web can influence heavy metal levels, especially in marine mammals relying on fish (Vos et al. 2003). Mercury concentrations were found to be elevated in Steller sea lion pups sampled in the western and central Aleutian Islands (Castellini et al. 2012; Rea et al. 2013; Rea and O'Hara 2018). Fetal exposure to mercury during late gestation, a particularly vulnerable stage of neurological development, was also detected in sea lions (Rea et al. 2013). Tissues from Eastern and Western DPS Steller sea lion pups were tested, and mercury occurred in nearly all of the tissues sampled (Holmes et al. 2008). Other heavy metals, such as lead, nickel, copper, and arsenic have also been detected in Steller sea lion samples (Holmes et al. 2008; Ferdinando 2019).

Heavy metals and other persistent contaminants are likely to be a concern for sunflower sea stars due to biomagnification. As opportunistic predators, sunflower sea stars prey on filter feeding species such as sea urchins, mussels, barnacles, and clams that bioaccumulate contaminants. Sunflower sea stars may be directly susceptible to the effects of contaminants. Additionally, sublethal effects from contaminants may increase increasing their vulnerability to other stressors such as biotoxins, SSWS, or other diseases.

5.9 Marine Debris

Marine debris is any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned in the marine environment. Marine debris degrades marine habitat quality, poses ingestion and entanglement risks to marine life, and may introduce invasive species. Marine debris may also leach or absorb hazardous materials which are harmful to marine life.

The most commonly observed interaction between marine mammals and marine debris is through entanglement, often from packing bands or in remnants of fishing gear that has been discarded or lost. Marine debris may also affect marine mammals through ingestion, such as from fishery gear ingestion (i.e., flashers) or from plastics. About 80 percent of marine debris is made up of plastic items, and plastic waste inputs into the ocean and marine mammal interactions with debris are increasing globally (Baulch and Simmonds 2015). Plastics are especially concerning because the large pieces degrade and break apart slowly, releasing harmful chemicals into the ocean and making them easier for fauna to consume. Plastics can be found throughout the water column, but are highest in sediment where it can settle and remain undisturbed (Tekman et al. 2020). Plastic ingestion has been observed throughout food chains, including in zooplankton, fish species, and marine mammals (Botterell et al. 2022; Tirelli et al. 2022). Ingested plastic can cause choking and blockage of the gastrointestinal tract, along with punctures that can expose the animal to infections. Microplastics in the stomach can also cause dietary dilution, where animals feel like they have a full stomach and will not continue to eat, which can lead to malnourishment, lethargy, and ultimately mortality. Ingested plastics can also expose animals to chemical pollution and contaminants that can aggregate in adipose tissue and cause a cascade of health concerns (Senko et al. 2020).

5.10 Fisheries Interactions

Commercial, recreational, and subsistence fishing occurs in the action area, and may harm or kill listed or proposed species through direct bycatch, gear interactions (entrapments and entanglements), vessel strikes, contaminant spills, habitat modification, competition for prey, and behavioral disturbance or harassment. Commercial fisheries pose a threat to recovering marine mammal stocks in the Gulf of Alaska. Entanglement may result in minor injury or may potentially significantly affect individual health, reproduction, or survival. Additionally, reductions in seasonal availability and distribution of fish can cause cumulative effects on many species that depend on reliable sources of prey for survival.

Reports of fin whale entanglements in Alaska waters are sparse, with only two records between 2012 and 2022. One was entangled and killed in the commercial Pacific cod mechanical jig fishery in the Gulf of Alaska in 2012 and the other in the commercial pollock trawl fishery in the Bering Sea in 2019 (Helker et al. 2019; Brower et al. 2024).

Bettridge et al. (2015) report that fishing gear entanglements may moderately reduce the population size or the growth rate of ESA-listed whales. Humpback whales have been killed and injured during interactions with commercial fishing gear. Between 2018 and 2022, entanglement of humpback whales (n=50) was the most frequent human-caused source of mortality and injury of large whales in Alaska (Brower et al. 2024). Most entanglements occur between early June and early September, when humpbacks are foraging in nearshore Alaska waters. A photographic study of humpback whales in southeastern Alaska found at least 53 percent of individuals showed some kind of scarring from fishing gear entanglement (Neilson et al. 2005). The frequency of these interactions, however, does not appear to have a significant adverse consequence for humpback whale populations.

The ADFG analyzed data from 1,439 individually marked Steller sea lions re-sighted between 2001 and 2015, and found that animals that ingested salmon hook and line fishing gear had lower survival than comparable animals that had not ingested fishing gear (Freed et al. 2022). Between 2018 and 2022, human-caused mortality and injury of Western DPS Steller sea lions (n=159) was primarily caused by entanglement in fishing gear, in particular, commercial trawl gear (n=109; Brower et al. 2024). This mortality and serious injury estimate results from an actual count of verified human-caused deaths and serious injuries, and is a minimum because not all entangled animals strand nor are all stranded animals found, reported, or have the cause of death determined. Overall, the relative impact on the recovery of the Western DPS of Steller sea lion due to entanglement is ranked as low (NMFS 2008).

Sunflower sea stars are caught as bycatch in commercial fisheries, but the exact number of individuals caught is currently unknown. The mortality rate of sunflower sea stars bycaught in commercial fisheries gear and returned to sea is also unknown, but likely varies by gear type. Sea stars bycaught in hook-and-line and pot gear are generally returned to sea shortly after being brought aboard, whereas sea stars bycaught in trawl gear generally stay with the catch of that haul all the way to processing. Some unknown amount of undetected injury and mortality to sunflower sea stars also likely occurs from bottom contact gear and anchors that crush but do not capture sea stars.

Commercial fisheries may indirectly affect marine mammals by reducing the amount of available prey or affecting prey species composition. Competition for prey species could exist between listed species and commercial fishing, as certain fisheries target key Steller sea lion and humpback whale prey, including Pacific cod, salmon, and herring. Fishery management measures have reduced this potential competition in some regions (e.g., no trawl zones and gear restrictions on various fisheries in southeast Alaska). The broad distribution of prey and seasonal fisheries may minimize competition as well.

Due to their highly migratory nature, many species considered in this opinion have the potential to interact with fisheries both in and outside of the action area. Assessing the impact of fisheries on such species is difficult due to the large number of fisheries that may interact with the animals and the inherent complexity of evaluating ecosystem-scale effects.

5.10.1 Aquaculture

Aquaculture in Alaska has the potential to impact ESA-listed species through habitat exclusion, entanglement, entrapment, behavioral modifications, vessel collisions, and increased vessel traffic and noise (Price et al. 2017; Bath et al. 2023). There are currently 98 issued permits for aquatic farm operations in Alaska: 14 hatcheries and 84 aquatic farms.[22] These operations occur within state waters, with the main regions of development in Southeast and Southcentral (Prince William Sound, Kenai Peninsula, and Kodiak). Forty-two seaweed and invertebrate species have been permitted for aquaculture in Alaska; the primary species include Pacific oysters, blue mussels, and sugar, ribbon, and bull kelp. Between 2014 and 2018, the state received an average of six applications for aquatic farms per year and this number has increased to an average of 14 applications per year between 2019 and 2023 (NMFS 2024b). Farmed seaweed production has significantly increased from no production in 2016 to approximately 871,911 pounds in 2022.

5.11 Subsistence Harvest

The ESA and MMPA allow for the harvest of marine mammal species by Alaska Natives for subsistence purposes and for creating and selling authentic native articles of handicrafts and clothing. Subsistence harvest of Western DPS Steller sea lions is regulated by co-management agreements with NMFS, and occurs at or well below sustainable levels of harvest. Annual statewide data on community subsistence harvest of Steller sea lions are no longer collected as of 2009. The minimum estimated mean annual subsistence take (harvested plus struck-and-lost) from the Western DPS between 2017–2021 was 218 sea lions (Young et al. 2024).

With the exception of the harvest of bowhead whales by subsistence hunters in the Alaska Eskimo Whaling Commission's 11 member villages, subsistence hunters in Alaska are not authorized to take any species of great whales (i.e., fin, sperm, and humpback whales) under the Whaling Convention Act (16 U.S.C. 916 *et seq.*), which implements the International

[22] https://www.adfg.alaska.gov/index.cfm?adfg=fishingaquaticfarming.aquaticfarminfo_op_permits_species_region accessed March 2025.

Convention for the Regulation of Whaling, Dec. 2, 1946, T.I.A.S. 1708, 161 U.N.T.S. 72.

5.12 Poaching and Illegal Harassment

Steller sea lions have been poached and illegally harvested throughout their range. The NMFS Alaska Marine Mammal Stranding Program documented 60 Steller sea lions with suspected or confirmed firearm injuries in Southeast and Southcentral Alaska from 2000–2019 (Wright 2016; Wright 2021).

Western DPS Steller sea lions with gunshot wounds have also been found stranded on shore along the outer Copper River Delta in recent years (Wright 2016; Wright 2021), and seven of nine pinnipeds stranded in the surveyed area in 2019 were shot (Wright 2021). Multiple Steller sea lion carcasses were found dead with evidence of human interactions along the Copper River Delta again in the summer of 2023; some had evidence of gunshot wounds. The number of carcasses observed during the 2023 NMFS surveys on the Copper River Delta was greater than previous years.[23] Two Alaska men were sentenced in 2018 for harassing and killing Steller sea lions with shotguns and obstructing the investigation. On various occasions during the 2015 Copper River salmon season, the captain and crew used two shotguns to shoot at Steller sea lions while fishing.[24]

There are two known cases of unlawful harvests of humpback whales in Alaska; one humpback whale was unlawfully harvested in Kotlik in October 2006, and another in Toksook Bay in May 2016. Subsistence hunters in western Alaska incorrectly believed they could legally harvest large whales other than bowheads. In May 2024, a fisherman pled guilty to a federal misdemeanor after admitting that he directed a member of his crew to shoot a sperm whale and tried to ram the whale with his fishing boat.[25]

5.13 Sea Star Wasting Syndrome

Sea star wasting syndrome is the primary threat and stressor to sunflower sea stars across their range. A sea star wasting syndrome pandemic occurred across the range of the sunflower sea star from 2013 to 2017. Sea star wasting syndrome is known to occur in sunflower sea stars and other species at smaller geographic and temporal scales. Outbreaks are expected to occur in the future, but the magnitude is unknown. The pathogen that caused the 2013-2017 pandemic is unknown; however, sea star wasting syndrome is thought to be exacerbated by warming ocean temperatures and other climate change related characteristics. The 2022 sunflower sea star status review report identified sea star wasting syndrome as the factor of greatest concern for the species throughout its range (Lowry et al. 2022).

[23] https://www.fisheries.noaa.gov/feature-story/help-stop-illegal-shootings-sea-lions-and-seals-near-copper-river-delta accessed December 2024.
[24] https://www.justice.gov/usao-ak/pr/two-alaska-men-sentenced-harassing-killing-steller-sea-lions-and-obstructing accessed November 2024.
[25] https://www.juneauempire.com/news/alaska-fisherman-pleads-guilty-to-federal-charges-after-ordering-crew-to-shoot-whale/ accessed December 2024.

6 EFFECTS OF THE ACTION

"Effects of the action" are all consequences to listed species described here that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR 402.02).

This opinion relies on the best scientific and commercial information available. We try to note areas of uncertainty, or situations where data is not available. In analyzing the effects of the action, NMFS aims to minimize the likelihood of false negative conclusions (i.e., concluding that adverse effects are not likely when such effects are, in fact, likely to occur).

We organize our effects analysis using a stressor identification – exposure – response – risk assessment framework for the proposed activities.

We conclude this section with an *Integration and Synthesis of Effects* that integrates information presented in the *Status of the Species* and *Environmental Baseline* sections of this opinion with the results of our exposure and response analyses to estimate the probable risks the proposed action poses to listed and proposed species.

NMFS identified and addressed all potential stressors; and considered all consequences of the proposed action, individually and cumulatively, in developing the analysis and conclusions in this opinion regarding the effects of the proposed action on ESA-listed and proposed species.

6.1 Project Stressors

Stressors are any physical, chemical or biological phenomena that can induce an adverse response. The effects section starts with identification of the stressors produced by the constituent parts of the proposed action. Based on our review of the IHA application, the biological assessment, personal communications, and available literature, the proposed activities may cause the following stressors to ESA-listed and proposed species:

- Vessel presence, noise, and strike
- Seafloor disturbance, turbidity, and loss of habitat
- Effects on prey
- Trash and debris
- Pollutants and contaminants
- Acoustic disturbance from pile driving activities
- Direct contact with sunflower sea stars

6.1.1 Minor Stressors on ESA-Listed and Proposed Species

Based on a review of available information, we determined the following stressors are either unlikely to occur or likely to have minimal impacts on Western DPS Steller sea lions, and sunflower sea stars.

