US Army Corps of Engineers®
Alaska District

DRAFT Feasibility Report and Environmental Assessment

Homer Navigation Improvements
Homer, Alaska
Appendix I: Draft Biological Assessment

May 2026

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Executive Summary

The United States Army Corps of Engineers (USACE) is conducting the *Homer Navigation Improvements Study, AK*, to determine the Federal interest in constructing navigation improvements at Homer, Alaska. The purpose is to increase operational safety and satisfy current and future demand for moorage. The Tentatively Selected Plan, evaluated in this Draft Biological Assessment (BA), is Alternative 2: Transient and Waitlisted Vessels Harbor. This project is currently at an approximate 30-35% design level, which would be further developed during the Preconstruction Engineering and Design (PED) Phase.

The project proposes a 50-year design life (2034-2084) and includes the construction of a new 37-acre mooring basin protected by approximately 4,500 feet of new rubble-mound breakwater. It would also involve dredging a new harbor basin and a 90-foot-wide entrance channel. The construction would be phased over three years, with in-water work occurring between early April and late October annually.

This project involves actions managed by multiple entities:

- USACE would manage the construction of general navigation features (breakwater and dredging).
- The Non-Federal Sponsor would manage the construction of local service facilities (new float systems, fuel dock).
- The U.S. Coast Guard (USCG) would manage the installation of Aids to Navigation, including driving a total of 15 piles for channel markers.

The Proposed Project has the potential to affect several species listed under the Endangered Species Act (ESA). However, with the full implementation of the mitigation measures outlined in this assessment, which would be incorporated as binding specifications in the USACE construction contract, the potential for adverse effects is expected to be insignificant or discountable. USACE would recommend equivalent mitigations to the Non-Federal Sponsor and the USCG for their respective actions.

The ESA-listed species considered and the resulting effect determinations are summarized in Table ES-1. Based on these determinations, USACE will initiate informal consultation under Section 7 of the ESA with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) to seek their concurrence. These determinations are subject to re-evaluation during the PED Phase as project designs are finalized

Table ES-1. Executive Summary Effects Determination

Species Common Name	Species Scientific Name	Listed Population	ESA Status	Species Effect Determination	
				Species	Critical Habitat
Species under the Jurisdiction of the National Marine Fisheries Service					
Fin whale	*Balaenoptera physalus*	Northeast Pacific	Endangered	**May affect, not likely to adversely affect**	Not applicable
Steller sea lion	*Eumetopias jubatus*	Western U.S. DPS	Endangered	**May affect, not likely to adversely affect**	**No effect**
Beluga whale	*Delphinapterus leucas*	Cook Inlet	Endangered	**May affect, not likely to adversely affect**	**No adverse modification**
Humpback whale	*Megaptera novaeangliae*	Western North Pacific	Endangered	**May affect, not likely to adversely affect**	Not applicable
		Mexico	Threatened	**May affect, not likely to adversely affect**	Not applicable
Species under the Jurisdiction of the United States Fish and Wildlife Service					
Steller's eider	*Polysticta stelleri*	Alaska Breeding	Threatened	**May affect, not likely to adversely affect**	**No effect**

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Acronyms and Abbreviations

µPa	Micropascal
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
AS	Alaska Statute
BA	Biological Assessment
BO	Biological Opinion
BMP	Best Management Practices
CFR	Code of Federal Regulations
CIBW	Cook Inlet Beluga Whale
CWA	Clean Water Act
DIP	Demographically Independent Population
DPS	Distinct Population Segment
DWDS	Deep Water Disposal Site
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESWG	Environmental Stakeholder Working Group
FR	Federal Register
HSI	Habitat Suitability Index
ITA	Incidental Take Authorization
KBB	Kachemak Bay Birders
KBCHA	Kachemak Bay Critical Habitat Area
KBRR	Kachemak Bay Research Reserve
MHW	Mean High Water
MMPA	Marine Mammal Protection Act
NCCOS	National Centers of Coastal Ocean Science
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
PAL	Planning Aid Letter
PCE	Primary Constituent Element
PED	Preconstruction Engineering and Design
POA	Port of Alaska
PSO	Protected Species Observer
RMS	Root Mean Square
SAV	Submerged Aquatic Vegetation
SL	Source Sound Level
TEK	Traditional Ecological Knowledge
TL	Transmission Loss Coefficient
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service

APPENDIX I - DRAFT BIOLOGICAL ASSESSMENT

I.1 Project Overview

United States Army Corps of Engineers (USACE) developed this Draft Biological Assessment (BA) for the *Homer Navigation Improvements, AK*, Feasibility Study's Proposed Project. The anticipated effect determinations provided in this Draft BA are subject to change in the Preconstruction Engineering and Design (PED) Phase when the project design is refined and USACE consults, as necessary, with the National Marine Fisheries Service (NMFS) and United States Fish and Wildlife Service (USFWS) pursuant to Endangered Species Act (ESA) Section 7 compliance.

The purpose of the BA is to review the project's construction in sufficient detail to determine whether the project may affect species protected under the ESA. Thus, this BA will assess the potential impacts from marine vessel traffic and construction associated with the project. The marine vessel traffic would include vessels associated with the construction activities of the project and the vessels utilization of the harbor infrastructure post-construction. Project marine construction activities would primarily consist of discharge of fill (rock placement), dredging operations, and pile driving to construct a new harbor, which would include the installation of Aids of Navigation by the United States Coast Guard (USCG) and local service facilities (i.e., float system, finger floats, and fuel dock) by the Non-Federal Sponsor, as well as removal and replacement of Float System 5 in the existing harbor.

A BA is needed to evaluate the potential for significant impacts to ESA species and their associated habitat within the Action and Project Areas from the project activities.

ESA Section 7(b)(4)(C) provides that if an endangered or threatened marine mammal species is involved, the taking must first be authorized by the Marine Mammal Protection Act (MMPA) Section 101(a)(5). The MMPA also provides the process for requesting take of non-ESA marine mammal species. The details in this Draft BA could be used to inform an Incidental Take Authorization (ITA) application if it is determined necessary. If an ITA is pursued, the authorized take numbers from the ITA would be necessary to assess the effects under ESA Section 7 and allow for accurate completion of the BA and resulting Biological Opinion (BO).

USACE does not currently plan to apply for an ITA for the construction activities it would directly manage under the project. The management and construction of the project would be divided among three primary entities, each with a distinct scope of work and responsibility for implementing mitigation measures. USACE would directly manage and contract the construction of the general navigation features, which include the new breakwater and the dredge prism. Construction elements managed by other parties include:

- Local Service Facilities: The Non-Federal Sponsor would be responsible for the final design and construction of the new float systems, finger floats, and the fuel dock.

- Aids to Navigation: The USCG would manage the final design and construction of all Aids to Navigation.

For the construction activities under its direct control, USACE would incorporate binding environmental mitigations and commitments into its contracts. However, for the components managed by the Non-Federal Sponsor and USCG, USACE's role is limited to recommending mitigations and best management practices (BMPs), as it cannot mandate their implementation.

This Draft BA lays out the rationale for which ESA species are considered and USACE's preliminary effect determinations. With the implementation of proposed mitigations (Section I.2), USACE has, through its preliminary analysis, determined that its action "may affect, not likely to adversely affect" ESA species. Thus, USACE will pursue informal ESA consultation with NMFS and USFWS as established by 50 CFR 402 et seq.

I.1.1 Purpose and Need

Homer Port and Harbor (herein Homer Harbor) is a regional port serving the needs of commercial vessels operating across southcentral and western Alaska in the commercial fishing, marine transportation, and maritime industrial industries. Over time, the fleet of marine vessels calling on Homer has exceeded the existing harbor's ability to serve this fleet safely and efficiently.

The harbor is overcrowded. Moorage is often at capacity even after rafting large marine vessels three to four deep on moorage floats. In 2019 there were 270 boats on the harbor permanent moorage waitlist; in 2024 there were 379. This number does not fully represent demand, since there is no permanent moorage for vessels over 85 feet in length. It takes several years for users to receive permanent moorage (average wait times vary by vessel size). This lack of permanent moorage increases the number of vessels using transient moorage which in turn increases the amount of rafting in the harbor. Rafting narrows navigation lanes inducing congestion and introduces tidal limits to navigation. Congestion in the harbor contributes to vessel delays and damages. Rafting also causes excess wear on the harbor's float system and increasing maintenance costs and decreasing the usable lifespan of floats. Rafting is a serious safety concern and increases risks of fires, falls, and collisions.

The dredged depth of the harbor basin, the width of the entrance channel, and the channel configuration limit the types of marine vessels that can call on Homer Harbor. Larger marine vessels may require harbor staff to shut the channel to two-way traffic and assist them through the harbor. This taxes the resources of the harbor and causes

delays for other marine vessels. In rare circumstances marine vessels can operate under optimal tidal conditions.

Negative impacts from navigation inefficiencies are not limited to Homer residents. Harbor staff identified 50 communities across Alaska that depend on essential fuel and freight services from marine vessels that moor in Homer Harbor.

USACE's Feasibility Study, *Homer Navigation Improvements Study, AK*, is evaluating the feasibility for solutions that provide safe, reliable, and efficient navigation and mooring for the local and commercial vessels that call on Homer Harbor. Under this study, the Proposed Project would expand the Homer Harbor at Homer, Alaska, as described in Section I.1.3, in order to satisfy current demand for moorage and enable larger transient marine vessels to reside within protected moorage within Kachemak Bay at Homer.

I.1.2 Location

The City of Homer is located in the Kenai Peninsula Borough of Southcentral Alaska, approximately 220 road miles and 118 air miles southwest of Anchorage (Figure I-1). It is the southernmost town on Alaska's contiguous highway system and part of the Alaska Marine Highway, a ferry service that operates along the southcentral coast of Alaska. According to the Census, the population of Homer was 5,522 in 2020. Homer has a 4.5-mile-long natural sand Spit, named Homer Spit (herein Spit), that extends southeast from the City of Homer into Kachemak Bay.

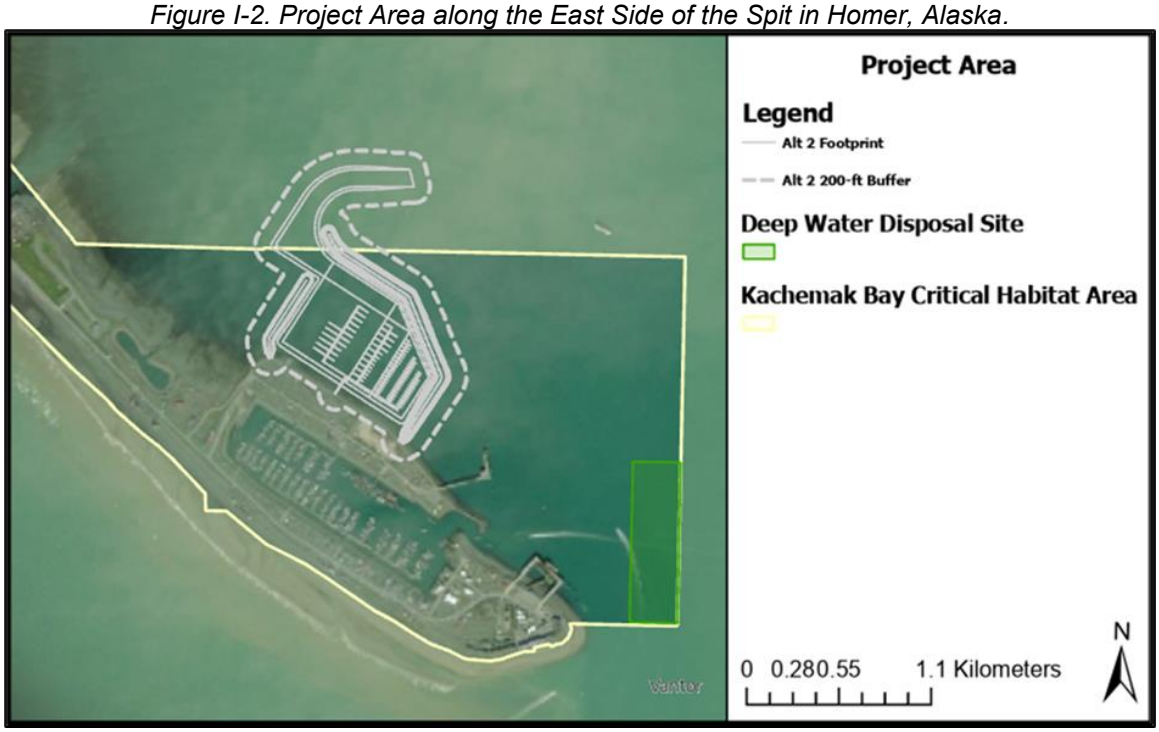
Figure I-1. Location of Homer, Alaska, Relative to Anchorage, Alaska.