6.1.1.1 Vessel Presence, Noise, and Strike

As described above in the proposed activities section, the project will use a tug and barges. These vessels will transport project equipment and materials to the construction site in Passage Canal and will likely deploy from Seattle, Washington, and/or Valdez, Alaska (Figure 5, Figure 6). Upon arrival to the construction site, movement of project vessels will be localized within the vicinity of the Small Boat Harbor and inside the breakwaters. A work skiff will also be used in the project area to support construction activities. Vessel traffic near the Small Boat Harbor will slightly increase during project construction. The proposed action will restore several currently unusable boat slips and is expected to marginally increase the number of smaller vessels that transit to and from the Whittier Small Boat Harbor once it is completed.

Auditory or visual disturbance to listed species could occur during vessel activities associated with the project. Marine mammals could react by either investigating or being startled by vessels. Disturbance from vessels could temporarily increase stress levels or displace an animal from its habitat. Underwater noise from vessels may temporarily disturb or mask communication of marine mammals. Behavioral reactions to vessels can vary depending on the type and speed of the vessel, the spatial relationship between the vessel and the animal, the species, and the behavior of the animal prior to the disturbance from the vessel. Response also varies between individuals of the same species exposed to the same sound.

If animals are exposed to vessel noise and presence, they may exhibit deflection from the noise source, engage in low level avoidance behavior, exhibit short-term vigilance behavior, or experience and respond to short-term acoustic masking behavior, but these behaviors are not likely to result in significant disruption of normal behavioral patterns. Vessels moving at slow speeds and avoiding rapid changes in direction may be tolerated by some species. Other individuals may deflect around vessels and continue on their path of travel.

Slight deflection and avoidance are expected to be common responses, in those instances where there is a response. Free-ranging marine mammals may engage in avoidance behavior when surface vessels move toward them, similar to their behavioral responses to predators. Animals have been observed reducing their visibility at the water surface and moving horizontally away from the source of disturbance or adopting erratic swimming strategies (Williams et al. 2002; Lusseau 2003; Lusseau 2006). Studies indicate that dive times and swimming speeds increase, vocalizations and surface active behaviors usually decrease, and individuals in groups move closer together (Kruse 1991; Evans et al. 1994). Most animals in confined spaces, such as shallow bays, moved towards more open, deeper waters when vessels approached (Kruse 1991).

Potential impacts of vessel disturbance on Steller sea lions have not been well studied, and the responses will likely depend on the season and stage in the reproductive cycle (NMFS 2008).

Steller sea lions are more likely to be disturbed at haulouts and near rookeries, where in-air vessel noise or visual presence could cause behavioral responses such as avoidance of the sound source, spatial displacement from the immediate surrounding area, trampling, and abandonment of pups (Calkins and Pitcher 1982; Kucey 2005). Repeated disturbances that result in abandonment or reduced use of rookeries by lactating females could negatively affect body condition and survival of pups through interruption of normal nursing cycles (NMFS 2008). Increases in ambient noise from vessel traffic, however temporary, also have the potential to mask communication between sea lions and affect their ability to detect predators (Richardson and Malme 1993; Weilgart 2007). Vessel operations during pile driving activities will not occur near any major pinniped haulouts or rookeries and the effects of vessel presence along the transit routes on Steller sea lions is likely to be temporary as the vessel approaches and passes.

Project vessels will increase sound in the action area during the proposed action and some marine mammals may be exposed to vessel noise as a result. Marine mammal responses to vessel noise may include changes in behavioral states (Richardson et al. 1995), changes in vocalizations (Lesage et al. 1999; Scheifele et al. 2005; Gervaise et al. 2012), and temporary displacement (Blane and Jaakson 1994; Erbe and Farmer 2000). However, project-related vessel noise is not expected to cause a disruption in marine mammal behavioral patterns, which include, but are not limited to, breeding, feeding, sheltering, resting, or migrating. Impacts to Western DPS Steller sea lions from vessel noise are expected to be undetectable and minor due to the relatively low density of these species in the action area, short duration of spatial overlap, low likelihood of exposure to vessel sound that could significantly disrupt behavioral patterns, and implementation of mitigation measures.

Project vessel noise is not expected to cause disruption in sunflower sea star behavioral patterns, which include, but are not limited to, breeding, feeding, sheltering, resting or migrating. There are no existing criteria to assess adverse impacts of anthropogenic sound on sunflower sea stars (Hawkins et al. 2015); however, vessel noise is not expected to impact sunflower sea stars in any measurable way because their physiological and behavioral processes are mediated by chemical stimuli. Additionally, there will only be a short and/or transitory duration of spatial overlap and a low likelihood of exposure to sound that could significantly disrupt behavioral patterns; impacts to sunflower sea stars are expected to be undetectable and minor.

Ship strikes can cause major wounds or death to marine mammals. An animal at the surface could be struck directly by a vessel, a surfacing animal could hit the bottom of a vessel, or a vessel propeller could injure or kill an animal below the water surface. Vessel speed is a principal factor in whether a strike results in serious injury or death of a whale. Laist et al. (2001) determined that most lethal or severe injuries involved ships traveling 14 kt or faster. Serious injuries were found to occur infrequently at vessel speeds below 14 kt, and rarely at speeds below 10 kt. Vanderlaan and Taggart (2007) found the greatest rate of change in the probability of a lethal injury to a large whale occurs between vessel speeds of 8.6 and 15 kt, and the probability of a lethal injury drops below 50 percent at 11.8 kt.

There are no ship strike reports for Steller sea lions in Alaska between 2012 and 2022 (Helker et al. 2019; Freed et al. 2023; Brower et al. 2024), and the risk of vessel strike has not been identified as a significant concern for Steller sea lions. Steller sea lions may be more susceptible

to ship strike mortality or injury in harbors or in areas where animals are concentrated, e.g., near rookeries or haulouts (NMFS 2008).

There may be an increased risk of vessel strike or disturbance due to vessel noise and presence due to the increased traffic associated with the Whittier Small Boat Harbor project. However, the low number of vessel trips, transitory nature of project-related vessel traffic, slow operational speeds, existing regulations regarding approaching marine mammals, and implementation of mitigation measures (e.g., staying 91 m away from listed marine mammals, avoiding changes in direction and reducing speed when within 274 m of whales, and reducing speed when visibility is reduced) limit the risk of strike and reduce exposure to noise and vessel presence from the proposed action. The relatively low density of Steller sea lions in the action area also greatly reduces the probability of a vessel strike occurring or negative interactions with vessels in the area due to disturbance from noise or their presence. NMFS concludes that it is extremely unlikely that a vessel strike of Western DPS Steller sea lions will occur and that adverse effects from vessel presence and noise are discountable. Sunflower sea stars are not susceptible to vessel strike and are unlikely to be measurably affected by vessel noise.

6.1.1.2 Seafloor Disturbance, Turbidity, and Loss of Habitat

The proposed activities would not result in permanent impacts to habitats used directly by listed or proposed species, except for inside the existing footprint of the Whittier Small Boat Harbor, which will remain unchanged. The total seafloor area likely impacted by the project is relatively small compared to the available habitat at the head of Passage Canal and does not include any biologically important areas or other habitat of known importance. The area is highly influenced by anthropogenic activities and is not heavily used by listed or proposed species. Additionally, the total seafloor area affected by pile installation and removal is a small area compared to the vast foraging habitat available to marine mammals and sunflower sea stars. At best, the construction area provides marginal foraging habitat. Furthermore, pile driving at the project site would not obstruct movements or migration of marine mammals and sunflower sea stars.

Pile removal and pile driving activities may cause temporary and localized turbidity through sediment disturbance, and increases in turbidity levels will have temporary impacts on water quality. Turbidity plumes during pile installation and removal will be localized around the pile; turbidity associated with pile installation is localized to an approximate 7.6 m radius around the pile (Everitt et al. 1980). The area of disturbance is almost completely within the breakwaters which will prevent most of the turbidity from leaving the harbor perimeter (Figure 3). Shutdown mitigation measures are likely to prevent listed species from being close enough to experience effects of turbidity from pile driving, and pinnipeds could easily avoid localized areas of turbidity.

Increases in turbidity will be temporary, localized, and difficult to detect in waters that have a high concentration of suspended solids and local tidal activity. Impacts on marine mammals are expected to be brief, intermittent, and minor, if impacts occur at all. Any effects to Western DPS Steller sea lions from seafloor disturbance and increased turbidity levels would be immeasurably small.

Sunflower sea stars have been observed in the action area and may overlap with construction activities. Sunflower sea stars may be in close enough proximity to experience habitat degradation from seafloor disturbance, localized turbidity, or loss of habitat from pile removals. Surveys will be conducted for sunflower sea stars prior to project activities and the increased activity may deter sea stars from re-occupying the area. Sunflower sea stars are also highly mobile and will be able to move from disturbed areas, if negatively impacted, to nearby areas of more favorable habitat. The in-water project footprint will remain unchanged, and is very small in comparison to the preferred habitat available in the intertidal zone near Whittier and the surrounding waters. Because of the low density of sunflower sea stars in the action area, their mobile nature, the relatively small area of non-preferred habitat impacted compared to the available widespread suitable habitat, and the implementation of mitigation measures, we conclude that the effects of seafloor disturbance, increased turbidity, and loss of habitat on sunflower sea stars would be immeasurably small.

6.1.1.3 Effects on Prey

Construction activities will produce non-impulsive (i.e., vibratory pile installation and removal) sounds. Fish react to intermittent low-frequency sounds and sounds that are especially strong. Short duration, sharp sounds can cause overt or subtle changes in fish behavior and local distribution. Hastings and Popper (2005) identified several studies that suggest fish may relocate to avoid areas with certain types of sound energy.

Injury to fish depends more on the magnitude of particle motion than on sound levels as mammals perceive it (Popper and Hawkins 2019). It is likely that fish will avoid sound sources within ranges that may be harmful (McCauley et al. 2003). The most likely impact to fish from pile driving activities would be temporary behavioral avoidance of the project area. The duration of fish avoidance of this area after pile driving ceases is unknown, but a rapid return to normal recruitment, distribution, and behavior is expected.

In general, impacts to marine mammal prey species are expected to be minor and temporary, given the small area of pile driving relative to known feeding areas of listed marine mammals. We expect fish will be capable of moving away from project activities to avoid exposure to noise. Any behavioral avoidance by fish of the disturbed area would still leave significantly large areas of fish and marine mammal foraging habitat in the nearby vicinity. We expect the area in which stress, injury, temporary threshold shifts (TTS), or changes in balance of prey species may temporarily occur will be limited to a few meters directly around the pile driving operations.

Studies on euphausiids and copepods, two of the more abundant and biologically important groups of zooplankton, have documented some sensitivity to sound (Chu et al. 1996; Wiese 1996); however, any effects of pile driving activities on zooplankton would be expected to be restricted to the area within a few meters of the project and would likely be sub-lethal. No appreciable adverse impact on zooplankton populations will occur due in part to large reproductive capacities and naturally high levels of predation and mortality of these populations. Any mortality or impacts on zooplankton as a result of construction operations is immaterial as compared to the naturally occurring reproductive and mortality rates of these species.

Given the short daily duration of sound associated with individual pile driving events, the relatively small areas being affected, the localized response of prey species, and the rapid return of any temporarily displaced species, pile driving activities are unlikely to have a permanent adverse effect on any prey habitat or prey species. Any impacts to marine mammal habitat are not expected to result in significant or long-term consequences for individual marine mammals, or to contribute to adverse impacts on their populations. NMFS considers potential adverse impacts to prey resources from construction activities in the action area to be short-term and immeasurably small.

Sound pressure levels generated by other activities of the proposed action (i.e., vessel traffic) may cause temporary behavioral changes of prey species at close range, such as a startle or stress response. Project-related vessel sounds are not expected to cause direct injury to fish, and will behaviorally affect fish only at close range, for a short period of time. A very small proportion of primary prey species for listed marine mammals may also be temporarily disturbed by non-acoustic sources, including boat wakes and spinning propellers. Prey species may exhibit a startle or flight response, but these forms of disturbance would be temporary, with a geographic extent much smaller than the project action area.

Sunflower sea stars are carnivorous invertebrates that eat a variety of invertebrates, including clams, mussels, oysters, snails, crabs, and sea urchins. Marine invertebrates such as mussels and barnacles may be in the project footprint, and attached to piles that will be removed. Given the relatively small project footprint and low amount of sunflower sea star prey expected within the footprint, impacts to their prey species are expected to be insignificant.

Based on the above information, prey species may be impacted by the proposed action; however, the expected impact on prey is very minor. Adverse effects to Western DPS Steller sea lions, or sunflower sea stars due to project-caused prey effects will be immeasurably small.

6.1.1.4 Trash and Debris

The project may generate trash and debris from construction activities, which could be released into the marine environment and pose risks to listed and proposed species. The City of Whittier intends to comply with all applicable regulations, and will implement best management practices to minimize, retrieve, and appropriately dispose of project-generated trash and debris. The impact of trash and debris is expected to be very minor, and thus adverse effects to ESA-listed and proposed species will be immeasurably small.

6.1.1.5 Pollutants and Contaminants

Listed and proposed species could be exposed to authorized discharges through project vessels. Discharges associated with some marine commercial vessels are covered under a national NPDES Vessel General Permit (VGP) for Discharges Incidental to the Normal Operation of Vessels. Commercial vessels are covered under the VGP when discharging within the territorial sea extending three nautical miles from shore. When vessels are operating and discharging in Federal waters, the discharges are regulated under MARPOL 73/78, the International Convention for the Prevention of Pollution from Ships. The EPA completes consultation on the issuance of

the VGP with the Services and receives separate biological opinions. Previously, these opinions have concluded that EPA's issuance of the VGP was not likely to jeopardize listed species or adversely modify designated or proposed critical habitat. An ESA consultation was completed for this general permit, impacts associated with marine vessel discharges were considered, and incidental take has been accounted for.

Accidental spills could occur from a vessel leak or onboard spill. The size of the spill influences the number of individuals that will be exposed and the duration of that exposure. Contact through the skin, eyes, or inhalation and ingestion could result in temporary irritation or long-term endocrine or reproductive impacts, depending on the duration of exposure. The greatest threat to cetaceans is likely from inhalation of volatile toxic hydrocarbon fractions of fresh oil, which can damage the respiratory system (Hansen 1985; Neff 1990), cause neurological disorders or liver damage (Geraci and St. Aubin 1990), have an anesthetic effects (Neff 1990), and cause death (Geraci and St. Aubin 1990). However, toxic fumes from small spills are expected to rapidly dissipate into the atmosphere as fresh refined oil ages quickly, limiting the potential exposure of marine mammals. We do not expect sunflower sea stars to be affected by pollutants that are released and remain at the surface or higher in the water column.

The City of Whittier has best management practices for hazardous materials and waste management in place to address oil and other contaminant spill prevention. These include oil booms on-site, regular checks of equipment, hoses, and fuel storage for leaks, and proper storage of potentially harmful chemicals and contaminants. Based on the localized nature of small spills or pollutant releases, the relatively rapid weathering and dispersion, and the safeguards in place to avoid and minimize spills, NMFS concludes that exposure of Western DPS Steller sea lions or sunflower sea stars to an oil spill or pollutant release from the project is extremely unlikely to occur. If exposure were to occur, NMFS does not expect detectable responses from listed or proposed species due to the ephemeral nature of small spills.

6.1.1.6 Acoustic Disturbance to Sunflower Sea Stars from Pile Driving Activities

Overall, there are significant data gaps regarding the effects of loud underwater sounds on sunflower sea stars. Sunflower sea stars do not possess a gas bladder, but we do not know if they possess underwater vibration receptors that could be affected by loud sounds. Exposure to continuous loud sound (>140 dB) can cause echinoderms, such as sea urchins, to have increased levels of stress-related hormones (Vazzana et al. 2020; Solé et al. 2023), but there is no data that the increase in these hormones affects their behavior or survival. There are currently no studies that suggest sea stars, or more specifically sunflower sea stars, have this response.

There are no existing criteria to assess adverse impacts of anthropogenic sound on sunflower sea stars (Hawkins et al. 2015); however, the number of ways a sunflower sea star could be affected by pile driving activity sound is limited. Their physiological and behavioral processes are mediated by chemical stimuli and noise is not expected to impact sunflower sea stars in any measurable way. Therefore, we conclude the effects of acoustic disturbance from pile driving activities will be very minor, if there are any effects at all.

6.1.2 Major Stressors on Western DPS Steller Sea Lions

Construction activities will produce non-impulsive (i.e., vibratory pile driving) sounds. Acoustic disturbance from pile driving activities is the major stressor likely to adversely affect Western DPS Steller sea lions. A brief explanation of the sound measurements and acoustic thresholds used in the discussions of acoustic effects in this opinion is provided below, and the following sections will analyze the exposure to and response of ESA-listed Western DPS Steller sea lions to underwater anthropogenic sound from project construction activities.

6.1.2.1 Acoustic Thresholds

Since 1997, NMFS has used generic sound exposure thresholds to determine whether an activity produces underwater and in-air sounds that might result in impacts to marine mammals (70 FR 1871, 1872; January 11, 2005). NMFS has developed comprehensive guidance on sound levels likely to cause injury to marine mammals through onset of permanent and temporary thresholds shifts (PTS and TTS) (89 FR 84872; October 24, 2024; 83 FR 28824; June 21, 2018; 81 FR 51693; August 4, 2016). NMFS is in the process of developing guidance for behavioral disruption (Level B harassment). However, until such guidance is available, NMFS uses the following conservative thresholds of underwater sound pressure levels,[26] expressed in root mean square[27] (rms), from broadband sounds that cause behavioral disturbance, and referred to as Level B harassment under section 3(18)(A)(ii) of the Marine Mammal Protection Act (MMPA) (16 U.S.C 1362(18)(A)(ii)):

- impulsive sound: 160 dB_{rms} re 1 µPa
- non-impulsive sound: 120 dB_{rms} re 1µPa

Under the Underwater and In-Air Criteria for Onset of Auditory Injury (AUD INJ) and TTS Technical Guidance, NMFS uses the following thresholds (Table 6) for underwater sounds that cause injury, referred to as Level A harassment under section 3(18)(A)(i) of the MMPA (16 U.S.C 1362(18)(A)(i)) (NMFS 2024). Different thresholds and auditory weighting functions are provided for different marine mammal hearing groups, which are defined in the Technical Guidance (NMFS 2024). The generalized hearing range for each hearing group is in Table 7.

These acoustic thresholds are presented using dual metrics of cumulative sound exposure level (L_E) and peak sound level (PK) for impulsive sounds and L_E for non-impulsive sounds. Level A harassment radii can be calculated using the optional user spreadsheet[28] associated with NMFS Acoustic Guidance or through modeling.

[26] Sound pressure is the sound force per unit micropascals (µPa), where 1 pascal (Pa) is the pressure resulting from a force of one newton exerted over an area of one square meter. Sound pressure level is expressed as the ratio of a measured sound pressure and a reference level. The commonly used reference pressure level in acoustics is 1 µPa, and the units for underwater sound pressure levels are decibels (dB) re 1 µPa.
[27] Root mean square (rms) is the square root of the arithmetic average of the squared instantaneous pressure values.
[28] The Optional User Spreadsheet can be downloaded from the following website: http://www.nmfs.noaa.gov/pr/acoustics/guidelines.htm

Table 6. Acoustic Thresholds Identifying the Onset of Auditory Injury based on 2024 Technical Guidance (NMFS 2024a).

	AUD INJ Onset Criteria* (Received Level)	
Hearing Group	**Impulsive**	**Non-impulsive**
Low-Frequency (LF) Cetaceans	$L_{p,0\text{-pk,flat}}$: 222 dB $L_{E,p,\text{ LF,24h}}$: 183 dB	$L_{E,p,\text{ LF,24h}}$: 197 dB
High-Frequency (HF) Cetaceans	$L_{p,0\text{-pk,flat}}$: 230 dB $L_{E,p,\text{ HF,24h}}$: 193 dB	$L_{E,p,\text{ HF,24h}}$: 201 dB
Very High-Frequency (VHF) Cetaceans	$L_{p,0\text{-pk,flat}}$: 202 dB $L_{E,p,\text{VHF,24h}}$: 159 dB	$L_{E,p,\text{ VHF,24h}}$: 181 dB
Phocid Pinnipeds (PW)	$L_{p,0\text{-pk.flat}}$: 223 dB $L_{E,p,\text{PW,24h}}$: 183 dB	$L_{E,p,\text{PW,24h}}$: 195 dB
Otariid Pinnipeds (OW)	$L_{p,0\text{-pk,flat}}$: 230 dB $L_{E,p,\text{OW,24h}}$: 185 dB	$L_{E,p,\text{OW,24h}}$: 199 dB

*Dual metric thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating AUDINJ onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds are recommended for consideration.

Note: Peak sound pressure level (Lp,0-pk) has a reference value of 1 µPa, and weighted cumulative sound exposure level (LE,p) has a reference value of 1µPa2s. In this Table, thresholds are abbreviated to be more reflective of International Organization for Standardization standards (ISO 2017). The subscript "flat" is being included to indicate peak sound pressure are flat weighted or unweighted within the generalized hearing range of marine mammals (i.e., 7 Hz to 165 kHz). The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, HF, and VHF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The weighted cumulative sound exposure level thresholds could be exceeded in a multitude of ways (i.e., varying exposure levels and durations, duty cycle).

The MMPA defines "harassment" as: any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment] (16 U.S.C. 1362(18)(A)).

While the ESA does not define "harass," NMFS issued guidance interpreting the term "harass" under the ESA as to: "create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering" (Wieting 2016).

Exposure to sound capable of causing Level A or Level B harassment under the MMPA often, but not always, constitutes take under the ESA. For the purposes of this consultation, we have determined construction activities that produce non-impulsive (i.e., vibratory pile driving) underwater sounds have sound source levels capable of causing take under the MMPA and ESA.

As described below, we anticipate that exposures to listed Western DPS Steller sea lion from noise associated with the proposed action may result in disturbance. However, no mortalities or

permanent impairment to hearing are anticipated.

Table 7. Marine mammal hearing groups (NMFS 2024a).

Hearing Group^	ESA-listed Marine Mammals in the Project Area Likely to be Adversely Affected by the Action	Generalized Hearing Range*
Low-frequency (LF) cetaceans *(Baleen whales)*	none	7 Hz to 36 kHz
High-frequency (HF) cetaceans *(dolphins, toothed whales, beaked whales)*	none	150 Hz to 160 kHz
Very High-frequency (VHF) cetaceans *(true porpoises)*	none	200 Hz to 165 kHz
Phocid pinnipeds (PW) *(true seals)*	none	40 Hz to 90 kHz
Otariid pinnipeds (OW) *(sea lions and fur seals)*	Steller sea lion	60 Hz to 68 kHz

^ Southall et al. 2019 indicates that as more data become available there may be separate hearing group designations for Very Low-Frequency cetaceans (blue, fin, right, and bowhead whales) and Mid-Frequency cetaceans (sperm, killer, and beaked whales). However, at this point, all baleen whales are part of the LF cetacean hearing group, and sperm, killer, and beaked whales are part of the HF cetacean hearing group. Additionally, recent data indicate that as more data become available for Monachinae seals, separate hearing group designations maybe appropriate for the two phocid subfamilies (Ruscher et al. 2021; Sills et al. 2021).

* Represents the generalized hearing range for the entire group as a composite (i.e., all species within the group), where individual species' hearing ranges may not be as broad. Generalized hearing range chosen based on ~65 dB threshold from composite audiogram, previous analysis in NMFS 2018, and/or data from Southall et al. 2007; Southall et al. 2019. Additionally, animals can detect very loud sounds above and below that generalized hearing range.

+ NMFS is aware that the National Marine Mammal Foundation successfully collected preliminary hearing data on two minke whales during their third field season (2023) in Norway. These data have implications for not only the generalized hearing range for low-frequency cetaceans but also on their weighting function. However, at this time, no official results have been published. Furthermore, a fourth field season (2024) is proposed, where more data will likely be collected. Thus, it is premature for us to propose any changes to our current Updated Technical Guidance. However, mysticete hearing data is identified as a special circumstance that could merit re-evaluating the acoustic criteria in this document. Therefore, we anticipate that once the data from both field seasons are published, it will likely necessitate updating this document (i.e., likely after the data gathered in the summer 2024 field season and associated analysis are published).

6.1.3 Major Stressors on Sunflower Stars

The primary stressor for sunflower sea stars will be direct physical contact, either during pile removal and driving activities or pre-construction surveys. Sunflower sea stars may be attached to the substrate and existing piles below the high tide line (HTL) that will be disturbed as part of this action. Pilings could come in contact with sunflower sea stars during installation, or sea stars could be brought to the surface on pilings during removal. Pile driving activities have the

potential to directly impact (e.g., harm, wound, kill) sunflower sea stars.

Surveys for sunflower sea stars will be conducted prior to pile removal and pile driving activities. Sunflower sea stars found during surveys or attached to a pile being removed from the water will be gently collected and released as outlined in the mitigation measures. Sunflower sea stars are fairly tolerant to handling; however, the collection and relocation process will likely introduce some stress. Handling/moving them can be a major stressor if done incorrectly, and immediate responses include behavioral changes including reduced appetite and high movement/activity. Sunflower sea stars could be injured during the collection or relocation process. Relocation may also expose them to a greater predation risk as they move to find shelter and attach to the substrate.