The Spit is a natural, dynamic system, which is constantly being shaped by deposition and erosion of sediments. The Spit is sensitive to changes in the natural environment and to anthropogenic activities, both on the Spit itself and in the uplands of the mainland. The Spit is unusual in that much of the land is owned by the city of Homer. Homer Harbor is located at the tip of the Spit and provides land for other land uses relating to outdoor recreation and business. An economic engine for the region, the Spit is also the center of Homer's fishing industry and has one of Alaska's most popular tourism destinations.

Due to the nature of navigation improvement projects, in-water work cannot be avoided, and the in-water work for the Proposed Project would occur in Kachemak Bay. Kachemak Bay overlaps with the Federal Cook Inlet Beluga Whale Critical Habitat Area 2 established by Final Rule 76 Federal Register (FR) 20179 and managed by NMFS Protected Resources Division (PRD) and the Alaska State Kachemak Bay Critical Habitat Area (KBCHA) established by Alaska Statute (AS)16.20.590 and managed by Alaska Department of Fish and Game (ADF&G). The majority of the project area would correspond with the area excluded from the KBCHA, but due to constraints with depth, the KBCHA could not be wholly avoided. The extent, if any, extending outside the exclusion area would depend on the final design of the selected structural alternative.

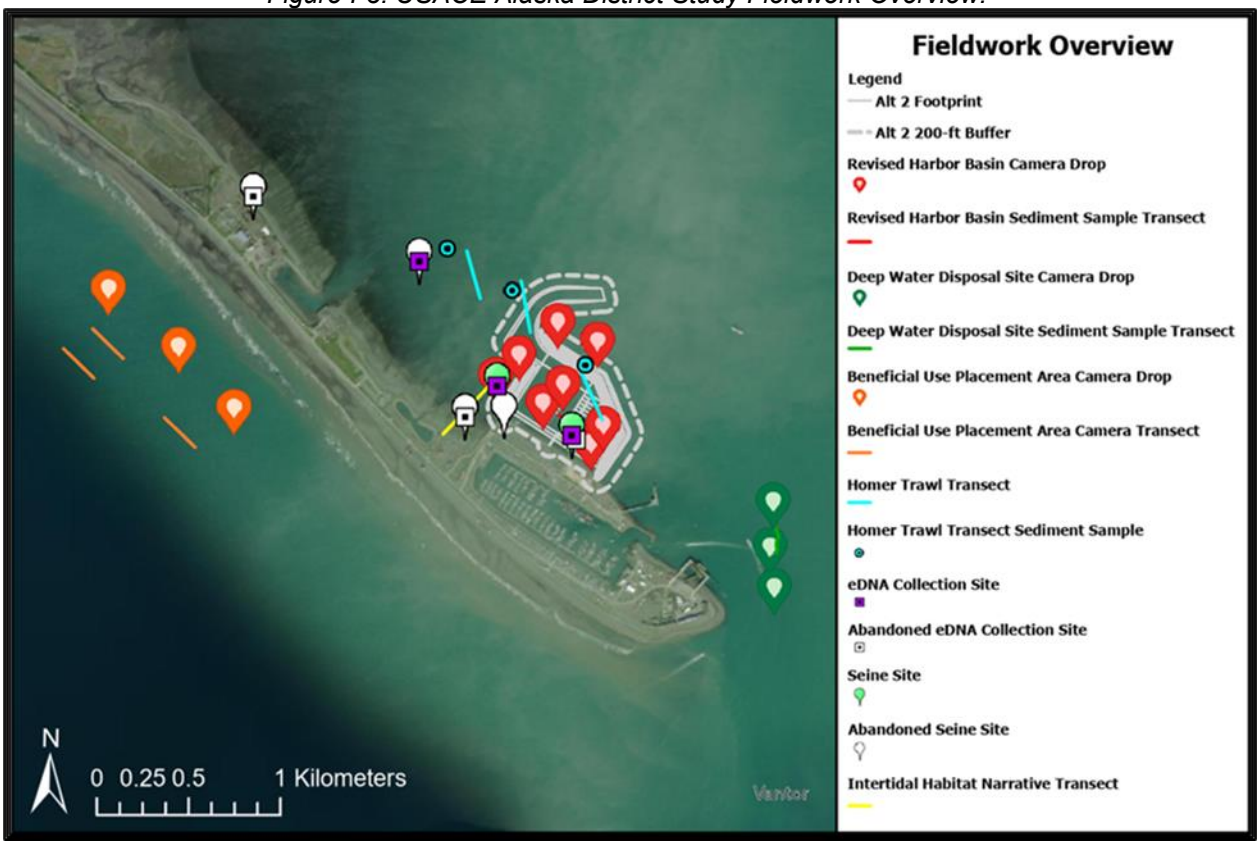
The Project Area is near the current operating Homer Harbor (Figure I-2). This area is favored due to (1) its proximity to the current harbor's infrastructure, (2) the area's exclusion from the KBCHA, and (3) existing marine anthropogenic activity and disturbance. The Project Area incudes the Proposed Project (Alternative 2 of the Feasibility Study) and Deep Water Disposal Site (DWDS) footprints.

Figure I-2. Project Area along the East Side of the Spit in Homer, Alaska.



USACE Alaska District study fieldwork informed the descriptions of the Project Footprint and DWDS Footprint within the Project Area. Figure I-3 provides a visual depiction of the fieldwork completed for the study within the Project Area.

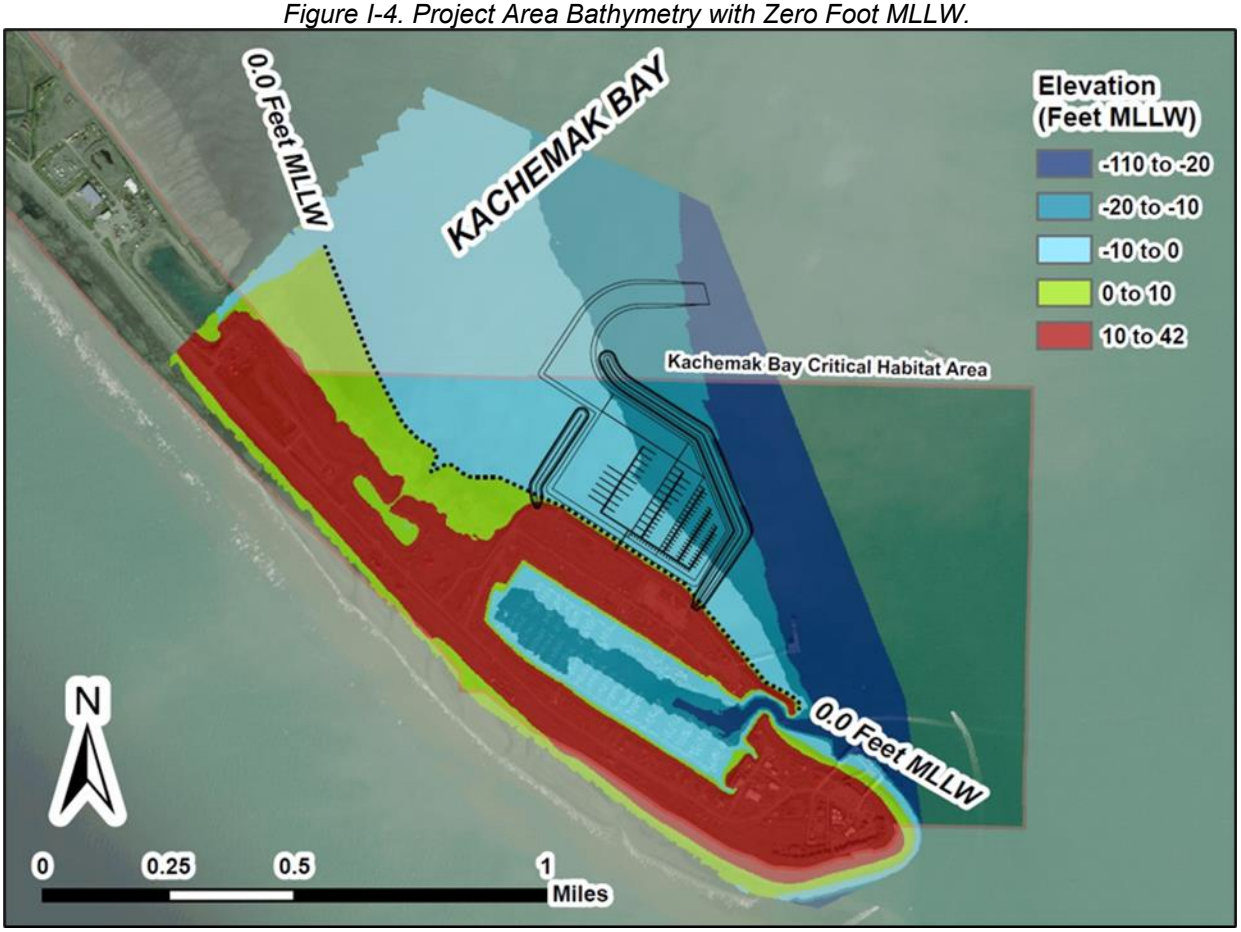
Figure I-3. USACE Alaska District Study Fieldwork Overview.



I.1.2.1 Project Footprint

The Project Footprint encompasses the harbor infrastructure and construction activities and is predominately within the subtidal nearshore environment along the eastern side of the Spit (Figure I-2). The intertidal zone that would be directly within the Project Footprint is depicted in Figure I-4. The 0-foot MLLW was used as the boundary between the intertidal and subtidal zones. There is minimal intertidal zone within the direct Project Footprint due to the steeper slope and greater depths. The intertidal zone west and northwest of the Project Footprint is expected to experience indirect impacts from project construction activities and will be the focus on intertidal zone descriptions provided in this Draft BA.

Figure I-4. Project Area Bathymetry with Zero Foot MLLW.



Intertidal Zone

The intertidal zone habitat described herein was based on observations within the intertidal zone west and northwest of the Project Area. This area is likely to receive indirect impacts from the Project, and it was determined appropriate to focus the intertidal habitat description on this area.

The intertidal zone provides a mix of hard bottom and soft bottom habitat. Figure I-5 consists of images of the intertidal zone adjacent to the Project Area that was exposed during low tide. The figure consists of still images from the Intertidal Habitat Narration Transect video footage taken May 9, 2024. The intertidal zone consisted predominately of coarse-grained sediment composed of a mixture of sand, gravel, and cobbles. However, as the intertidal zone transitioned away from the supratidal (i.e., uplands) towards the subtidal, the coarse-grained sediment transitioned to a finer-grained composition consisting predominately of silty sand with cobbles. Within the intertidal zone, boulders were more frequently observed northward towards the Homer mainland and shell debris was observed scatter throughout the zone during USACE 2024 and 2025 fieldwork.

Figure I-5. Imagery from the May 9, 2024, Intertidal Narrative Transect. (59.6089, -151.4353 to 5.6113, -151.4311)

In the intertidal zone, there were patches of submerged aquatic vegetation (SAV) including seagrasses (e.g., eelgrass, *Zostera marina*) and various green, brown, and red seaweed species. Canopy and understory kelp species were observed and specific species included, but were not limited to, *Ulvales* species, sugar kelp (*Saccharina latissima*), and *Palmariales* species. The occurrence and density of marine flora appeared to increase within the intertidal zone as the distance from the shoreline increased and in areas where water inundation endured for longer periods.

Non-flora marine organisms were also observed and identified within the intertidal zone, including, jellyfish, sea star species, anemone species, and clusters of Pacific blue mussels (*Mytilus trossulus*) that were integrated with the sediment. The presence of each species observed was not uniformed throughout the intertidal zone. Rather, the sediment type, water inundation period, and other physical and biological features factored into where marine fauna were observed. There was a general increase of marine fauna as distance increased away from the shore and/or where longer water inundation was experienced, e.g., anemones observed in the intertidal zone were predominately observed around the 0-foot MLLW line.