6.2 Exposure Analysis

As discussed in the *Approach to the Assessment* section of this opinion, exposure analyses are designed to identify the listed and proposed species that are likely to co-occur with these effects in space and time and the nature of that co-occurrence. In this step of our analysis, we try to identify the number, age (or life stage), and sex of the individuals that are likely to be exposed to an action's effects and the populations or subpopulations those individuals represent.

NMFS expects that Steller sea lions will be exposed to underwater noise from pile driving activities (including vibratory pile driving and removal) and that sunflower sea stars will be exposed to direct physical contact from pile removal and pile driving activities or pre-construction surveys.

6.2.1 ESA-Listed Marine Mammals

6.2.1.1 Ensonified Area

Here, we describe operational and environmental parameters of the activity that are used in estimating the area ensonified above the acoustic thresholds, including source levels and transmission loss coefficient.

The sound field in the proposed project area is the existing background noise plus additional construction noise from the proposed project. Marine mammals are expected to be affected via sound generated by the primary components of the project activities (i.e., pile driving and removal).

The Whittier Small Boat Harbor Project includes vibratory pile installation and removal. Source levels for these activities are based on reviews of measurements of the same or similar types and dimensions of piles available in the literature and are described in greater detail in the IHA (90 FR 23891; June 5, 2025). NMFS used acoustic monitoring data from other locations to develop the source levels used to calculate distances to the Level A and Level B thresholds for different sizes of piles and removal/installation methods. The calculated distance to the farthest Level A harassment isopleth is approximately 4.7 m (15.3 ft) and is entirely contained inside the existing harbor perimeter. The calculated distance to the farthest Level B harassment isopleth is

approximately 6.3 km (4.5 mi), however, the action area is truncated by land and the Whittier Harbor breakwater and seawall, and therefore does not reach its full calculated extent. At its maximum, the ensonified area extends approximately 1.8 km from the proposed project and encompasses approximately 1.3 km^2 (0.5 mi^2) (Figure 4). The pile types and quantities along with values used and the source from which they were derived are summarized in Table 8. The resulting calculated isopleths and areas are summarized in Table 9.

Table 8. Estimates of Mean Underwater Sound Levels Generated During Vibratory Pile Driving and Removal.

Pile Size and Method	Proxy Sound Source Levels at 10m (dB re 1 µPa)	Reference
	RMS SPL	
12-16-inch timber pile; removal	162	NMFS 2023[1]
16-inch steel pile; installation/ removal	155	Denes et al. (2019)

[1]NMFS Southeast Alaska proxy recommendations for Southeast Alaska

Table 9. Level A Harassment and Level B Harassment Isopleths and Associated Areas from Vibratory Pile Driving and Removal.

Pile Size/ Type	Level A Harassment Zone (m)[a], Areas (km^2)[b]	Level B Harassment Zone (m)[a], Areas (km^2)[b]
Vibratory Pile Driving/Removal		
12-16-inch timber pile; removal	4.7 (0.021)	6,309.6 (0.650)
16-inch steel pile; removal	1.4 (0.019)	2,154.4 (1.385)
16-inch steel pile; installation	8.3 (0.023)	2,154.4 (1.385)

[a] Distances represent the maximum calculated radius of the zone. The actual zone may be truncated by landforms.
[b] Areas of zones accounting for truncation by landforms

Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic sound exposure is also informed to varying degrees by other factors related to the source (e.g., frequency, predictability, duty cycle), the environment (e.g., bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall et al. 2007; Ellison et al. 2012). Based on the available science and the practical need to use a threshold that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic sound above received levels of 120 dB re 1 µPa rms for continuous or non-impulsive sources (e.g., vibratory pile-driving and DTH) and above 160 dB re 1 µPa rms for non-explosive impulsive (e.g., impact pile driving) or intermittent sources.

6.2.2 Shutdown Zones

To minimize impacts to Steller sea lions, monitoring of shutdown, and Level A and Level B harassment zones under the MMPA IHA would be implemented to protect and document listed marine mammals in the action area. The project will have two units, focused on the East side of the harbor and the West side (Figure 12). The shutdown zones for Level A and monitoring zones for Level B harassment of marine mammals for the work in the East Unit are displayed in Figure 13, and the corresponding shutdown and monitoring zones for the West Unit are displayed in Figure 14.

As noted previously, the breakwaters surrounding the harbor will limit propagation of sound during construction to the north and east and the shoreline will limit propagation to the south. Sound that moves past the harbor perimeter to the west will reach the shoreline of Passage Canal before the full extent of the modeled Level B isopleth (Figure 13 and Figure 14).

Figure 12. Whittier Small Boat Harbor project units.

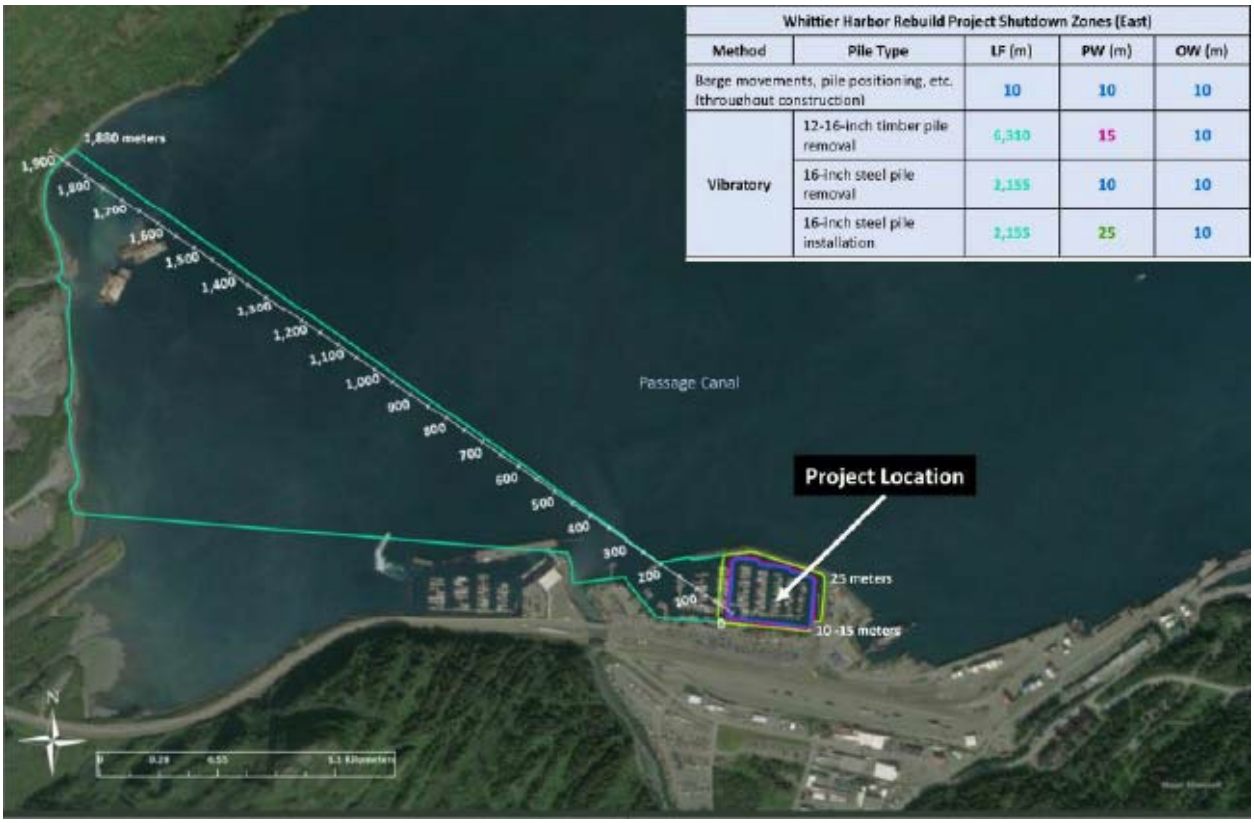

Figure 13. Proposed shutdown and monitoring distances for activities in the East Unit during the Whittier Small Boat Harbor project.

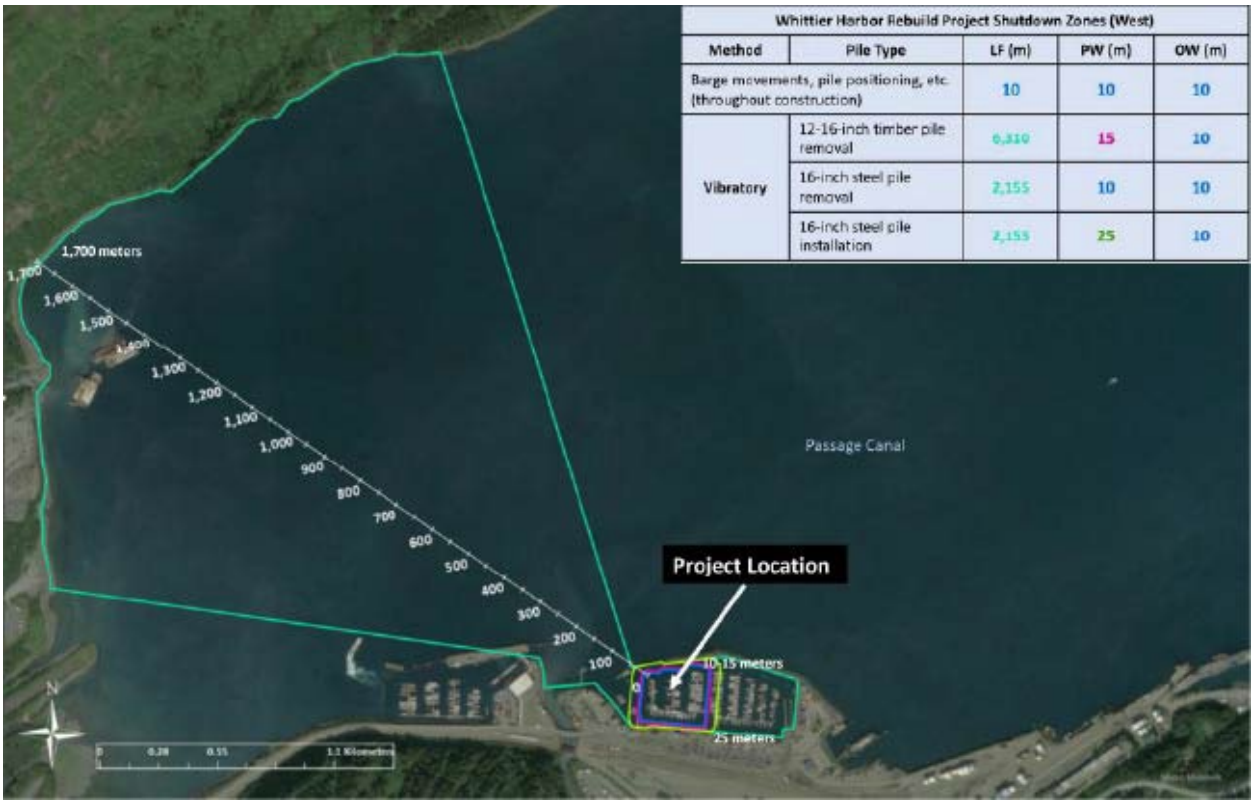

Figure 14. Proposed shutdown and monitoring distances for activities in the West Unit during the Whittier Small Boat Harbor project.

6.2.2.1 Marine Mammal Occurrence and Exposure Estimates

To more accurately determine species that may occur in the action area in Passage Canal, the following sources were reviewed:

- Protected Species Monitoring Data—Whittier Head of the Bay Cruise Ship Dock Project (Solstice 2025)
- DOT&PF Incidental Harassment Authorization – Whittier Ferry Terminal Modification (84 FR 72321)
- Whittier Ferry Terminal Modification Marine Mammal Monitoring and Mitigation Program Report(Leonard and Wisdom 2020b).

Scientific literature, other monitoring reports, and local knowledge from tour guide operators were also referenced to determine exposure estimates in the construction action area. Information from these sources and a review of scientific literature indicate that WDPS Steller sea lions could occur in the action area during construction.

Shutdowns will be implemented only if these or any other marine mammal species appears likely to approach the Level B harassment zone during in-water work.

Steller Sea Lions

Steller sea lions occur year-round in the action area. Steller sea lions are drawn to fish processing plants and high forage value areas such as anadromous streams. Passage Canal has several anadromous streams that support salmon species and one fish processing plant with an Alaska Department of Environmental Conservation (ADEC) permitted outfall that also attracts Steller sea lions (ADEC 2024). Steller sea lions may be present in Passage Canal year-round, but we expect the highest numbers to occur between April and October.