Subtidal Zone

The subtidal zone was informed through USACE fieldwork sediment grab samples (Figure I-6 and Figure I-7) and underwater video surveys (Figure I-8, Figure I-9, and I-10); the KBRR Report; and USACE geotechnical analysis.

Figure I-6. Sediment sample collection sites from USACE fieldwork activities.

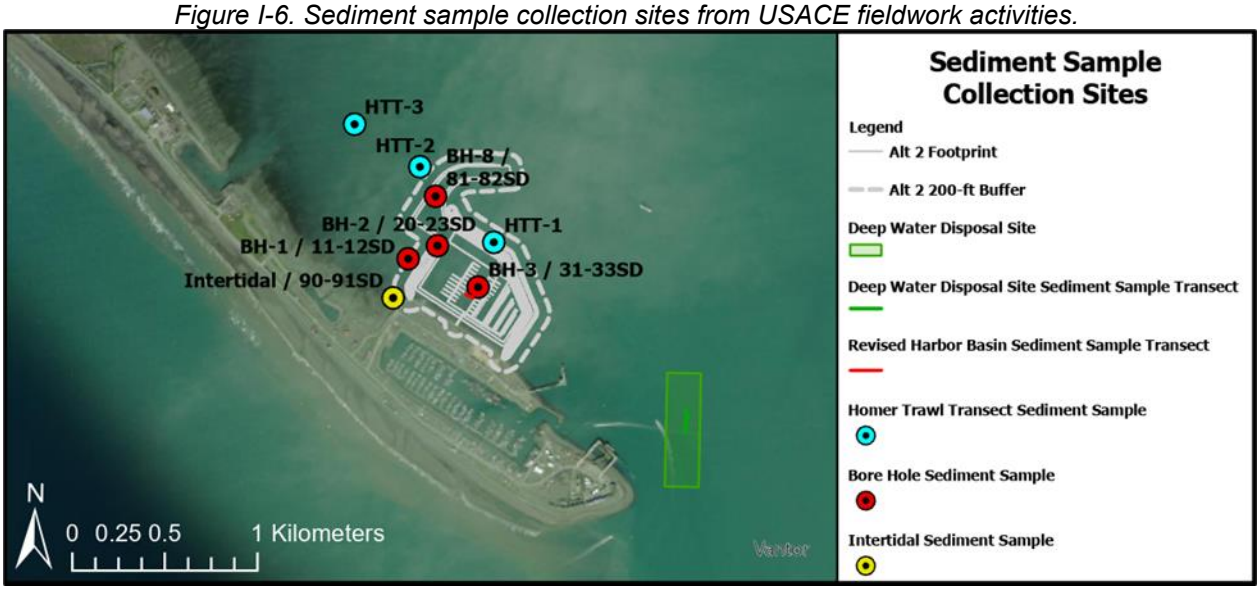


Figure I-7. Revised Basin Area and Homer Trawl Transect Sediment Grab Samples.

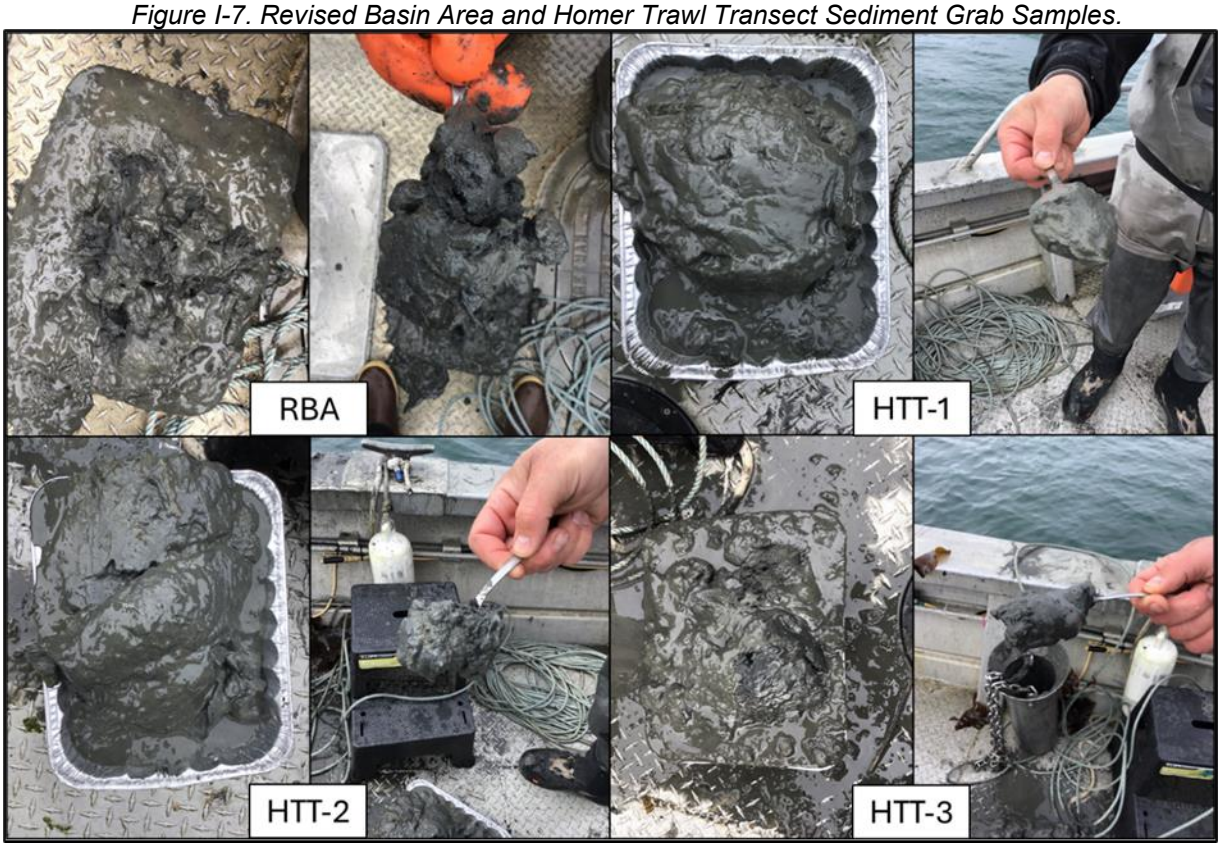


Figure I-8. Project underwater camera survey transect and drop sites.

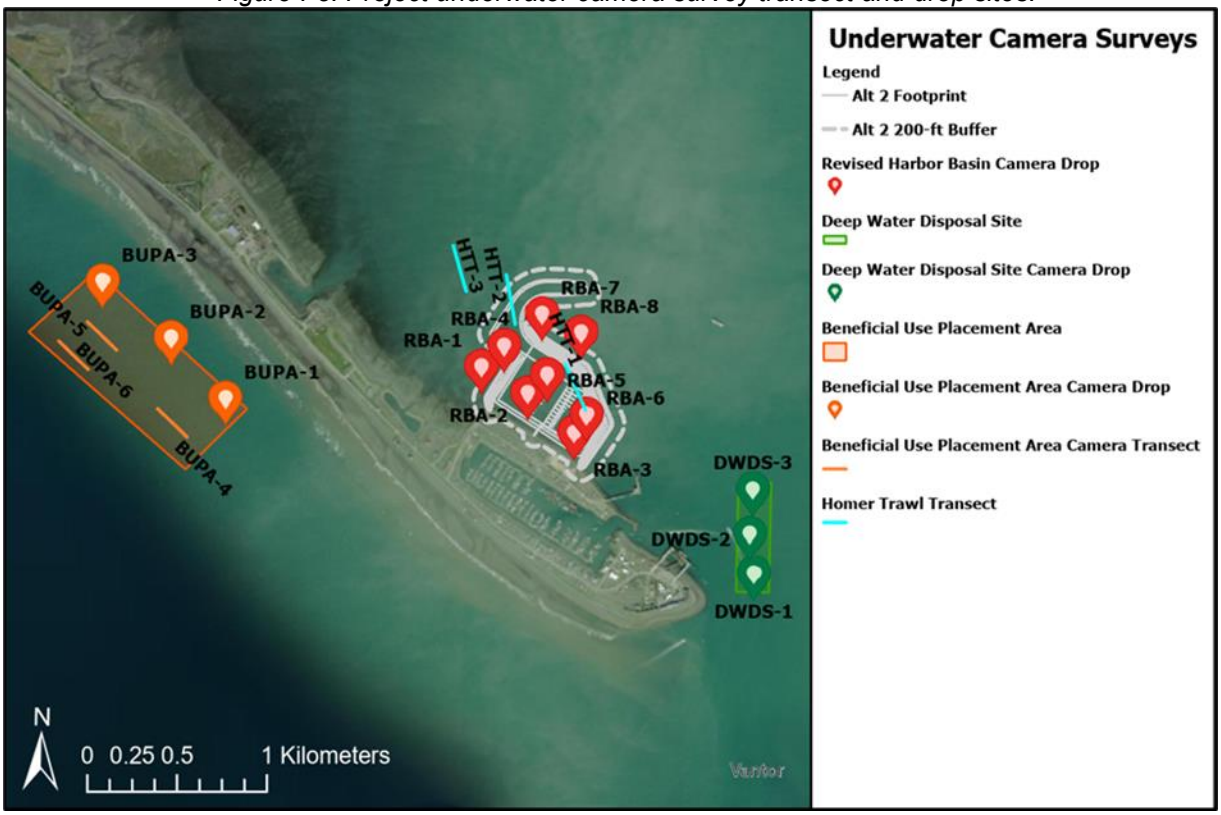
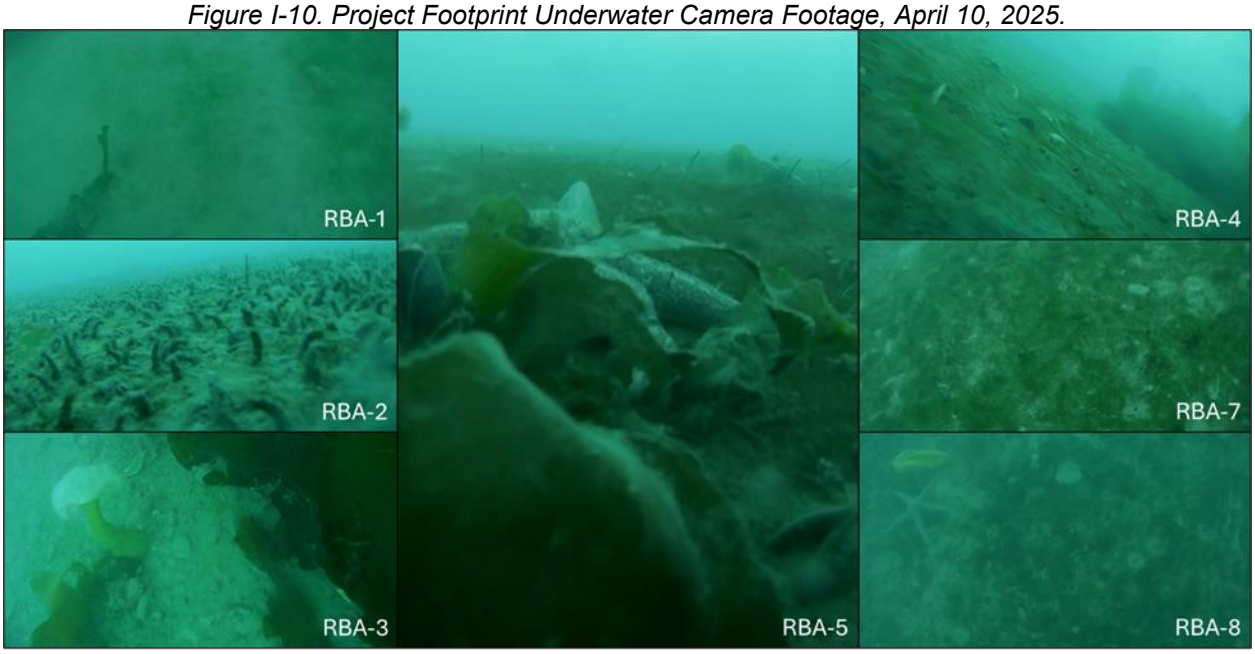


Figure I-9. Homer Trawl Transect Underwater Camera Footage, June 6, 2024.

Figure I-10. Project Footprint Underwater Camera Footage, April 10, 2025.



Based on the available data, the subtidal zone habitat provides soft bottom habitat predominately composed fine-grained sediment (silty sand) with cobbles based on Shell hash was observed throughout the sediment matrix of the Proposed Project footprint, HTT-2, and HTT-3 sediment grab samples. Numerous marine worms were integrated within the Project footprint sediment matrix as well.

SAV observed within the subtidal included seagrasses (e.g., eelgrass, *Zostera marina*) and various seaweed species. The kelp species observed were consistent with species

identified in the intertidal; i.e., *Ulvales* species, sugar kelp, and *Palmariales* species. Marine algae were also observed in the underwater camera survey footage. Non-flora marine organisms observed and identified within the subtidal zone, included but were not limited to, flatfish, crab, sea pen (*Ptilosarcus gurneyi*), sea star, and anemone species. The presence and density of marine species observed was not uniformed throughout the subtidal zone due to the physical (e.g., water depth, light attenuation, and sediment) and biological (e.g., other organisms occupying the location) features specific to each site and transect analyzed.

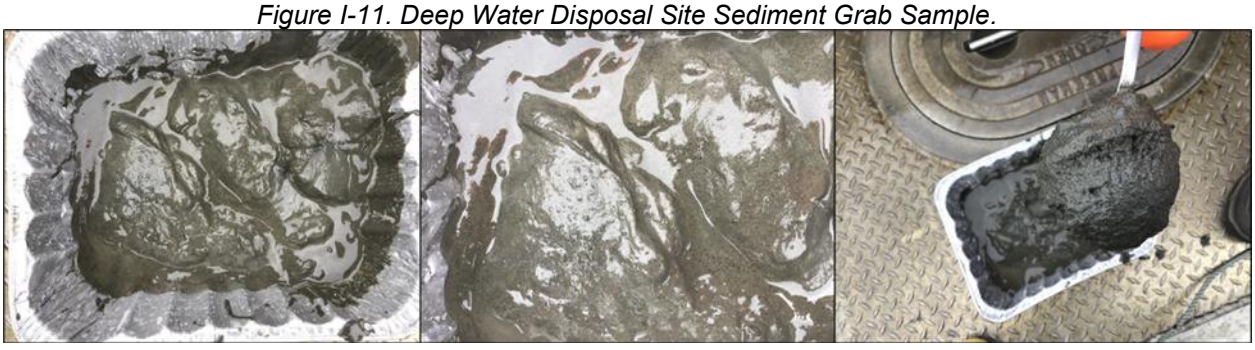
Specific observations to note within the Project Footprint are the locations and depths of observed eelgrass. Within the subtidal zone within the Project Footprint, dense patches of eelgrass were observed at HTT-2 at approximately -6 feet MLLW (1_0 fathoms) and HTT-3 at approximately -10 feet MLLW (1_4 fathoms). No eelgrass was observed at HTT-1 located approximately along the -12 feet MLLW (2_0 fathoms) contour. The underwater camera surveys conducted on April 10, 2025, appeared to show degraded SAV (presumedly eelgrass) in RBA-2 and RBA-3, both located approximately -7 feet MLLW (11 fathoms). This would be consistent with the underwater camera work occurring April 10, 2025, which is outside the typical season expected for established, healthy eelgrass.

I.1.2.2 Deep Water Disposal Site Footprint

The DWDS is the proposed area for in-water disposal of new work dredged material. This area is fully within subtidal, soft bottom habitat and was selected based on its location within the area excluded from the KBCHA, its adjacent proximity to the Project Footprint, and its depth within the water column. The depth is an important factor for avoiding disposed dredged material from immediately shoaling within the existing Homer Harbor or new harbor built under the project.

The DWDS sediment was predominately composed of a sandy silt and very uniformed throughout the site. There were traces of black grained sediment (presumed naturally occurring coal) and organic cellulose material throughout the sediment matrix from the April 10, 2025, USACE fieldwork sediment grab sample collected at the DWDS (Figure I-6 and Figure I-11).

Figure I-11. Deep Water Disposal Site Sediment Grab Sample.



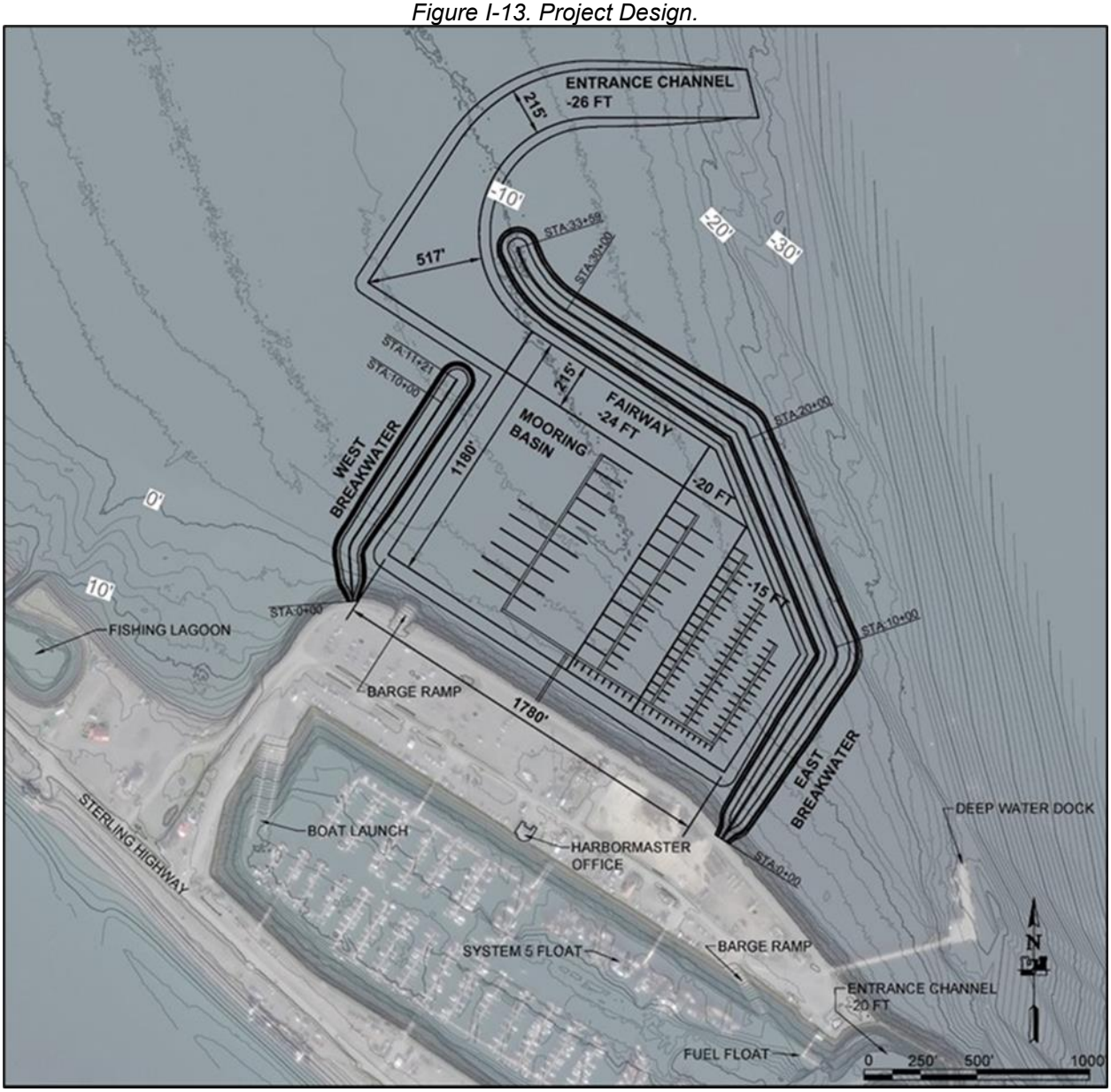
There was very little marine vegetation, specifically kelp, observed within the DWDS during underwater camera surveys conducted April 10, 2025 (Figure I-8 and Figure I-12). Additionally, the kelp appeared to simply be remnants of kelp rather than kelp that is integrated within the habitat. Non-flora marine organisms were prevalent at DWDS-1 and DWDS-3. The depth differences between DWDS-1 , DWDS-2, and DWDS-3, were approximately 178, 169, and 150 feet deep, respectively, at the time of the underwater surveys. These changes in depth and other factors within this considerably unstable area, may account for the differences in the type and quantity of marine organisms observed at each site, which were relatively close in proximity (i.e., approximately 0.15 miles separation from DWDS-1 to DWDS-2 and DWDS-2 to DWDS-3). At DWDS-1, sea star species were prevalent throughout the site, but absent from DWDS-2 and DWDS-3. In DWDS-2, only a singular unidentified fish species was observed. In DWDS-3, a number of groundfish, primarily starry flounder (*Platichthys stellatus)*, were observed. Other marine organisms observed at DWDS were crab, anemone, and other fish species.

Figure I-12. Deep Water Disposal Site Underwater Camera Footage, April 10, 2025.

I.1.3 Project Activities

The Proposed Project would be designed to have a project life of 50-years (project life assumed under the study is 2034 to 2084). Alternative 2: Transient and Waitlisted Vessels Harbor, has been selected as the Tentatively Selected Plan for the USACE Feasibility Study and will be the project evaluated under this Draft BA. The project is at approximately at 30-35% level of design (Figure I-13) and unlikely to progress to a higher level of design beyond 35% (typical of a feasibility study) until it progresses to the PED Phase.

Figure I-13. Project Design.



The project is scheduled for a three-year phased construction timeline. Work would be conducted during annual construction seasons of six to eight months, with in-water activities restricted to the summer months to avoid adverse weather conditions associated with winter storms. Early April through late October would be the seasons assumed for construction activities assessed in this Draft BA.

The project would address the current moorage waitlist in addition to the entire transient fleet (vessels up to 225 feet in length). The project would provide moorage sufficient for 304 vessels with a combination of slips and side-tie.

USACE would manage and contract the construction associated with the project general navigation features (the breakwater and dredge prism). The project would

involve the construction of a 37-acre mooring area (-24 feet MLLW) on the northeast side of the current harbor connected to adjoining fairway (-24 feet MLLW) and 90-foot-wide entrance channel (-26 feet MLLW). New work dredging and maintenance dredging across an approximate total of 68-acres would be required with the new harbor dredge prism. This harbor basin would be protected by a new rubble-mound breakwater, with east and west sections totaling approximately 4,500 feet. The breakwater crests would be constructed to an elevation of +30 feet MLLW, matching the height of the existing harbor breakwaters. USACE would install a 10-foot by 10-foot pre-poured concrete pad on each breakwater at the harbor entrance, providing a foundation for Aids to Navigation to be installed by the U.S. Coast Guard. The construction contract for the general navigation features would be performance-based, meaning the specific equipment and operational "means and methods" would not be dictated by the government. The awarded contractor would be responsible for developing their construction plan. This plan must operate entirely within the constraints of all environmental mitigations and commitments, which would be incorporated by USACE as binding specifications in the contract.

The Non-Federal Sponsor would manage the final design and construction for local service facilities for the project. Local service facilities under the project include a new float system for the expanded basin (complete with gangways, finger floats, and electrical utilities), the construction of a new fuel dock in the expanded harbor, and the removal and replacement of the System 5 float in the existing harbor. The replaced System 5 float is anticipated to provide moorage for 40 vessels at 24 feet in length and 132 vessels at 32 feet in length.

The USCG would manage the final design and construction of all Aids to Navigation. For the Integrated Feasibility Report and Environmental Assessment (IFR/EA) associated with this project, the USCG provided a preliminary Aids to Navigation description for planning and analysis. The preliminary description includes the construction of two navigation towers, each positioned at the end of a new breakwater nose and supported by a 10-foot by 10-foot pre-poured concrete pad provided by USACE. Additionally, the entrance channel would be marked by three 5-pile towers, totaling 15 driven piles; two would form a "gated pair" near the channel's end, and one would designate its northeast corner just outside the breakwaters. The Aids to Navigation are expected to include some form of lighting for visibility under night conditions.