Based on the above sightings data and seasonal patterns, NMFS expects that one group of two Western DPS Steller sea lions per day could be exposed to Level B harassment from noise generated by pile driving activities. The project schedule indicates that in-water activities will occur on 29 days between September 2025 and spring 2026. Therefore, 58 sea lions (2/day x 29 days) between September 2025 and spring 2026 may be exposed to Level B harassment from pile driving noise. In total, NMFS expects that 58 Western DPS Steller sea lions could be exposed to Level B harassment from noise generated by pile driving activities. Here we assume that if an animal is present in the ensonified area, it will be exposed to acoustic harassment, acknowledging that not all animals within the action area will be so exposed. We expect 0 to be exposed to Level A harassment.

6.2.3 ESA-Proposed Sunflower Sea Stars

6.2.3.1 Project Footprint

The existing creosote-treated timber piles and ten steel piles will be removed as part of the harbor rebuild. Ninety new 16-inch steel piles will be installed to support the new floats. The existing A, G, and H floats will be removed and replaced (Figure 2).

Table 10. Project footprint for sunflower sea stars.

Activity	Pile Size/Type[†]	# of Piles	Surface Area/Pile (m^2)[*]	Total Surface Area (m^2)
Pile Removal	12-16-inch timber	155	5.45	844.03
	16-inch steel pipe	10	5.45	54.45
Pile Installation	15-inch steel pipe	90	0.13	11.68
			TOTAL	**910.16**

[†]In instances where the pile size has not been determined (e.g., temporary template piles and mooring dolphins), the larger pile size was used in the surface area calculations.

[*]The surface area for piles being installed was calculated using the formula for the area of a circle ($A = \pi r^2$), as only the bottom surface of the pile will contact the seafloor and potentially disturb sunflower sea stars. The surface area for piles being removed was calculated using the formula for the area of a cylinder ($A = 2\pi rh + 2\pi r^2$), as sunflower sea stars could potentially be attached to the pile throughout the water column. r is the radius of the pile and h is the height (or water depth) of the pile. Nautical charts for the area indicate a water depth of approximately 4.26 m inside the harbor.

6.2.3.2 Sunflower Sea Star Occurrence and Exposure Estimates

We assume that the sunflower sea star occupies inter-and sub-tidal habitats throughout Prince William Sound and Passage Canal, including the project construction action area. Surveys and data for sunflower sea stars in most Alaska waters are very sparse, and there have been no recent surveys conducted in inner Passage Canal. Sunflower sea stars have been documented within Passage Canal, including along the breakwater between the Whittier Harbor and the ferry terminal and along the shoreline approximately one mile east of the Whittier Harbor. Densities in nearby western Prince William Sound were considered high with an average of 0.233 sunflower sea stars/m^2 (Konar et al. 2019); however, post-SWSS pandemic densities in the area are now much lower at 0.0405 sunflower sea stars/m^2 (Traiger et al. 2022).

The total calculated project footprint for sunflower sea stars is 910.16 m^2. Using the 0.0405 sea stars/m^2 density estimate, an estimated 37 sunflower sea stars (rounded up from 36.86) may be exposed to direct physical contact via pile driving activities (including pile installation, pile removal, and fill placement) or capture and relocation efforts (e.g., pre-construction surveys).

6.3 Response Analysis

As discussed in the *Approach to the Assessment* section of this opinion, response analyses determine how listed and proposed species are likely to respond after being exposed to an action's effects on the environment or directly on listed and proposed species themselves. Our assessments try to detect the probability of lethal responses, physical damage, physiological responses (particularly stress responses), behavioral responses, and social responses that might result in reducing the fitness of listed and proposed individuals. Ideally, our response analyses consider and weigh evidence of adverse consequences, beneficial consequences, or the absence of such consequences.

6.3.1 Marine Mammal Responses to Major Noise Sources

Loud underwater noise can result in physical effects on the marine environment that can affect marine organisms. Possible responses by Western DPS Steller sea lions to the non-impulsive sound produced by pile driving activities include:

- Physical Response
    - Temporary or permanent hearing impairment
    - Non-auditory physiological effects

- Behavioral responses
    - Tolerance or habituation
    - Change in dive, respiration, or feeding behavior
    - Change in vocalizations
    - Avoidance or displacement
    - Vigilance
    - Startle or fleeing/flight
    - Auditory interference

As described in the Exposure Analysis, Western DPS Steller sea lions are expected to occur in the construction action area and to overlap with noise associated with pile installation and removal activities. We assume that some individuals are likely to be exposed and respond to these non-impulsive noise sources.

With proper implementation of the mitigation measures and shutdown procedures described in Section 2.1.2, we do not expect that any listed marine mammals will be exposed to noise levels loud enough, long enough, or at distances close enough for the proposed action to result in harm to the animal. In other words, we expect no permanent hearing impairment or other injury. We expect no more than 58 exposures of Western DPS Steller sea lions to noise levels sufficient to cause harassment, as described in Section 6.2. All instances of harassment are expected to occur at received levels greater than 120 dB and 160 dB for non-impulsive and impulsive noise sources, respectively, meaning some physical and behavioral responses could occur.

The introduction of anthropogenic noise into the aquatic environment from pile driving is the primary means by which Western DPS Steller sea lions may be harassed from project activities covered in this opinion. In general, animals exposed to natural or anthropogenic sound may experience physical and physiological effects, ranging in magnitude from none to severe (Southall et al. 2007). Exposure to anthropogenic noise can also lead to non-observable physiological responses such an increase in stress hormones. Additional noise in marine mammal habitat can mask acoustic cues used by marine mammals to carry out daily functions such as communication and predator and prey detection.

Exposure to pile driving noise has the potential to result in auditory threshold shifts and behavioral reactions (e.g., avoidance, temporary cessation of foraging and vocalizing, changes in dive behavior). The effects of pile driving noise on marine mammals are dependent on several factors, including, but not limited to, sound type (e.g., impulsive vs. non-impulsive), the species, age and sex class (e.g., adult male vs. cow with calf), duration of exposure, the distance between the pile and the animal, received levels, behavior at time of exposure, and previous history with exposure (Wartzok et al. 2003; Southall et al. 2007). Here we discuss physical auditory effects followed by behavioral effects.

6.3.1.1 Temporary or Permanent Hearing Impairment

NMFS defines a noise-induced threshold shift (TS) as a change, usually an increase, in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS 2018). In other words, a threshold shift is a hearing impairment, and may be temporary (such as ringing in your ears after a loud rock concert) or permanent (such as the loss of the ability to hear certain frequencies or partial or complete deafness). There are numerous factors to consider when examining the consequence of TS, including: the signal's temporal pattern (e.g., impulsive or non-impulsive); likelihood an individual would be exposed for a long enough duration or to a high enough level to induce a TS; the magnitude of the TS; time to recovery; the frequency range of the exposure (i.e., spectral content); the hearing and vocalization frequency range of the exposed species relative to the signal's frequency spectrum (i.e., how an animal uses sound within the frequency band of the signal; Kastelein et al. 2014); and the overlap between the animal and the sound (e.g., spatial,

temporal, and spectral; NMFS 2018). The amount of threshold shift is customarily expressed in dB.

Temporary Threshold Shift

Temporary threshold shift (TTS) is the mildest form of hearing impairment that can occur during exposure to a strong sound (Kryter 1970). While experiencing TTS, the hearing threshold rises, and a sound must be stronger in order to be heard. For sound exposures at or somewhat above the TTS threshold, hearing sensitivity in marine mammals recovers rapidly after exposure to the sound ends. Few data exist on the sound levels and durations necessary to elicit mild TTS in marine mammals, and none of the published data describe TTS elicited by exposure to multiple pulses of sound. Available data on TTS in marine mammals are summarized in (Southall et al. 2007).

Although some exposures to sound capable of causing harassment may occur during the course of the proposed action, not all instances will result in TTS because the estimated noise thresholds for the onset of TTS are conservative. If TTS does occur, it is expected to be mild and temporary and not likely to affect the long-term fitness of the affected individuals.

Auditory Injury

NMFS defines auditory injury as damage to the inner ear that can result in destruction of tissue such as the loss of cochlear neuron synapses or auditory neuropathy (NMFS 2024a). Auditory injury may or may not result in permanent threshold shift (PTS). When PTS occurs, there is physical damage to the sound receptors in the ear. The animal will have an impaired ability to hear sounds in specific frequency ranges, and there can be total or partial deafness in severe cases (Kryter 1985). There is no specific evidence that exposure to pulses of sound can cause PTS in any marine mammal. However, given the possibility that mammals close to a sound source can incur TTS, it is possible that some individuals will incur PTS. Single or occasional occurrences of mild TTS are not indicative of permanent auditory damage, but repeated or (in some cases) single exposures to a level well above that causing the onset of TTS may elicit PTS.

Relationships between TTS and PTS thresholds have not been studied in marine mammals but are assumed to be similar to those in humans and other terrestrial mammals, based on anatomical similarities. PTS might occur at a received sound level at least several decibels above that which induces mild TTS, if the animal were exposed to strong sound pulses with rapid rise time. For non-impulsive exposures (i.e., vibratory pile driving), a variety of terrestrial and marine mammal data sources indicate that a threshold shift up to 40 to 50 dB may be induced without PTS, and that 40 dB is a conservative upper limit for threshold shift to prevent PTS. An exposure causing 40 dB of TTS is, therefore, considered equivalent to PTS onset (NMFS 2018).

The shutdown zones to be implemented are larger than the calculated isopleths to reduce the likelihood that listed marine mammals are exposed to noise levels that could cause PTS or other harmful disturbance. No exposures are expected at levels resulting in PTS due to conservative estimates of MMPA Level A acoustic isopleths and mitigation measures to shut down pile driving activities if a Western DPS Steller sea lion approaches a Level A zone.

6.3.1.2 Non-auditory Physiological Effects

Non-auditory physiological effects or injuries that theoretically might occur in marine mammals exposed to strong underwater sound include stress, neurological effects, internal bubble formation, resonance effects, and other types of organ or tissue damage (Cox et al. 2006; Southall et al. 2007). Studies examining such effects are limited. In general, little is known about the potential for pile driving activities to cause auditory impairment or other physical effects in marine mammals. Available data suggest that such effects, if they occur at all, would presumably be limited to short distances from the sound source and to activities that extend over a prolonged period of time. The available data do not allow identification of a specific exposure level above which non-auditory effects can be expected (Southall et al. 2007) or any meaningful quantitative predictions of the numbers (if any) of marine mammals that may be affected in those ways. Marine mammals that show behavioral avoidance of pile driving are especially unlikely to incur auditory impairment or non-auditory physical effects.

An animal's perception of a threat may be sufficient to trigger stress responses consisting of some combination of behavioral responses, autonomic nervous system responses, neuroendocrine responses, or immune responses (Moberg 2000). In many cases, an animal's first, and sometimes most economical (in terms of energetic costs), response is behavioral avoidance of the potential stressor. Autonomic nervous system responses to stress typically involve changes in heart rate, blood pressure, and gastrointestinal activity. These responses have a relatively short duration and may or may not have a significant long-term effect on an animal's fitness.

The primary distinction between stress (which is adaptive and does not normally place an animal at risk) and "distress" is the cost of the response. During a stress response, an animal uses glycogen stores that can be quickly replenished once the stress is alleviated. In such circumstances, the cost of the stress response would not pose serious fitness consequences. However, when an animal does not have sufficient energy reserves to satisfy the energetic costs of a stress response, energy resources must be diverted from other functions. This state of distress will last until the animal replenishes its energetic reserves sufficient to restore normal function.

Relationships between these physiological mechanisms, animal behavior, and the costs of stress responses are well-studied through controlled experiments and for both laboratory and free-ranging animals (Jessop et al. 2003; Lankford et al. 2005; Crespi et al. 2013). Stress responses due to exposure to anthropogenic sounds or other stressors and their effects on marine mammals have also been reviewed (Fair and Becker 2000; Romano et al. 2002) and, more rarely, studied in wild populations (Romano et al. 2002). For example, noise reduction from reduced ship traffic in the Bay of Fundy following September 11, 2001, was linked to a significant decline in fecal stress hormones in North Atlantic right whales, suggesting that chronic exposure to increased noise levels, although not acutely injurious, can produce stress (Rolland et al. 2012). These stress hormones returned to their previous level within 24 hours after the resumption of shipping traffic.

Exposure to loud noise can also adversely affect reproductive and metabolic physiology (Kight

and Swaddle 2011). In a variety of factors, including behavioral and physiological responses, females appear to be more sensitive or respond more strongly than males (Kight and Swaddle 2011). These and other studies lead to a reasonable expectation that some marine mammals will experience physiological stress responses upon exposure to acoustic stressors and that it is possible that some of these would be classified as "distress". In addition, any animal experiencing TTS would likely also experience stress responses (NRC 2003).