USACE cannot mandate but would recommend mitigations and BMPs to the Non-Federal Sponsor and USCG for their actions under the Project.

For this Draft BA, the project activities would be separated into two distinct categories for analysis: marine vessel traffic and construction activities. The assumptions provided in these sections are subject to change during the PED phase, and USACE would reevaluate the need for additional consultation under ESA in response to any significant changed conditions.

I.1.3.1 Marine Vessel Traffic

This section will focus on marine vessel traffic associated with the Project. Project marine vessel traffic has potential to occur throughout the Action Area. The following are marine vessel traffic assumptions that will be the basis of marine vessel traffic effects analysis:

- Vessels associated with construction activities would travel along standard shipping routes;
- Vessels would be used to facilitate construction logistics and activities required to construct the project;
- Vessels would be used to maintain the new project basin and entrance channel to Federally-authorized depths (i.e., maintenance dredging);
- Transient vessels moored in the current harbor would move into the harbor constructed under the project;
- Larger transient vessels (up to 225 feet in length) that could not be accommodated previously by the existing harbor would utilize the new harbor;
- The construction of the new harbor and replacement of System 5 would provide additional moorage for 360 waitlisted vessels a portion of which already operate in Homer (e.g., boats that use the boat launch and transient moorage in lieu of reserve);
- The project is not anticipated to increase cruise activity in Kachemak Bay as it does not provide infrastructure suitable for them; and,
- Waitlisted marine vessels are smaller and likely to operate more frequently and at faster speeds than the larger vessels that occur within the Action Area.

Marine vessel transits associated with project construction that occur outside the primary Action Area would be limited in number and are expected to follow standard shipping routes. The volume of these transits is not anticipated to exceed normal year-to-year variance along these routes. Given this, and with the implementation of required mitigation measures and BMPs, the effects of project-related vessel traffic outside the Action Area are considered negligible. Therefore, these transits have been excluded from the scope of this Draft BA.

I.1.3.2 Marine Construction Activities

This section will focus on construction activities associated with the project. Under construction activities, the following project activities were further separated into subcategories: breakwater construction, dredging operations, pile driving operations,

and harbor infrastructure development. The Project Area represents where active construction would occur. The basis of assumptions to inform the effects of the construction activities will be:

- Information acquired from ongoing and future project analyses, simulations, and modeling;
- Developed and refined design; and,
- Consultation with NMFS, as applicable.

Assumptions will be provided for each project construction activity.

Breakwater Construction

Breakwater construction includes the placement of rock and two concrete pads. The following are breakwater construction assumptions that will inform the project construction activity effects analysis:

- Approximately 4,500 feet of rubble-mound breakwater would be constructed;
- Breakwaters would consist of clean approximately 123,100 cubic yards of armored rock, 66,500 cubic yards of B rock, and 310,800 cubic yards of C rock.
- Breakwaters would be built to a 1:5:1 slope;
- Breakwater rock would be placed precisely by the bucketload from an excavator or crane; and,
- A 10-foot by 10-foot pre-poured concrete pad would be constructed on both breakwaters near the harbor entrance to support installation of two navigation towers with lighting by the USCG.

Dredging Operations

Dredging operations would include new work (i.e., first dredging of harbor basin and entrance channel) and maintenance dredging (i.e., dredging to maintain Federally-authorized depths of the project) operation considerations. The following are new work dredging operations assumptions that will be inform the project construction activity effects analysis:

- New work dredged material is anticipated to equate to approximately 1,311,800 cubic yards (CY) of soft silt/clay, loose sand material;
- Mechanical dredging using an excavator or clamshell bucket would be used for new work dredging of a 68-acre dredge prism footprint (includes a 37-acre

basin);

- A tugboat and scow would be used to transfer dredged material to an in-water disposal site;

- In-water disposal site would be in deep waters adjacent to the operations that are excluded from the Kachemak Bay Critical Habitat Area; and,

- The activity would have a duty cycle and be categorized as an intermittent sound source.

Maintenance dredging operations are anticipated to be consistent with the current Homer Harbor annual maintenance dredging operations. Thus, the following are maintenance dredging operations assumptions that will inform the project construction activity effects analysis:

- Very soft silts/clays, loose sands material is anticipated to shoal into the new basin and entrance channel and require maintenance dredging of up to approximately 17,000 CY;

- Hydraulic dredging using a cutterhead suction dredge, categorized as a continuous sound source, would be used to maintain project Federally-authorized depths;

- Dredged material would be dredged directly to the designated dewatering site before being used beneficially (e.g., beach nourishment); and,

- Maintenance dredging frequency is anticipated to remain consistent with existing maintenance dredging of the current harbor and occur annually in the fall (September and October).

Pile Driving Operations

Pile driving operations would be required for installing the harbor float system. The following are pile driving operations assumptions that will inform the project construction activity effects analysis:

- Anticipated piles used for the new float system managed by the Non-Federal Sponsor would be 18- or 24-inch diameter round steel piles;

- Pile driving would include a combination of vibratory and impact pile driving; and,

- The USCG would pile drive three 5-pile towers, totaling 15 driven piles; two would form a "gated pair" near the channel's end, and one would designate its northeast corner just outside the breakwaters.

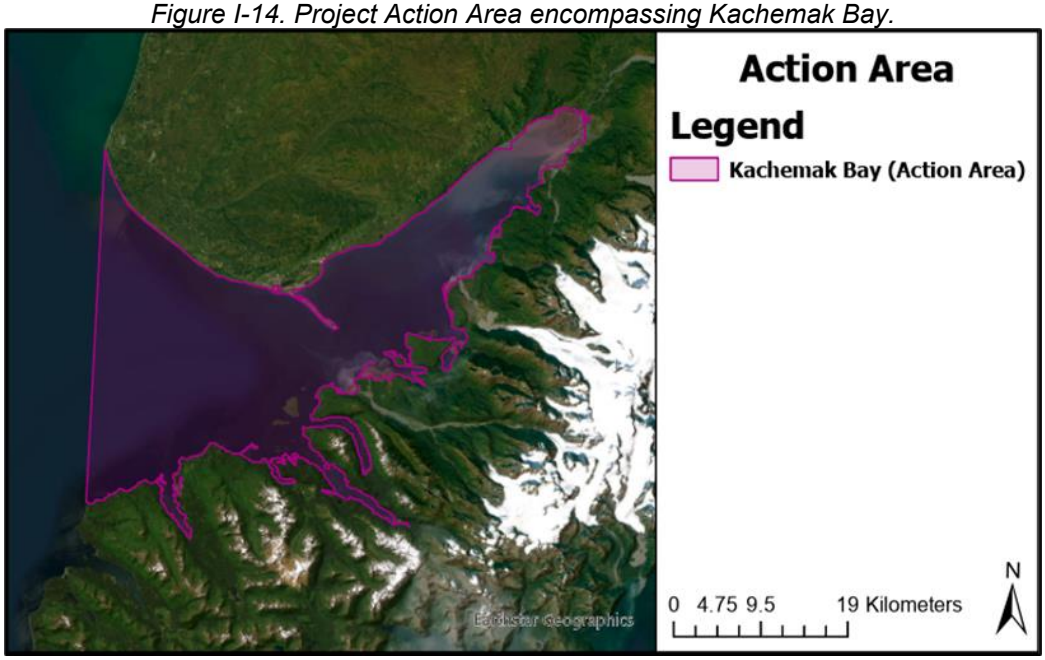
Local Service Facilities and Aids to Navigation

Harbor infrastructure development of the local service facilities by the Non-Federal Sponsor and Aids to Navigation by the USCG are required to realize the intended project. These are being included in the analysis as part of the project. However, the Non-Federal Sponsor and USCG are responsible for ensuring compliance under ESA, as applicable, for the activities beyond the coverage provided by this Draft BA. Furthermore, this Draft BA assumes the Non-Federal Sponsor and USCG adopt the mitigations and BMPs described in this Draft BA.

I.1.4 Action Area

The Action Area (Figure I-14) is defined in the ESA regulations (50 CFR 402.02) as the area within which all direct and indirect effects of a project would occur. The Action Area is distinct from and larger than the Project Area because some elements of the Project may affect listed species some distance from the Project footprint. The Action Area, therefore, extends out to a point where no measurable effects from the Project are expected to occur.

Figure I-14. Project Action Area encompassing Kachemak Bay.



USACE defined Kachemak Bay as the Action Area for this Draft BA by taking into account the Project Area, Project marine vessel transit between Cook Inlet and Homer Harbor, and the ensonified area associated with construction operations. There would be marine vessels associated with the Project that would travel to and from ports outside the Action Area (e.g., ports of origin and associated with logistics like quarry rock source). These ports would not be specified in the construction contract and are therefore undefined. As the potential routes are undefined and project-dedicated marine vessels are anticipated to utilize standard shipping routes, vessel movement outside

Kachemak Bay (i.e., the Action Area) will not be included in this the scope of analysis conducted in this Draft BA.

I.2 Proposed Mitigation Measures

To mitigate potential project adverse impacts to ESA species and critical habitat, USACE and, as appropriate, its contractors would adhere to the mitigation measures described herein that would be further developed further in coordination with the NMFS and USFWS, as applicable. Safety would override mitigations wherein determined necessary to ensure safe operating conditions for working personnel and the public.

I.2.1 General

- USACE would inform NMFS and USFWS via email of in-water construction activities a minimum of one week prior to the onset of those activities.

- USACE would incorporate seasonal restrictions required for environmental compliance from applicable regulatory agencies into contract specifications to minimize and/or avoid impacts to ESA species during critical life history stages.

- USACE would conduct nest surveys prior to construction to identify and mark active nest found with high-visibility methods to prevent accidental disturbance.

- The contractor would consider non-regulatory agency required environmental windows (e.g., Steller's eider timing windows) when determining the order and timing of construction activities.

- Consistent with AS 46.06.080, trash would be disposed of in accordance with State law. In addition, USACE and its contractors would ensure that all closed loops (e.g., packing straps, rings, bands) would be cut prior to disposal, and USACE and its contractors would secure all ropes, nets, and other potential entanglement hazards, so they cannot enter public waterways.

- USACE design decisions would be informed by available modeling (e.g., for sediment transportation and SAV Habitat Suitability Index [HSI]) developed during the project's Feasibility Study to avoid and minimize ecological impacts.

- USACE would require the contractor to develop comprehensive invasive species protocols in an Environmental Protection Plan that would include: biofouling removal, ballast water management, and the use of certified weed-free materials. During construction, visual inspections, designated cleaning stations, and an Early Detection and Rapid Response protocol for suspected sightings would be implemented to prevent invasive species introduction and spread.

- USACE would hold a stakeholder workshop to develop a formal Ecological Survey and Monitoring Plan for assessing pre-construction conditions and post-construction (Year 0, 1, 3, and 5) impacts to marine habitat.

- Project features would be designed to minimize bird hazards, including use of downward-shielding, non-glare lighting to reduce avian attraction and disorientation and structure design that minimize collision risks.

- USACE and/or its contractor would develop and implement BMPs to prevent or minimize contamination from ship bilge waters, antifouling paints, shipboard accidents, shipyard work, maintenance dredging and disposal, and nonpoint source contaminants from upland facilities related to marine vessel operations.

- USACE and/or its contractor would stage oil spill response equipment at several planned locations throughout the shipping route to facilitate any accidental spillage of marine vessel cargo or fuels.

- All food waste and trash would be stored in covered, wildlife-proof containers and removed from the site regularly to avoid attracting birds and predators that could prey on nests.

- Underwater and in-air noise shutdown zones would be implemented for ESA species and marine mammals to avoid unauthorized take (see Section I.6.2.2. for zones that would be implemented).

I.2.2 General Marine Vessel Movement

The general marine vessel movement mitigation measures that would be applied, to the extent practicable, would only apply to the project-dedicated marine vessels under control of USACE and its contractors. This would not include regular scheduled marine vessel movements that the project could utilize to transport equipment, supplies, or personnel. These mitigations include considerations for species outside the Action Area to take into account project-dedicated marine vessel transit to and from ports outside the Action Area.