The proposed action may result in ESA-listed Western DPS Steller sea lions experiencing stress responses. However, in-water pile driving activities will be staggered over 29 non-consecutive work days and occur for a limited amount of time on each day of in-water work, limiting the potential for chronic stress. Marine mammals that show behavioral avoidance of pile driving activities are especially unlikely to incur auditory impairment or non-auditory physical effects, like stress and distress, because they will be limiting the duration of their exposure. If listed marine mammals are not displaced and remain in the stressful environment (within the behavioral shutdown zone), we expect the stress response will dissipate shortly after the individual leaves the area or after the cessation of the acoustic stressor.

6.3.1.3 Behavioral Disturbance Reactions

Behavioral responses are influenced by an animal's assessment of whether a potential stressor poses a threat or risk. Behavioral responses may include: changing durations of surfacing and dives, number of blows per surfacing, or changing direction and/or speed; reduced/increased vocal activities; changing/cessation of certain behavioral activities (such as socializing or feeding); visible startle response or aggressive behavior (such as tail/flipper slapping or jaw clapping); avoidance of areas where sound sources are located; and/or, flight responses.

Disturbance includes a variety of effects, including subtle changes in behavior, more conspicuous changes in activities, and displacement. Behavioral responses to sound are highly variable and context-specific, and reactions, if any, depend on species, state of maturity, experience, current activity, reproductive state, auditory sensitivity, time of day, and many other factors (Southall et al. 2007).

Tolerance can occur when an animal's response to a stimulus wanes with repeated exposure, usually in the absence of unpleasant associated events (Wartzok et al. 2003). Animals are most likely to tolerate, and possibly habituate to, sounds that are predictable and unvarying. The opposite process is sensitization, when an unpleasant experience leads to subsequent responses, often in the form of avoidance, at a lower level of exposure. Behavioral state may affect the type of response as well. For example, animals that are resting may show greater behavioral change in response to disturbing sound levels than animals that are highly motivated to remain in an area for feeding (Richardson et al. 1995; NRC 2003; Wartzok et al. 2003).

Controlled experiments with captive marine mammals showed pronounced behavioral reactions, including avoidance of loud sound sources (Ridgway et al. 1997; Finneran et al. 2003). Observed responses of wild marine mammals to loud pulsed sound sources (typically seismic guns or acoustic harassment devices, but also pile driving) have been varied, but often consist of avoidance behavior or other behavioral changes, suggesting discomfort (Morton and Symonds

2002; Wartzok et al. 2003; Thorson and Reyff 2006; Nowacek et al. 2007). Responses to non-impulsive sound, such as vibratory pile installation, have not been documented as well as responses to pulsed sounds.

Steller sea lions exposed to pile driving noise may change their behavioral state by avoiding these sound fields or exhibiting vigilance by raising their heads above the water. In general, pinnipeds seem more tolerant of low frequency noise and less responsive to exposure to industrial sound than most cetaceans (Costa et al. 2003).

The onset of behavioral disturbance from anthropogenic sound depends on both external factors (characteristics of sound sources and their paths) and the specific characteristics of the receiving animals (hearing, motivation, experience, demography), and is difficult to predict (Southall et al. 2007). The biological significance of many of these behavioral disturbances is also difficult to predict, especially if the detected disturbances appear minor. However, the consequences of behavioral modification could be biologically significant if the change affects growth, survival, or fitness. Significant behavioral modifications that could potentially lead to effects on growth, survival, or fitness include drastic changes in diving/surfacing patterns, longer-term habitat abandonment due to loss of desirable acoustic environment, longer-term cessation of feeding or social interaction, and cow/pup separation.

The proposed action may result in ESA-listed Western DPS Steller sea lions experiencing the behavioral disturbance reactions described above. However, in-water pile driving activities will be staggered over 29 non-consecutive work days and occur for a limited amount of time on each day of in-water work. We expect that disturbed animals would leave the area during pile driving activities for other habitat located throughout Passage Canal, and any reactions or behavioral changes are expected to be temporary and subside quickly when the exposure ceases. The individual and cumulative energy costs of the behavioral responses we have discussed are not likely to reduce the energy budgets of ESA-listed Western DPS Steller sea lions, and their probable exposure to noise sources are not likely to reduce their fitness.

6.3.1.4 Auditory Masking

Natural and artificial sounds can disrupt behavior by masking, or interfering with, a marine mammal's ability to hear other sounds. Masking occurs when the receipt of a sound is interfered with by another coincident sound at similar frequencies and at similar or higher levels. Chronic exposure to excessive, though not high-intensity, sound could cause masking at particular frequencies for marine mammals that utilize sound for vital biological functions.

Masking can interfere with detection of acoustic signals such as communication calls, echolocation sounds, and environmental sounds important to marine mammals. Therefore, under certain circumstances, marine mammals whose acoustical sensors or environment are being severely masked could also be impaired from maximizing their performance or fitness in survival and reproduction. If the coincident (masking) sound were anthropogenic, it could be potentially harassing if it disrupted hearing-related behavior. It is important to distinguish TTS and PTS (which persist after the sound exposure) from masking, which occurs only during the sound exposure. Because masking (without resulting in threshold shift) is not associated with

abnormal physiological function, it is not considered a physiological effect, but may result in a behavioral effect.

Masking occurs at the frequency band the animals utilize, so the frequency range of the potentially masking sound is important in determining any potential behavioral impacts. Lower frequency man-made sounds are more likely to affect detection of communication calls and other potentially important natural sounds such as surf and prey sound. Anthropogenic sounds may also affect communication signals when both occur in the same sound band and thus reduce the communication space of animals (Clark et al. 2009; Eickmeier and Vallarta 2022), and cause increased stress levels (Foote et al. 2004; Holt et al. 2009).

Masking has the potential to affect species at the population or community levels, as well as at individual levels. Masking affects both senders and receivers of the signals and can potentially have long-term chronic effects on marine mammal species and populations. Research suggests that low frequency ambient sound levels have increased by as much as 20 dB (more than a three-fold increase in terms of SPL) in the world's ocean from pre-industrial periods, and that most of these increases are from distant shipping (Hildebrand 2009). All anthropogenic sound sources, such as those from project activities, contribute to the elevated ambient sound levels, thus intensifying masking.

Noise from pile driving activities may mask acoustic signals important to Steller sea lions. However, pile driving activities will be intermittent, occur during daylight hours, and affect a limited area. Masking only exists for the duration of time that the masking sound is emitted and interfering with biologically important sounds; extended periods of time where masking could occur are not expected.

Masking is likely less of a concern for Steller sea lions, which vocalize both in air and water and do not echolocate or communicate with complex underwater “songs”. Any masking event that could harass Steller sea lions would occur concurrently within the zones of behavioral harassment already estimated for pile driving activities, which have already been taken into account in the Exposure Analysis.

6.3.2 Sunflower Sea Star Responses to Direct Contact

As described in the Exposure Analysis, sunflower sea stars are expected to occur in the action area and overlap with pile driving activities. We expect that some individuals will be exposed to and disturbed by project activities. The total calculated project footprint for sunflower sea stars is 910.16 m^2 and an estimated 37 sunflower sea stars may be exposed to direct physical contact via pile driving activities, including construction and pre-construction surveys.

The mitigation measures will reduce, but not eliminate, the risk of sunflower sea star injury or mortality from pile installation, pile removal, or fill placement. Direct contact with piles is expected to adversely affect sunflower sea stars and result in injury or mortality. The range-wide population for sunflower sea stars is estimated at 600 million, and the 37 individuals potentially impacted by project activities represents a very small fraction of the population. Therefore, the estimated level of injury or mortality from direct contact with piles and fill is not expected to

have population-level effects nor significantly impede recovery of the species in the Gulf of Alaska where the pandemic was less severe, there is evidence of recovery, and millions of sunflower sea stars persist.

Sunflower sea stars detected alive and not exhibiting SSWS will be exposed to direct human contact via capture and relocation efforts. Individuals will be relocated to areas of similar quality habitat and are not expected to return to the project footprint during construction activities. Relocation will introduce some stress for those sunflower sea stars captured, and may also expose them to a greater predation risk as they move to find shelter and attach to the substrate. However, it is reasonable to conclude that gentle removal and relocation is less likely to result in injury or death than leaving the sea stars in an area where they may be crushed by active pile driving or removal. Sea stars can regenerate tube feet and arms if injured during removal or relocation, which may reduce potential for long-term effects. Large sea stars held at the Alaska SeaLife Center are gently touched and handled regularly without apparent behavioral or survival effects.

6.3.3 Response Analysis Summary

Reactions and behavioral changes of Western DPS Steller sea lions to pile driving activities are expected to be temporary and subside quickly when the exposure ceases. The primary mechanism by which these behavioral changes may affect the fitness of individual animals is through the animals' energy budget, time budget, or both (the two are related because foraging requires time). Some animals may leave the area during pile driving activities if they were disturbed, and high-quality habitat is located throughout Passage Canal and the surrounding waters. The individual and cumulative energy costs of the behavioral responses we have discussed are not likely to reduce the energy budgets of Steller sea lions, and their probable exposure to noise sources are not likely to reduce their fitness.

Some sunflower sea stars are expected to experience injury, behavioral modification (e.g., temporarily reduced feeding), stress, or displacement resulting from capture and relocation efforts. Individual sea stars may expend minimal additional energy to find a suitable area to become established after relocation, but this additional energy expenditure is not expected to result in any long-term changes to their energy budget or survival. The individual and cumulative energy costs of the behavioral responses we have discussed are not likely to increase the energy budgets of sunflower sea star individuals, and their probable exposure to these stressors are not likely to reduce their fitness. Injury and mortality from direct contact with piles and fill are expected to adversely affect sunflower sea stars. The range-wide population for sunflower sea stars is estimated at 600 million, and the 37 individuals potentially impacted by project activities represents a very small fraction of the population. The estimated level of injury or mortality is not expected to have population-level effects nor significantly impede recovery of the species in the Prince William Sound where the pandemic was less severe, there is evidence of recovery, and millions of sunflower sea stars persist.

7 CUMULATIVE EFFECTS

"Cumulative effects" are those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area (50 CFR 402.02). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

Some continuing non-Federal activities are reasonably certain to contribute to climate change within the action area. However, it is difficult, if not impossible, to distinguish between the action area's future environmental conditions caused by global climate change that are properly part of the environmental baseline versus cumulative effects. Therefore, all relevant future climate-related environmental conditions in the action area are described in the *Status of the Species* and the *Environmental Baseline* sections.

We searched for information on non-Federal actions reasonably certain to occur in the action area. We did not find any information about non-Federal actions other than what has already been described in the Environmental Baseline section, which we expect to continue in the future, and those summarized below. Reasonably foreseeable future state, local, or private actions include vessel traffic (e.g., shipping and tourism) state fisheries, and pollution, and are discussed in the following sections.

7.1 Vessel Traffic, Shipping, and Tourism

Whittier has deep-water piers and receives moderate vessel traffic year-round, with a peak from April to October. Vessel types include cruise ships, freight vessels, passenger ferries, barges, recreational vessels (whale watching, kayaks, sailboats), and charter and commercial fishing vessels.

Alaska's summer 2019 cruise ship visitor volume was 44 percent higher than in 2010, and 15 percent of cruise ship passengers in 2019 stopped in Whittier (McDowell Group 2020). After a downturn of visitors caused by the COVID-19 pandemic, approximately 1.9 million cruise ship passengers are expected to visit Alaska in 2025 and there are 70 cruise ships scheduled to visit Whittier in 2025.[29] The influx of visitors suggests an increasing demand for tourism in the area, including vessel-based activities like whale-watching and sport-fishing. Larger vessels and longer tourist seasons have the potential to bring many more passengers to Whittier in the future.

Additionally, many residents maintain a recreational and commercial fishing lifestyle. The action area experiences moderate levels of commercial fishing vessels and recreational marine vessel traffic during the summer season.

Vessel traffic is expected to continue in Passage Canal. It is unknown whether overall vessel traffic or shipping will increase in the future, as this depends largely on economics, tourism, and other factors, but it is unlikely to decrease significantly. As a result, there will be continued risk

[29] https://claalaska.com/wp-content/uploads/2025/04/WHT-Whittier-2025.pdf accessed April 2025.

to marine mammals of ship strikes, exposure to vessel noise and presence, and small spills.