- Marine vessel operators would:

    - Maintain a watch for ESA species and marine mammal species at all times while underway;

    - Remain at least 460 meters (500 yards) away from endangered North Pacific right whales and at least 91 meters (100 yards) away from all other listed marine mammals species;

    - Travel at less than 5 knots (9 kilometers/hour) when within 274 meters (300 yards) of a whale;

    - Avoid changes in direction and speed when within 274 meters (300 yards) of a whale, unless doing so is necessary for maritime safety;

- Not position marine vessel(s) in the path of a whale, and not cut in front of a whale in a way or at a distance that causes the whale to change direction of travel or behavior (including breathing/surfacing pattern);

- Check the waters immediately adjacent to the marine vessel(s) to ensure that no whales would be injured when the propellers are engaged;

- Reduce marine vessel speed to 10 knots or less when weather conditions reduce visibility to 1.6 kilometer (1 mile) or less;

- Would take reasonable steps to alert other marine vessels in the vicinity of whale(s);

- Would not allow lines to remain in the water unless both ends are under tension and affixed to marine vessels or gear. No materials capable of becoming entangled around ESA species or marine mammal species would be discarded into marine waters; and,

- Adhere to the Alaska Humpback Whale Approach Regulations when marine vessels are transiting to and from the Project Area; see 50 CFR §§ 216.18, 223.214, and 224.103(b) (note: these regulations apply to all humpback whales). Specifically, pilot and crew would not:

    - Approach, by any means, including by interception (i.e., placing a marine vessel in the path of an oncoming humpback whale), within 100 yards of any humpback whale;

    - Cause a vessel or other object to approach within 100 yards of a humpback whale; nor,

    - Disrupt the normal behavior or prior activity of a whale by any other act or omission.

- If a whale's course and speed are such that it would likely cross in front of a vessel that is underway, or approach within 91 meters (100 yards) of the marine vessel, and if maritime conditions safely allow, the marine vessel operator would put the engine in neutral and the whale would be allowed to pass beyond the marine vessel, except for North Pacific right whales. Marine vessels would remain 460 meters (500 yards) from North Pacific right whales.

I.2.3 Marine Vessel Transit within Range of North Pacific Right Whales and their Critical Habitat

- Marine vessel operators would:

    - Remain at least 460 meters (500 yards) from North Pacific right whales; and,

- Avoid transiting through designated North Pacific right whale critical habitat if practicable (50 CFR 226.215). If traveling through North Pacific right whale critical habitat cannot be avoided, marine vessels would:

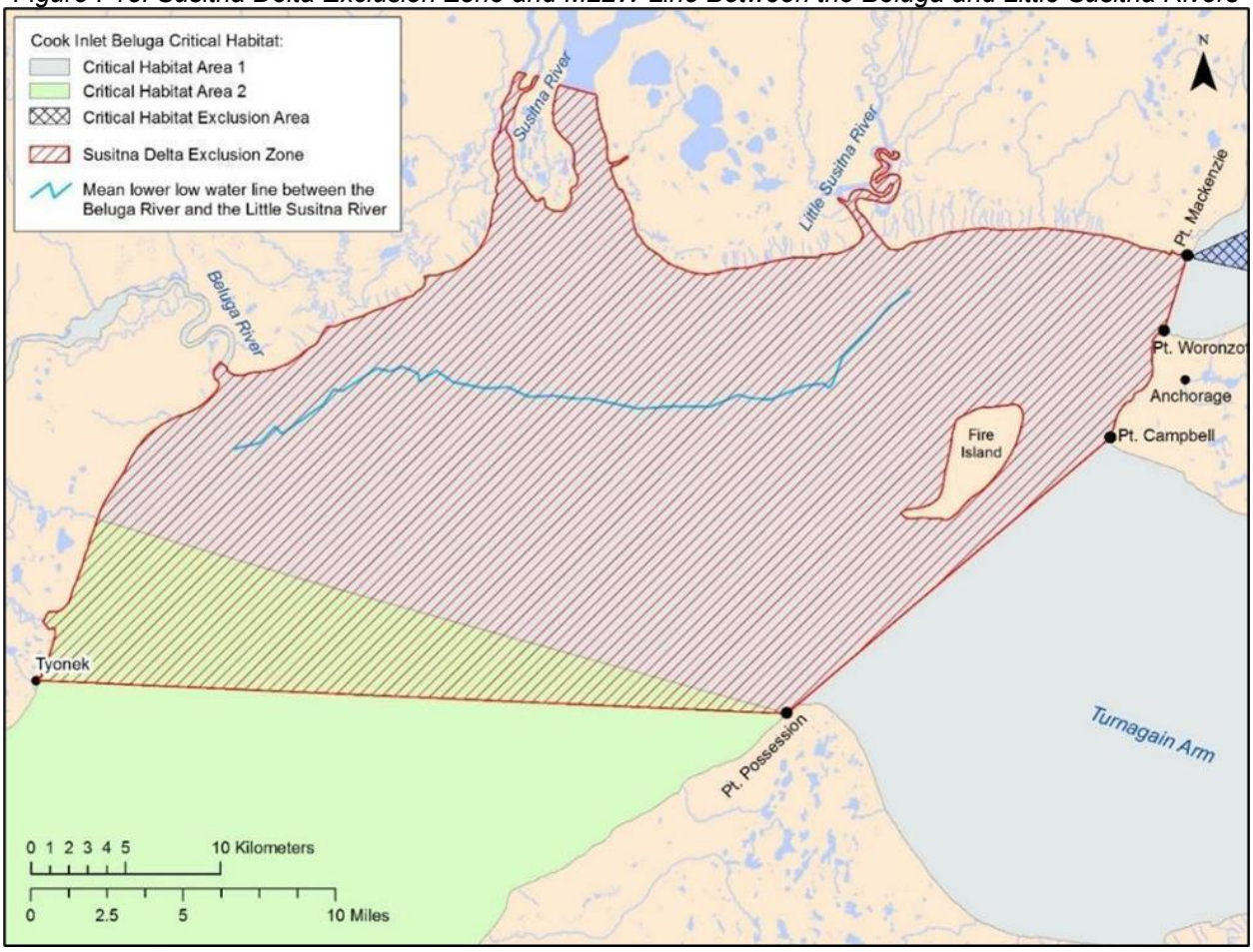
- Travel through North Pacific right whale critical habitat at 5 knots or less; or at 10 knots or less while a crew member maintains a constant watch for marine mammals from the bridge; and,

- Maintain a log indicating the time and geographic coordinates at which marine vessels enter and exit North Pacific right whale critical habitat.

I.2.4 Marine Vessel Transit within Range of Cook Inlet Beluga Whales and their Critical Habitat

- Project marine vessel(s) operating in the Cook Inlet would maintain a distance of at least 1.5 miles south of the MLLW line between the Little Susitna River and Beluga River; (see Figure I-15).

Figure I-15. Susitna Delta Exclusion Zone and MLLW Line Between the Beluga and Little Susitna Rivers



I.2.5 Marine Vessel Transit within Range of Western DPS Steller Sea Lions and their Critical Habitat

- Project marine vessels would not approach within 5.5 kilometers (3 nautical miles) of a haulout, or rookery site listed in (50 CFR 224.103(d)), if possible.

- In instances where approaching within 3 nautical miles of a major Steller sea lion haulout or rookery is unavoidable, marine vessels would reduce speed to 8 knots or less.

I.2.6 Marine Vessel Transit within Range of Southwest Alaska DPS Northern Sea Otters and their Critical Habitat

- In instances of approaching individual or congregations of northern sea otters, project marine vessels would reduce speed to 8 knots or less and avoid these individuals or aggregations within the limits of safe navigation.

I.2.7 Marine Vessel Transit within Range of Steller's eiders and their Critical Habitat

- In instances of approaching individual or congregations of Steller's eiders, project marine vessels would reduce speed to 8 knots or less and avoid these individuals or aggregations within the limits of safe navigation.

I.2.8 Dredging

Dredging mitigation measures are proposed for implementation to the greatest extent practicable under the project for new work and/or maintenance dredging, including the discharge of dredged material:

- Dredging, excavating, and screeding activities would cease when any ESA species or marine mammal species enters the designated shutdown zone of a construction activity. These activities include active dredging, transfer, and disposal of dredged material.

    - A PSO with the authority to suspend activities until the animal(s) have left the applicable shutdown radius would monitor these activities.

    - This shutdown zone radius is subject to change through ESA consultation with NMFS and USFWS.

- The contractor would be required to utilize silt fences/curtains (or similar functioning method) during new work dredging operations to control turbidity and sedimentation.

- The area and volume of material to be dredged would be reduced to the maximum extent practicable through informed design.

- USACE would recommend the utilization of a hydraulic dredge for maintenance dredging operations to minimize turbidity and sediment.

- Before commencing dredging operations, sediment analyses would be conducted to assess contaminants of concern against applicable screening levels. The scope and frequency of these analyses would be established in coordination with the Alaska Department of Environmental Conservation and Environmental Protection Agency to sufficiently validate the suitability of the selected dredged material management strategy.

I.2.9 Discharge of Fill

Discharge of fill mitigation measures are proposed for implementation to the greatest extent practicable under the project for placement of breakwater rock and fill:

- The contractor would cease breakwater rock placement or fill operations when any ESA or marine mammal species enters a 50-meter shutdown zone radius around the area where rock or fill is being placed directly in water to eliminate any risk of harming an ESA species or marine mammal species during these activities.

    - These activities would be monitored by a PSO with the authority to suspend rock placement or fill activities until the animal(s) have left the applicable shutdown zone radius.

    - This shutdown zone radius is subject to change through ESA consultation with NMFS and USFWS.

- The extent (area, height, and volume) of fill material would be minimized to the maximum extent practicable through informed design.

- Fill materials used would be clean and test within the neutral range of 7.5 to 8.4 power of hydrogen (pH).

I.2.10 Pile Driving Operations

Pile driving operation mitigation measures are recommended by USACE to the Non-Federal Sponsor and USCG for implementation to the greatest extent practicable under the project for installation, adjustment, and removal of piles for the proposed float systems:

- Pile driving activities would cease when any ESA species or marine mammal species enters the applicable shutdown zone radius around the activity. These activities include the active installation, adjustment, and removal of a pile.

    - A PSO with the authority to suspend activities until the animal(s) have left the applicable radius would monitor these activities.

    - This shutdown zone radius is subject to change through ESA consultation with NMFS and USFWS.

- A PSO would monitor the full expanse of in-water and over-water activities associated with pile driving with potential to take an ESA species or marine mammal species and suspend activities if an ESA species or marine mammal species enters within a 10-meter radius.

- Specific to pile removal, the pile would either be removed completely from the substrate at a minimal rate of speed or the contractor would use silt curtain/fences to reduce resuspended sediment and turbidity increases.

- The contractor would be required to:

    - Utilize an air bubble curtain system (or similar functioning method) to attenuate noise during pile driving operations.

    - Maximize use of vibratory hammer for the installation and removal of pilings before implementing impact hammer methods or direct pull and clamshell methods.

    - Utilize an impact hammer with adjustable energy level if impact pile driving cannot be avoided.

- Conduct SSV at the beginning of pile driving operations to assess the sufficiency of mitigation measures and implement practical mitigation measures for remaining work if necessary, based on SSV results.

- If a clamshell bucket is used to remove pile, require the contractor complete each pass of the clamshell.

I.2.11 Harbor Infrastructure, Docking Facilities, and Marine Vessel Operations

Harbor infrastructure, docking facilities, and marine vessel operations mitigation measures are proposed for implementation to the greatest extent practicable under the project for future local service facilities and marine vessel harbor access and use:

- Existing Homer Harbor's infrastructure and facilities would be utilized to reduce the overall shoreline development required to support the project.

- USACE would recommend the Non-Federal Sponsor increase ambient light transmission under the float system through the use of reflective material on underside of docks and artificial light and consideration during final alignment decisions.

- The extent (area, height, and volume) of fill material would be minimized through informed design.

- USACE would recommend that the Non-Federal Sponsor incorporate low-wake vessel technology and other wave attenuation structures, establish low speed requirements for vessels in and near the harbor, and designate no-wake zones near sensitive habitats.

- USACE would recommend the Non-Federal Sponsor develop catchment basins for collecting and storing surface runoff from upland repair facilities, parking lots, and other impervious surfaces adjacent to the project infrastructure to remove contaminants prior to delivery to any receiving waters.