7.2 State of Alaska Fisheries

ADFG manages fish stocks and monitors and regulates fishing under the state jurisdiction to maintain sustainable stocks. Fishing, a major industry in Alaska, is expected to continue in the area. The City of Whittier is one of three communities in the Prince William Sound Management Area, which includes all coastal marine waters between Cape Fairfield in the west and Cape Suckling in the east, and all freshwater drainages that flow into these waters. In addition to what is normally thought of as Prince William Sound, this area also includes the Copper River downstream from Haley Creek, the Copper River Delta, and the Bering River.[30] Tourism, including the growing sport fish charter industry, is vital to its economy. There are more than 100 tour and charter fishing boats participating in sport/recreational fishing. Additionally, there are a variety of vessels that make up Whittier's commercial fishing fleet, including long-liners, purse-seiners, and gill-netters. Prince William Sound area supports extensive fisheries, but is accessible only by boat or plane. Sport anglers target hatchery king salmon as well as wild pink and chum salmon, cutthroat trout and Dolly Varden char. Bottomfish such as halibut, rockfish, and lingcod are also popular targets. There are six private non-profit hatcheries contribute significantly to several salmon fisheries, and state hatcheries support fisheries in three stocked lakes and king salmon fisheries in Valdez, Cordova, and Whittier.

There will be continued risk to marine mammals of prey competition, ship strikes, harassment, and entanglement in fishing gear, and continued risk to sunflower sea stars of bycatch. There is also the risk of displacement from foraging habitat due to human activity associated with fishing. It remains unknown whether and to what extent marine mammal prey may become less available due to commercial, subsistence, personal use, and sport fishing.

7.3 Pollution

As visitors to Whittier and the use of Passage Canal continues to grow, an increase in pollutants entering Passage Canal is likely to occur. The ADEC monitors wastewater discharges and has documented increasing water-quality violations with increasing cruise ship visitation. There were generally about 20 to 25 exceedances a year found in samples from both large and small ships from 2015 to 2018.[31] Detected exceedances have ranged from about 60 to 75 a year in the past few years.

Hazardous materials may also be released into Passage Canal from vessels and municipal runoff. Vessels traveling within the action area could accidentally spill oil and oil spilled outside of the action area could migrate into the action area. There are many potential nonpoint sources of pollution within the action area; pollutants can pass from streets, construction, and industrial areas. The EPA and ADEC will continue to regulate the amount of pollutants that enter Passage Canal from point and nonpoint sources through NPDES/APDES permits. Permittees will be

[30] https://www.adfg.alaska.gov/index.cfm?adfg=ByAreaSouthcentralPrinceWilliamSound.main accessed May 2025.
[31] https://www.adn.com/alaska-news/2025/02/25/more-cruise-traffic-in-alaska-is-followed-by-more-wastewater-violations-officials-say/ accessed May 2025.

required to renew their permits, verify they meet permit standards, and potentially upgrade facilities.

8 INTEGRATION AND SYNTHESIS

The Integration and Synthesis section is the final step of NMFS's assessment of the risk posed to species as a result of implementing the proposed action. In this section, we add the effects of the action (Section 6) to the environmental baseline (Section 5) and the cumulative effects (Section 7) to formulate the agency's opinion as to whether the proposed action is likely to result in appreciable reductions in the likelihood of both the survival or recovery of the species in the wild by reducing its numbers, reproduction, or distribution These assessments are made in full consideration of the status of the species (Section 4).

As we discussed in the Approach to the Assessment (Section 3) of this opinion, we begin our risk analyses by asking whether the probable physical, physiological, behavioral, or social responses of endangered, threatened, or proposed species are likely to reduce the fitness of endangered, threatened, or proposed individuals or the growth, annual survival or reproductive success, or lifetime reproductive success of those individuals.

As part of our risk analyses, we identified and addressed all potential stressors and considered all consequences of exposing listed and proposed species to all the stressors associated with the proposed action, individually and cumulatively, given that the individuals in the action area for this consultation are also exposed to other stressors in the action area and elsewhere in their geographic range.

8.1 Western DPS Steller Sea Lion Risk Analysis

Based on the results of the exposure analysis, we expect 58 Western DPS Steller sea lions may be exposed to Level B harassment from underwater sound associated with pile removal and installation. We do not expect any Level A harassment to occur.

Exposure to project-related vessel noise, vessel strike, trash and debris, seafloor disturbance and turbidity, effects on prey, and pollutants and contaminants may occur, but such exposure would have a very small impact, and is not expected to result in take of Steller sea lions. Impacts from vessel noise are expected to be immeasurably small due to the small marginal increase in such activities relative to the environmental baseline, the transitory nature of project-related vessel traffic and short duration of spatial overlap, low likelihood of exposure to sound that could significantly disrupt behavioral patterns, likely habituation of marine mammals that frequent this heavily trafficked area, and implementation of mitigation measures. The increase in ship traffic due to the proposed action is unlikely to result in a vessel strike. Project vessels will be operating at slow speeds, the increase in vessel traffic will be small, vessel strike is not considered a significant concern for Steller sea lions, and mitigation measures will be implemented.

The harbor has 360 slips ranging from 15-to-60 feet in size used for commercial and recreational

vessels. The harbor is used by residents of Whittier and the surrounding area, and local businesses including those offering fishing charters and ocean cruises. The project will not increase the harbor capacity or lead to substantial increased vessel traffic once completed, but will address failing infrastructure that has limited use of some slips.

Exposure to non-biodegradable marine debris, specifically to debris that can cause entanglement, remains an unquantifiable risk, but associated effects from this project would be minimal. Trash will be disposed of in accordance with state law and entanglement hazards will be secured, making exposure to marine debris and entanglement hazards from this project unlikely. Any increases in seafloor disturbance and turbidity would be temporary, localized, and minimal. Based on the localized nature of small spills or pollutant releases, the relatively rapid weathering expected, and the safeguards in place to avoid and minimize spills, we conclude that the probability of the proposed action exposing Western DPS Steller sea lions to a spill is extremely small, and thus the effects are considered highly unlikely to occur. Mitigation measures and adherence to Clean Water Act regulations are expected to minimize the risk of exposure to the potential introduction of pollutants and contaminants into the action area.

Impacts to prey species are expected to be minor and temporary, given the small area of activity relative to known feeding areas of listed marine mammals. We expect fish will be capable of moving away from project activities to avoid exposure to noise. Any behavioral avoidance by fish of the disturbed area would still leave significantly large areas of fish and marine mammal foraging habitat in the nearby vicinity. We expect the area in which stress, injury, TTS, or changes in balance of prey species may occur will be limited to a few meters directly around ongoing operations. We consider potential adverse impacts to prey resources from project activities in the action area to be immeasurably small.

Steller sea lions may experience stress responses as a result of noise from pile driving activities. Individuals that show behavioral avoidance of pile driving activities are especially unlikely to incur auditory impairment or non-auditory physical effects because they will be further limiting the duration of their exposure. If an animal is not displaced and remains in the stressful environment (within the behavioral harassment zone), we expect the stress response will dissipate shortly after the individual leaves the area or after the cessation of the acoustic stressor. If TTS occurs, it is expected to be mild and temporary, and is unlikely to affect the long-term fitness of the affected individual. We do not expect Steller sea lions to experience auditory injury or PTS from the proposed action. Noise from pile driving activities may also mask acoustic signals important to Steller sea lions. However, pile driving activities will be intermittent (occurring over 29 non-consecutive work days) and affect a limited area, thereby limiting the potential for these species to experience chronic stress, repeated TTS, or extended periods of masking as a result of project activities. Additionally, the City of Whittier will implement mitigation measures during project activities in order to minimize effects on listed marine mammals and reduce the likelihood that animals will be exposed to sound that could cause harassment.

It is difficult to estimate the behavioral responses, if any, that Western DPS Steller sea lions in the action area may exhibit to underwater sounds generated by project activities. Though the sounds produced during project activities may not greatly exceed levels that Steller sea lions

already experience in Passage Canal, particularly near Whittier, some of the sources proposed for use in this project are not among sounds to which they are commonly exposed. In response to project-related sounds, some Steller sea lions may move out of the area or change from one behavioral state to another, while other Steller sea lions may exhibit no apparent behavioral changes at all. These responses are not likely to alter the physiology, behavioral ecology, and social dynamics of individual animals in ways or to a degree that would reduce their fitness. Potential reactions are expected to subside quickly when the exposure to project noise ceases.

The primary mechanism by which behavioral changes affect the fitness of individual animals is through the animal's energy budget, time budget, or both. Most adult Steller sea lions occupy rookeries during the pupping and breeding season, which extends from late May to early July (NMFS 2008). The closest major rookery or haulout is over 40 km away from the construction site (Perry Island and Dutch Group). The individual and cumulative energy costs of the behavioral responses we have discussed are not likely to measurably increase energetic costs of Steller sea lions, and their probable exposure to project-related noise is not likely to reduce their fitness.

The probable behavioral responses (i.e., tolerance, short-term masking) to close approaches by vessel operations and potential exposure to noise from pile driving activities are not likely to reduce the current or expected future reproductive success or reduce the rates at which Steller sea lions grow, mature, or become reproductively active. Therefore, these exposures are not likely to reduce the abundance, reproduction rates, or survival and growth rates of the population those individuals represent.

As mentioned in the Environmental Baseline section, Western DPS Steller sea lions may be impacted by a number of anthropogenic activities present in Passage Canal. Human activity in the area has produced a number of anthropogenic risk factors that marine mammals must contend with, including: coastal and marine development, ship strikes, noise pollution, water pollution, prey reduction, fisheries, and tourism. These risk factors are in addition to those operating on a larger scale such as predation, disease, and climate change. The species may be affected by multiple threats at any given time, compounding the impacts of the individual threats. All of these activities are expected to continue to occur into the foreseeable future.

Based on the best information currently available, the proposed action is not expected to appreciably reduce the likelihood of survival or recovery of Western DPS Steller sea lions.

8.2 Sunflower Sea Star Risk Analysis

Based on the results of the exposure analysis, we expect 37 sunflower sea stars may be exposed to direct contact from pile driving activities (including pile installation and pile removal) and pre-construction surveys.

There are no existing criteria to assess adverse impacts of anthropogenic sound on sunflower sea stars; however, noise is not expected to impact sunflower sea stars in any measurable way because their physiological and behavioral processes are mediated by chemical stimuli. Impacts of noise from pile driving activities and project vessels are expected to be insignificant.

Exposure to project-related trash and debris, seafloor disturbance and turbidity, and pollutants and contaminants may occur, but such exposure would have a very small impact, and is not expected to result in take of sunflower sea stars. Trash will be disposed of in accordance with state law and entanglement hazards will be secured, making exposure to marine debris and entanglement hazards unlikely. Any increases in seafloor disturbance and turbidity would be temporary, localized, and minimal. The new project footprint will result in a loss of slightly less than 0.23 acres of non-preferred habitat in an area of low species density, and impacts to sunflower sea stars are expected to be minimal. Based on the localized nature of small spills or pollutant releases, the relatively rapid weathering expected, and the safeguards in place to avoid and minimize spills, we conclude that the probability of the proposed action exposing sunflower sea stars to a spill is extremely small, and thus the effects are considered highly unlikely to occur. Mitigation measures and adherence to Clean Water Act regulations are expected to minimize the risk of exposure to the potential introduction of pollutants and contaminants into the action area.

Sunflower sea stars are carnivorous invertebrates that eat a variety of invertebrates, including clams, mussels, oysters, snails, crabs, and sea urchins. Marine invertebrates such as mussels and barnacles may be in the project footprint, and attached to piles that will be removed. Given the relatively small project footprint and low amount of prey expected within the footprint and likely recolonization of the replaced piles, impacts to prey species are expected to be insignificant.

Direct contact from pile driving activities is the primary risk to sunflower sea stars from this project. The mitigation measures will reduce, but not eliminate, the risk of sunflower sea star injury or mortality from pile installation or pile removal. Relocation will introduce some stress for those sunflower sea stars captured, and may also expose them to a greater predation risk as they move to find shelter and attach to the substrate. However, it is reasonable to conclude that gentle removal and relocation is less likely to result in injury or death than leaving the sea stars in an area where they may be crushed by active pile driving or buried by fill. Sea stars can regenerate tube feet and arms if injured during construction or removal or relocation efforts, which may reduce potential for long-term effects. The range-wide population for sunflower sea stars is estimated at 600 million, and the 37 individuals potentially impacted by project activities represents a very small fraction of the population. Additionally, the total project footprint of 910.16 m^2 is extremely small compared to the amount of habitat the species can occupy throughout Alaska and other parts of its range (e.g., low intertidal and subtidal zones down to 435 m). Therefore, the estimated level of injury or mortality from direct contact is not expected to have population-level effects nor significantly impede recovery of the species in the Gulf of Alaska where the pandemic was less severe, there is evidence of recovery, and millions of sunflower sea stars persist.

As mentioned in the Environmental Baseline section, sunflower sea stars may be impacted by a number of anthropogenic activities present in the Whittier area and Passage Canal. Human activity in the area has produced a number of anthropogenic risk factors that sea stars must contend with, including: coastal and marine development, water pollution, and prey reduction. These risk factors are in addition to those operating on a larger scale such as predation, SSWS,

and climate change. The species may be affected by multiple threats at any given time, compounding the impacts of the individual threats. All of these activities are expected to continue to occur into the foreseeable future. Based on the best information currently available, the proposed action is not expected to appreciably reduce the likelihood of survival or recovery of sunflower sea stars.