- USACE would recommend the Non-Federal Sponsor design harbor facilities to include BMPs for reducing, containing, and cleaning up petroleum spills

I.3 Proposed Data Collection and Reporting

I.3.1 Data Collection and Reporting for Marine Construction

The NMFS and USFWS, as applicable, would be copied on monthly and annual report summaries required under ESA Section 7 consultations (see Section I.3.7 and Section I.3.8). The monthly and annual reports would include the work completed and the observations obtained for any activity that requires a PSO under the management of a USACE-managed contract (i.e., rock placement for the breakwater and dredging of the new harbor basin).

I.3.2 Data Collection and Reporting for Marine Vessel Transits

The data and reporting for project construction marine vessels would be limited to unauthorized take or observation of an ESA species or marine mammal presenting abnormal behavior during transit or the observation of illegal activities as described in this Draft BA. Marine vessel operator or contractor would report such observations or activity to USACE who would coordinate further with NMFS or USFWS, as determined appropriate. The marine vessel operators and their crew would attempt to include as much as possible of the following information in ship logs for such reports:

- The identifier/initials of the crew member who made the observation;
- Date and time of recorded observation event (i.e., a species observation);
- Weather parameters (e.g., percent cloud cover, percent glare, visibility) and sea state based on the Beaufort Wind Force (https://www.weather.gov/mfl/beaufort);
- Species, number, and, if possible, sex and age class of observed ESA species,
- The predominant marine vessel activity (e.g., traveling, anchored, etc) and sound-producing activities occurring during each species observation;
- Species' behavior observed, including bearing and direction of travel;
- Behavioral reaction(s) of species just prior to, or during sound producing activities;
- Initial, closest, and last location of species, including distance from the observer to the species, and minimum distance from the predominant sound-producing activity or activities to species;
- Whether the presence of species necessitated the implementation of mitigation measures to avoid acoustic impact, and the duration of time that normal operations were affected by the presence of species; and,

- Geographic coordinates for the observed species, with the position recorded by using the most precise coordinates practicable (coordinates would be recorded in decimal degrees, or similar standard and defined coordinate system).

I.3.3 Unauthorized Take

If a listed an ESA species, or marine mammal, is determined to have been disturbed, harassed, harmed, injured, or killed wherein take has not been authorized, the marine vessel operator, PSO, and/or contractor would report the incident to NMFS and/or USFWS, as appropriate, and USACE as soon as able, ideally no later than one business day.

Unauthorized Take reports would include all information required in the final report (see Section I.3.8) to the extent practicable and include:

- Number of animals of each threatened and endangered species affected;
- The date, time, and location of each event (provide geographic coordinates);
- Description of the event;
- 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;
- Mitigation measures implemented prior to and after the animal was taken; and,
- photographs or video footage of the animal(s) (if available); and,
- if a marine vessel struck an ESA species, the contact information for the individual piloting the marine vessel.

I.3.4 Stranded, Injured, Sick or Dead Marine Mammal (Non-Project Related)

If an injured, sick, or dead marine mammal is observed, project personnel would notify the Alaska Marine Mammal Stranding Hotline at 877-925-7773, as soon as able, ideally no later than one business day. Photos and available data would be submitted as practicable to NMFS and USFWS to aid in determining how to respond to the stranded animal.

If able, data submitted to NMFS and USFWS in response to stranded marine mammals would include:

- Date and time;
- Location of stranded marine mammal;

- Species and number of stranded marine mammals;
- Description of the stranded marine mammal's condition;
- Event type (e.g., entanglement, dead, floating); and,
- Behavior of live-stranded marine mammals.

I.3.5 Stranded, Injured, Sick or Dead Bird (Non-Project Related)

If an injured, sick, or dead bird is observed, project personnel would notify the Alaska Sick or Dead Bird Hotline at 1-866-527-3358 or 907-229-6357, as soon as able, ideally no later than one business day. Photos and available data would be submitted to the animal at ak_mbm@fws.gov as practicable to USFWS to aid in determining how to respond.

If able, data submitted to USFWS in response to a stranded bird would include:

- Date and time;
- Location of stranded bird;
- Species and number of stranded bird;
- Description of the stranded bird's condition;
- Event type (e.g., entanglement, dead, floating); and,
- Behavior of live-stranded bird.

I.3.6 Illegal Activities

If ESA species or marine mammal species are observed being disturbed, harassed, harmed, injured, or killed; these activities would be reported to the appropriate resource agency's law enforcement office.

- NMFS Contact: NMFS Alaska Region Office of Law Enforcement at 1-800-853-1964; and,
- USFWS Law Enforcement at 1-844-397-8477.

As able, data submitted to NMFS and USFWS would include:

- Date and time;

- Location;
- Description of the event; and,
- Any photos or videos.

I.3.7 Monthly Report

Marine vessel operators would submit monthly ship logs, as applicable, and PSOs would submit monthly observation reports to USACE on the 1st day of the month following the reporting period. USACE would consolidate observation information into an electronic form that would be submitted to NMFS and USFWS, as applicable, by the 15th day of the month following the reporting period.

I.3.8 Final Report

A final report would be submitted to NMFS and USFWS, as applicable, within 90 calendar days of the completion of the project each year. Final reports would summarize the monthly data recorded and submitted to NMFS and USFWS each year. This includes a summary of project marine vessel movements, in-water construction activities, and monitoring results.

The final report would include (as determinable and available based off ship logs, PSO observation reports, and contractor reporting):

- Summaries of ESA species observation events;
- Analyses on the effects from various factors that may have influenced detectability of ESA species (e.g., sea state, number of observers, fog, glare, and other factors);
- Species composition, occurrence, and distribution of ESA species observations, including date, water depth, numbers, age/size/gender categories, group sizes, and ice cover;
- Number of ESA species observed (by species if possible) during periods with and without project activities;
- Initial, closest, and last ESA species observation distances versus project activity at time of observation;
- Observed ESA species behaviors and movement types versus project activity at time of observation;
- Numbers of ESA species observations/individuals seen versus project activity at time of observation

- Distribution of ESA species around the Action Area versus project activity at time of observation.

- Digital, querriable documents containing crew, PSO, contractor, and other Project personnel observations and records.

I.4 Description of Species and Critical Habitats

There are five species that are either listed or proposed for listing under the ESA that may occur within the Project Area (Table I-1). Each species will be described further in this section.

Table I-1. Endangered and Threatened Species with Potential to Occur in the Project Area.

Species Common Name	Species Common Name	Listed Population / Stock / DPS	ESA Status	Designated Critical Habitat in Project Area	Minimum Population Estimate (N_{min})	Number Expected when Observed in Action Area
National Marine Fisheries Service Managed Species						
Beluga whale	*Delphinapterus leucas*	Cook Inlet	Endangered	Yes	267[a]	1-10
Fin whale	*Balaenoptera physalus*	Northeast Pacific	Endangered	N/A	2,554[a]	1-10
Humpback whale	*Megaptera novaeangliae*	Western North Pacific	Endangered	No	1,084[a]	1-10
		Mexico – North Pacific	Threatened	No	1,504[a,1]	1-10
Steller sea lion	*Eumetopias jubatus*	Western U.S. DPS	Endangered	No	49,837[1]	1-2
United States Fish and Wildlife Managed Species						
Steller's eider	*Polysticta stelleri*	Alaska Breeding	Threatened	No	326[c,2]	3[3]

Sources:
[a] Young *et al.* 2024
[b] USFWS 2020
[c] USFWS 2023a
Notes:
[1] The minimum population estimate is unknown. This number is an average of the minimum populations derived from methods used to with data collected over approximately 20 years ago.
[2] Based on the average of Steller's eiders present on the Arctic Coastal Plan from 2007 to 2017.
[3] Based on 5% of the highest total number of individuals observed on any one day during USACE 2025 Winter Steller's Eider Surveys. This is consistent with the method used in the source used to determine the number used for the minimum population estimate for determining what percent of the Pacific-wintering population are part of the Alaska-breeding population.
Acronym: DPS = Distinct Population Segment

There were three species considered for but ultimately eliminated from further consideration under this Draft BA (Table I-2).

Table I-2. Endangered and Threatened Species Eliminated from Further Consideration.

Species Common Name	Species Common Name	Listed Population / Stock / DPS	ESA Status	Designated Critical Habitat in Project Area	Minimum Population Estimate (N_{min})	Number Expected when Observed in Action Area
National Marine Fisheries Service Managed Species						
Guadalupe fur seal	*Arctocephalus townsendi*	Mexico	Threatened	No	30,019	1-2

Species Common Name	Species Common Name	Listed Population / Stock / DPS	ESA Status	Designated Critical Habitat in Project Area	Minimum Population Estimate (N_{min})	Number Expected when Observed in Action Area
Sunflower sea star	*Pycnopodia helianthoides*	Throughout range	Proposed	N/A	Unknown	0
United States Fish and Wildlife Managed Species						
Short-tailed albatross	*Phoebastria albatrus*	Alaska Region	Endangered	N/A	7,365[a]	0

Sources:
[a] USFWS 2020

The reasons for eliminating these species from further consideration are as follows:

- Guadalupe fur seal (*Arctocephalus townsendi*): Considered based on Environmental Stakeholder Working Group (ESWG) feedback regarding a historical sighting in Kachemak Bay (Attachment 1). Investigation confirmed this was a single 1992 stranding event linked to an extreme El Niño weather pattern (McCue et al. 2021). As this does not represent a standard range extension, the species is not anticipated to occur within the Action Area.

- Short-tailed albatross (*Phoebastria albatrus*): Identified via USFWS Information for Planning and Consultation tool as having potential range overlap but was not identified as a species occurring within Kachemak Bay in the USFWS FWCA Planning Aid Letter (PAL; USFWS 2023b). The Action Area also lacks the preferred pelagic habitat (deep offshore waters and continental shelf breaks; ADF&G 2025b, USFWS 2025, and O'Connor 2013). Given its preference for offshore foraging and the lack of historical records in the area, any occurrence would be restricted to rare, vagrant individuals. Thus, presence of this species during project activities is considered highly unlikely.

- Sunflower sea star (*Pycnopodia helianthoides*): Currently a candidate species proposed for listing as threatened (88 FR 16212). While habitat within the Project Area includes the subtidal zones preferred by this species (NCCOS 2021), and recovery is noted in Kachemak Bay following a 2017 wasting syndrome outbreak (NCCOS 2024), no individuals were observed during USACE 2024 or 2025 fieldwork. Despite its potential to range within the Action Area and ESWG consensus on potential to occur within the Project Area (Attachment 1), the species is excluded from this Draft BA due to its current unlisted status, indication of recovery, and lack of sightings in the immediate footprint. USACE will reassess this determination during the planned Section 7 consultation with NMFS.

I.4.1 Beluga whale (*Delphinapterus leucas*) - Cook Inlet DPS

The NMFS 2008, *Conservation Plan for Cook Inlet Beluga Whale (Delphinapterus leucas)*, and NMFS 2016, *Recovery Plan for the Cook Inlet Beluga Whale*

(Delphinapterus leucas), were developed pursuant to the ESA, as amended, to promote the conservation and restoration of the Cook Inlet beluga whale (CIBW).

The CIBW Distinct Population Segment (DPS) occurs within the Cook Inlet year-round and has been observed in adjacent rivers and bays, like Kachemak Bay. NMFS surveys conducted in 2005–2012 showed the CIBW population was predominately concentrated north of the Forelands located at 60° 45' N, above Kaligan Island (Rugh *et al.* 2010, Shelden *et al.* 2015a) with smaller numbers of CIBW occurring south of the Forelands and vagrants occurring within the Gulf of Alaska, outside the Cook Inlet. During the spring and summer periods, the species predominately occurs within the Upper Cook but has been historically observed along the west side of the Cook Inlet down to Kamishak Bay and Kachemak Bay (NMFS 2008). During the fall period, CIBW continue to predominately occur in the Upper Cook Inlet and Middle Cook Inlet but may occur within the Lower Cook Inlet as well. During the winter period, CIBW appear to occur in deeper waters within the Middle Cook Inlet and the Lower Cook Inlet but also may occur in the Upper Cook Inlet (NMFS 2008). The ice cover within the Cook Inlet and adjacent waters does not appear to limit the movement of the species or preclude CIBW occurrence in the nearshore environment during the winter period (NMFS 2008). The CIBW tends to remain within nearshore habitat along the coastline within groups. Their distribution and movement throughout the Cook Inlet demonstrate consistent seasonal patterns between distinct areas and are highly influenced by tidal patterns, prey availability, and other environmental factors.