9 CONCLUSION

After reviewing the current status of the listed and proposed species, the environmental baseline within the action area, the effects of the proposed action, and cumulative effects, it is NMFS's biological opinion that the proposed action is not likely to jeopardize the continued existence of the Western DPS Steller sea lion. It is also NMFS's conference opinion that the action is not likely to jeopardize the continued existence of the proposed threatened sunflower sea star.

NMFS also concurred that the proposed action is not likely to adversely affect the endangered North Pacific right whale, threatened Mexico DPS and endangered Western North Pacific DPS humpback whale, endangered fin whale, or the endangered sperm whale.

10 INCIDENTAL TAKE STATEMENT

Section 9 of the ESA prohibits the take of endangered species unless there is a special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct (16 U.S.C. 1532(19)). "Incidental take" is defined as take that results from, but is not the purpose of, the carrying out of an otherwise lawful activity conducted by the action agency or applicant (50 CFR 402.02). Based on NMFS guidance, the term "harass" under the ESA means to: "create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering" (Wieting 2016). The MMPA defines "harassment" as: any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment] (16 U.S.C. 1362(18)(A)(i) and (ii)). For this consultation, it is expected that take of Western DPS Steller sea lions will be by Level B harassment. No Level A takes are contemplated or authorized. NMFS expects incidental take of sunflower sea stars may occur by harm through direct contact with pile driving activities, including construction and pre-construction surveys.

The ESA does not prohibit the take of threatened species unless special regulations have been promulgated, pursuant to ESA section 4(d), to promote the conservation of the species. ESA section 4(d) rules have not been proposed for the proposed threatened sunflower sea star at this time; therefore, ESA section 9 take prohibitions would not apply to this species if listed. We

include numeric limits on the take of sunflower sea stars because specific amounts of take were analyzed in our jeopardy analysis. These numeric limits provide guidance to the action agencies on their requirement to re-initiate consultation if the amount of take estimated in the jeopardy analysis of this conference opinion is exceeded. This ITS includes reasonable and prudent measures and terms and conditions designed to minimize and monitor take of this species.

Under the terms of section 7(b)(4) and section 7(o)(2) of the ESA, taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA, provided that such taking is in compliance with the terms and conditions of an Incidental Take Statement.

Section 7(b)(4)(C) of the ESA provides that if an endangered or threatened marine mammal is involved, the taking must first be authorized by section 101(a)(5) of the MMPA. Accordingly, **the terms of this incidental take statement and the exemption from section 9 of the ESA become effective only upon the issuance of MMPA authorization to take the marine mammals identified here**. Absent such authorization, this incidental take statement is inoperative.

In order to be exempt from the prohibitions of section 9 of the ESA, the Federal action agency must comply (or must ensure that any applicant complies) with the following terms and conditions. USACE, and NMFS Permits Division have a continuing duty to regulate the activities covered by this ITS. In order to monitor the impact of incidental take, The City of Whittier through the Federal action agencies must monitor and report on the progress of the action and its impact on the species as specified in the ITS (50 CFR 402.14(i)(4)). If USACE, and NMFS Permits Division (1) fail to require the permit holder to adhere to the terms and conditions of the ITS through enforceable terms that are added to the authorization, and/or (2) fail to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

10.1 Amount or Extent of Take

Section 7 regulations require NMFS to estimate the number of individuals that may be taken by proposed actions or utilize a surrogate (e.g., other species, habitat, or ecological conditions), if we cannot assign numerical limits for animals that could be incidentally taken during the course of an action (50 CFR 402.14(i)(1); see also 80 FR 26832; May 11, 2015).

NMFS is reasonably certain the proposed project activities are likely to result in the incidental take of ESA-listed Western DPS Steller sea lion by Level B harassment associated with noise from pile driving. The taking by serious injury or death is prohibited and will result in the modification, suspension, or revocation of the ITS. Table 11 lists the amount of authorized take for ESA-listed and proposed species for this action. The method for estimating the number of listed Western DPS Steller sea lions exposed to sound levels expected to result in Level B harassment is described above in the Exposure Analysis. The method for estimating sunflower sea star exposure to project activities is also described above in the Exposure Analysis.

NMFS expects that 58 instances of Level B harassment of Western DPS Steller sea lions may

occur.

Sunflower sea stars may be impacted by direct contact during pile driving activities (including pile installation, pile removal, and fill placement) or capture and relocation efforts (e.g., pre-construction surveys). The estimated density in Prince William Sound is 0.0405 sunflower sea stars/m^2 and the project footprint is 910.16 m^2. NMFS expects that 37 sunflower sea stars may be exposed to direct physical contact during the project.

Table 11. Incidental take of ESA-listed and proposed species authorized.

Species	Total Amount of Take	
	Level A	Level B
Western DPS Steller sea lion	0	58
Sunflower sea stars	37	

10.2 Effect of the Take

In Section 9 of this opinion, NMFS determined that the level of anticipated take, coupled with other effects of the proposed action, is not likely to result in jeopardy to the species. Although the biological significance of the expected behavioral responses of Western DPS Steller sea lions remains unknown, this consultation has assumed that exposure to disturbances associated with the proposed pile driving activities might disrupt one or more behavioral patterns that are essential to an individual animal's life history. However, any behavioral responses of these pinnipeds to major noise sources, and any associated disruptions, are not expected to measurably affect the reproduction, survival, or recovery of these species. The taking of Western DPS Steller sea lions will be by incidental acoustic harassment only, analogous to MMPA Level B take via behavioral disturbance or temporary threshold shift in their hearing. NMFS has therefore determined that the amount or extent of expected take, coupled with other effects of the action, is not likely to result in jeopardy to this species.

The proposed activities could adversely affect 37 sunflower sea stars. The current range-wide population estimate for the sunflower sea star is nearly 600 million individuals, based on a compilation of the best available science and information (Gravem et al. 2021). The proposed activities will impact, at most, 0.000000617 percent of the population. Take prohibitions have not been proposed for this species at this time. NMFS does not expect take will affect the species' reproduction, survival, or recovery. NMFS has therefore determined that the amount or extent of expected take, coupled with other effects of the action, is not likely to result in jeopardy to the species.

10.3 Reasonable and Prudent Measures

"Reasonable and prudent measures" are measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take." (50 CFR 402.02). Failure to comply with RPMs (and the terms and conditions that implement them) may invalidate the take exemption and result in unauthorized take.

RPMs are distinct from the mitigation measures that are included in the proposed action. We

presume that the mitigation measures will be implemented as described in this opinion. The failure to do so will constitute a change to the action that may require reinitiation of consultation pursuant to 50 CFR 402.16.

The RPMs included below, along with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. NMFS concludes that the following RPMs are necessary and appropriate to minimize or to monitor the incidental take of Western DPS Steller sea lions, and sunflower sea stars[32] resulting from the proposed action.

- USACE, NMFS Permits Division, and the City of Whittier through the Federal agencies aforementioned must monitor and report all authorized and unauthorized takes, and monitor and report the effectiveness of mitigation measures incorporated as part of the proposed authorization for the incidental taking of ESA-listed Western DPS Steller sea lion (pursuant to section 101(a)(5)(D) of the MMPA) and the proposed sunflower sea star. In addition, they must submit a report to NMFS Alaska Region that evaluates the mitigation measures and reports the results of the monitoring program.

10.4 Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the Federal action agency must comply (or must ensure that any applicant complies) with the following terms and conditions. These terms and conditions are in addition to the mitigation measures included in the proposed action, as set forth in Section 2.1.2 of this opinion. USACE and NMFS Permits Division or any applicant has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this incidental take statement (50 CFR 402.14(i)(4))).

Any taking that is in compliance with these terms and conditions is not prohibited under the ESA (50 CFR 402.14(i)(6)). As such, partial compliance with these terms and conditions may invalidate this take exemption and result in unauthorized, prohibited take under the ESA. If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the action may lapse.

These terms and conditions constitute no more than a minor change to the proposed action because they are consistent with the basic design of the proposed action.

To carry out the RPM, USACE, NMFS Permits Division, and the City of Whittier through the aforementioned Federal entities must monitor and report all authorized and unauthorized takes, and monitor and report the effectiveness of mitigation measures incorporated as part of the proposed authorization for the incidental taking of ESA-listed marine mammals and proposed

[32]The prohibitions against taking species under section 9 of the ESA do not apply to the sunflower sea star, as it is proposed to be listed as threatened, and no section 4(d) regulations have been proposed at this time. However, NMFS Alaska Region advises USACE, NMFS Permits Division, and the City of Whittier to consider implementing the RPM for the sunflower sea star. If this conference opinion is adopted as a biological opinion following a listing, this measure, with its implementing terms and conditions, will be non-discretionary.

sunflower sea stars. A final report will be submitted to NMFS Alaska Region that evaluates the mitigation measures and provides the results of the monitoring program.

This concludes the conference opinion for sunflower sea stars for the Whittier Small Boat Harbor proposed action. The City of Whittier may ask NMFS Alaska Region to confirm the conference opinion as a biological opinion issued through formal consultation if the sunflower sea star is listed. The request must be in writing. If NMFS Alaska Region reviews the action and finds that there have been no significant changes in the action as planned or in the information used during the conference, NMFS Alaska Region will confirm the conference opinion as the biological opinion on the action and no further Section 7 consultation will be necessary.

11 CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed or proposed species or critical habitat or regarding the development of information (50 CFR 402.02).

For this proposed action, NMFS Alaska Region suggests the following conservation recommendations:

1. 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 NMFS Alaska Region as soon as possible.
2. Without approaching whales, project vessel crews should attempt to photograph humpback whale flukes and record GPS coordinates of the sightings during transit. These data should be included in the final report submitted to NMFS Alaska Region.
3. 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.
4. USACE, and NMFS Permits Division should ensure that the entities responsible for conducting the sunflower sea star surveys have experience and expertise with the methodology used to conduct the survey. In addition, NMFS Alaska Region biologists should be invited to the site when a sunflower sea star survey is being conducted or the survey equipment is being tested in order to enable NMFS Alaska Region to better understand the efficacy of the selected methods and equipment.
5. A report detailing the sunflower sea star survey methodology and results should be published or made widely available. The findings will aid other action agencies and

projects in developing protocols for future surveys, and will increase general understanding of sunflower sea star movements and densities in the area.

In order to keep NMFS Alaska Region informed of actions minimizing or avoiding adverse effects or benefitting listed and proposed species or their habitats USACE, and NMFS Permits Division should notify NMFS Alaska Region of any conservation recommendations they implement in their final action.

12 REINITIATION OF CONSULTATION

As provided in 50 CFR 402.16, reinitiation of consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) the amount or extent of incidental take is exceeded, (2) new information reveals effects of the agency action on listed species or designated critical habitat in a manner or to an extent not considered in this opinion, (3) the agency action is subsequently modified in a manner that causes an effect on listed species or critical habitat not considered in this opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount of incidental take is exceeded, section 7 consultation must be reinitiated immediately (50 CFR 402.14(i)(5)).

13 DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

Section 515 of the Treasury and General Government Appropriations Act of 2001 (Public Law 106-554) (Data Quality Act [DQA]) specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the opinion addresses these DQA components, documents compliance with the DQA, and certifies that this opinion has undergone pre-dissemination review.

13.1 Utility

This document records the results of an interagency consultation. The information presented in this document is useful to USACE, NMFS Permits Division, and the general public. These consultations help to fulfill multiple legal obligations of the named agencies. The information is also useful and of interest to the general public as it describes the manner in which public trust resources are being managed and conserved. The information presented in these documents and used in the underlying consultations represents the best available scientific and commercial information and has been improved through interaction with the consulting agency.

This consultation will be posted on the NMFS Alaska Region website https://www.fisheries.noaa.gov/alaska/consultations/section-7-biological-opinions-issued-alaska-region. The format and name adhere to conventional standards for style.

13.2 Integrity

This consultation was completed on a computer system managed by NMFS in accordance with relevant information technology security policies and standards set out in Appendix III, 'Security of Automated Information Resources,' Office of Management and Budget Circular A-130; the Computer Security Act; and, the Government Information Security Reform Act.

13.3 Objectivity

Standards: This consultation and supporting documents are clear, concise, complete, and unbiased; and were developed using commonly accepted scientific research methods. They adhere to published standards including the ESA Consultation Handbook, ESA Regulations, 50 CFR 402.01 et seq.

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the literature cited section. The analyses in this opinion contain more background on information sources and quality.

Referencing: All supporting materials, information, data and analyses are properly referenced, consistent with standard scientific referencing style.

Review Process: This consultation was drafted by NMFS staff with training in ESA implementation, and reviewed in accordance with Alaska Region ESA quality control and assurance processes.

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