The migration of key prey species; i.e., Pacific eulachon (*Thaleichthys pacificus*) also known as Hooligan in May and early June and salmon (*Oncorhynchus* spp.) in May and Late July through October; within the Cook Inlet are particularly influential on the distribution of CIBW within the Cook Inlet (McGuire *et al.* 2020) and are presumedly the reason CIBW often concentrate near river mouths or specific distinct areas during the summer (Young *et al.* 2024). Areas with habitat features, such as rock structures, river mouths, channels, and the shallow edges of mudflats, are important to CIBW foraging activities. CIBW use these habitat features to concentrate prey and provide a structure against which CIBW can drive prey. Submerged boulders and confluence lines of waters with different turbidity and salinity (i.e., ambush habitat) are also likely preferred habitat features with regards to foraging activities, since CIBW groups were observed foraging in habitats with these features (McGuire *et al.* 2020).

Other environmental features and conditions may influence the distribution and movement of CIBW and its prey. These other potential features or conditions include noise, predators (e.g., killer whales [*Orcinus orca*]), anthropogenic activities (e.g., marine vessel noise and movement), high currents, and variations in water temperature, ice cover, and/or river discharge. Nosie from anthropogenic activities may influence the CIBW movement and presence within certain habitat throughout the Cook Inlet. Anthropogenic noise sources have potential to mask the communication and hearing of the CIBW, and subsequently, reduce the CIBW communication and echolocation range (Castellote *et al.* 2019).

The CIBW is anticipated to occur in small numbers within Kachemak Bay. Recent sightings within Kachemak Bay are infrequent although the CIBW have historically occurred and been observed in the Lower Cook Inlet and near Homer, Alaska, in groups of 10 to 20 individuals. CIBW occurrence in Kachemak Bay is most likely tied to foraging and transit between other habitat within the Cook Inlet and adjacent waters. From September 13 to November 19, 2019, acoustic monitoring was conducted at four passive acoustic mooring sites within the Lower Cook Inlet (Figure I-16). The results of the monitoring are depicted in Table I-3.

Figure I-16. Passive Acoustic Monitoring for Seismic Surveys (Black Outlined Square) with Four Passive Acoustic Mooring Locations (Yellow Pins).
(Castellote et al. 2020)

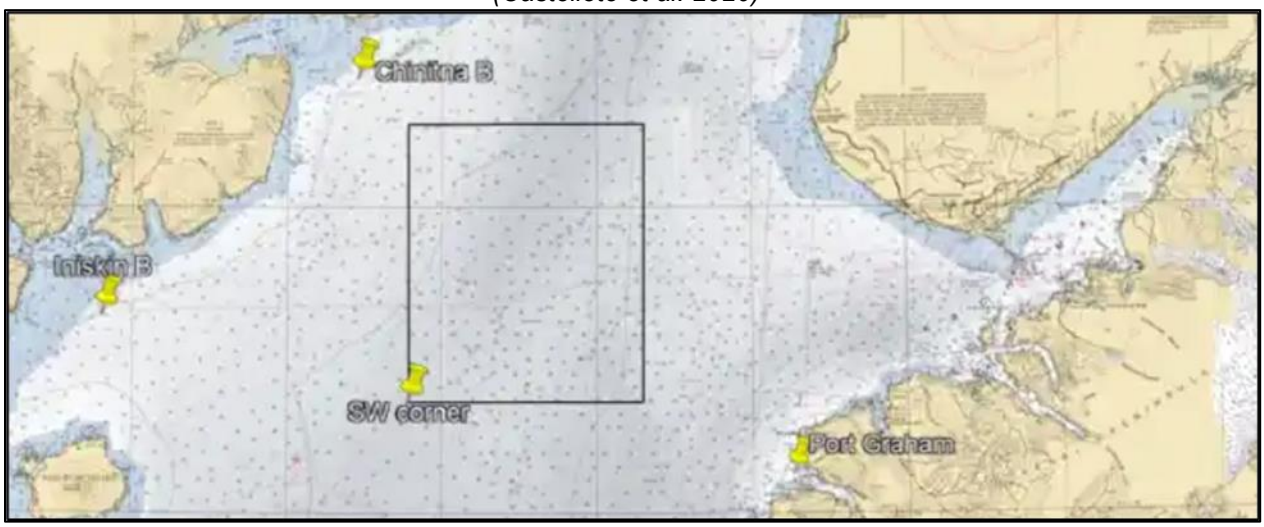


Table I-3. Marine Mammal Acoustic Mooring Data Collect September 13 to November 21, 2019

Acoustic Mooring	Unidentified Porpoise	Pacific white-sided dolphin	Beluga Whale	Killer Whale	Humpback Whale	Fin Whale	Minke Whale
Iniskin	1111	6	0	120	553	-	-
Chinitna	3212	0	0	161	661	-	-
SW Corner	2616	51	0	680	144	8,383	0
Port Graham	2613	0	5	997	100	-	-

Source: Castellote *et al.* 2020

The five CIBW recorded at the Port Graham acoustic mooring site, the closes to Kachemak Bay, reinforce the potential that CIBW occur in Kachemak. There is Traditional Ecological Knowledge (TEK) and other anecdotal observations that also support their potential to occur in Kachemak Bay. CIBW were historically observed in the fall along Kachemak Bay's northern shore (NMFS 2016) and the TEK of Alaska Natives described historical beluga calving and nursery habitats at the northern side of Kachemak Bay (Huntington 2000). CIBW have also been observed in Kachemak Bay around the Spit and the head of Kachemak Bay during the spring and fall (Speckman and Piatt 2000). CIBW have occurred around the Fox River flats, Mud Bay, and the northwest shore of Kachemak Bay (Rugh *et al.* 2000, NMFS 2008), and there have been year-long occurrence throughout the summer (Huntington 2000). The ESWG provided an anecdotal observation of CIBW within Kachemak Bay around Miller's

Landing (59.6638612, -151.4368318) in summer 2019 and that previous hydrophone data collected on the west side of the Spit indicated a lot of CIBW calls (Attachment 1). There was also a reported sighting of CIBW near Bishop's Beach in 2020 (McGuire *et al.* 2022).

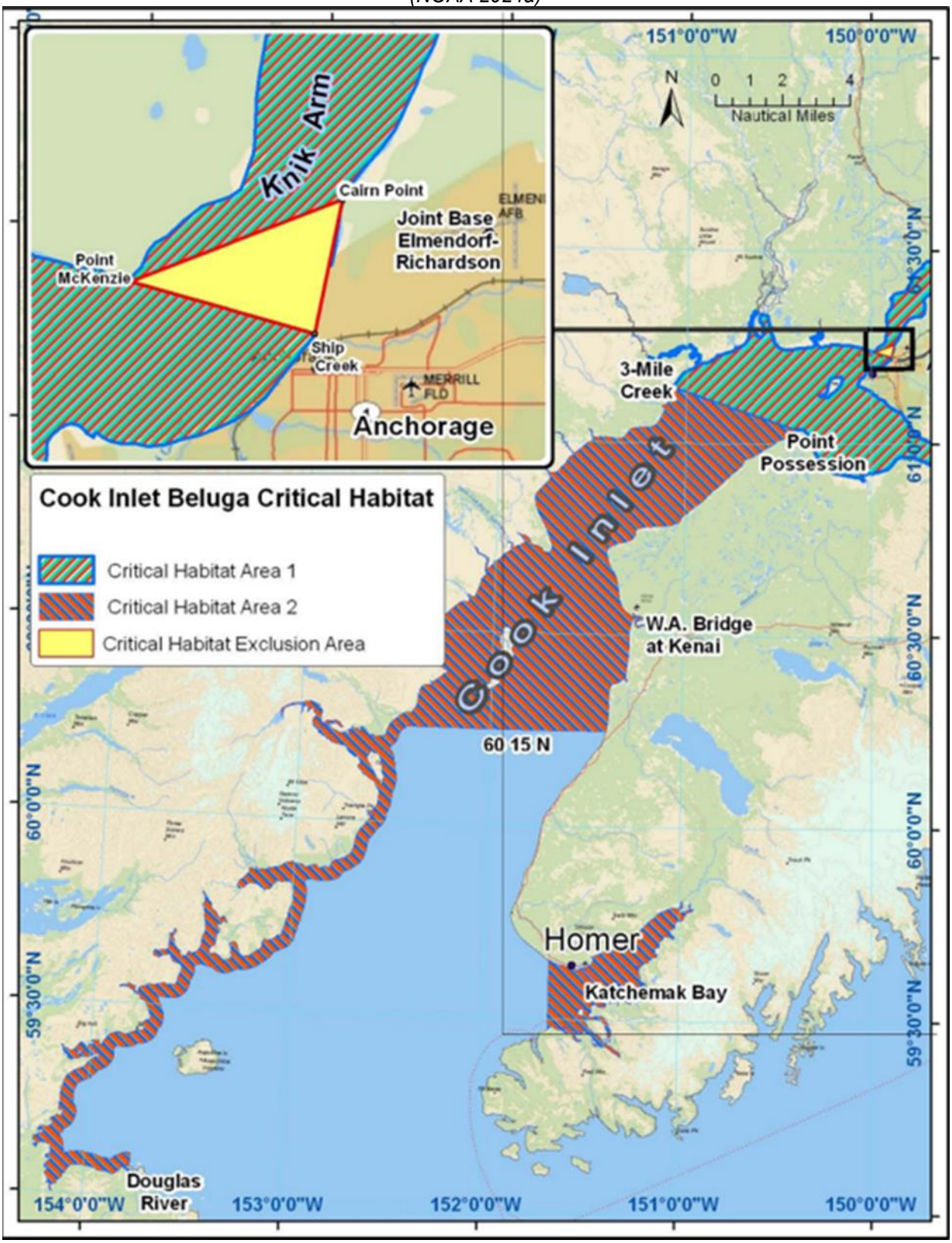
CIBW have a reduced surface presence within the Kachemak Bay and are likely to conduct deep dives, to the bottom of the water column (Hobbs *et al.* 2005). This is anticipated to be tied to foraging activities during the fall and winter months, which is consistent with the CIBW deep dive behavior, use of mid- Inlet and Lower Cook Inlet areas, and stomach content analyses (NMFS 2008).

The low occurrence within Kachemak Bay may be a result of the deep dive behavior and type of activity (e.g., foraging) typically demonstrated by CIBW in Kachemak Bay, the reduced CIBW population, and other habitat within the Cook Inlet being more valuable. The presence of predators may also be a factor influencing the occurrence of CIBW within Kachemak Bay. The ESWG provided anecdotal evidence that CIBW were being predated within Kachemak Bay on the east side of the Spit and pushed into nearshore waters of Mud Bay by killer whales in the 1980s and 1990s (Attachment 1). There was also an anecdotal observation of a killer whale chasing a beluga in Kachemak Bay in 2000 (NMFS 2016). It is likely that low use areas and other historic use areas would be re-occupied if there is substantial growth and recovery of the CIBW population.

Critical Habitat

The endangered CIBW population is isolated and declining, and the Cook Inlet and associated waters were identified as essential to their continued survival. Thus, they are encompassed in the critical habitat (Figure I-17) designated by the Final Rule in 76 Federal Register (FR) 20179, on April 11, 2011, except for an area excluded due to national security purposes near Anchorage, Alaska.

Figure I-17. Cook Inlet Beluga Whale Critical Habitat.
(NOAA 2024a)



The physical and biological features essential to the conservation of the species were considered in designating the critical habitat for the CIBW. The primary constituent elements (PCEs) essential to conservation of the CIBW for the designated Critical Habitat Area 1 and Area 2 are:

- Intertidal and subtidal waters of Cook Inlet with depths less than +30 feet MLLW and within five miles of high and medium flow anadromous fish streams;
- Primary prey species consisting of four species of Pacific salmon, Pacific eulachon, Pacific cod, walleye pollock, saffron cod, and yellowfin sole;
- Waters free of toxins or other agents of a type and amount harmful to CIBW;
- Unrestricted passage within or between the critical habitat areas; and,
- Waters with underwater noise below levels resulting in the abandonment of critical habitat areas by Cook Inlet beluga whales.

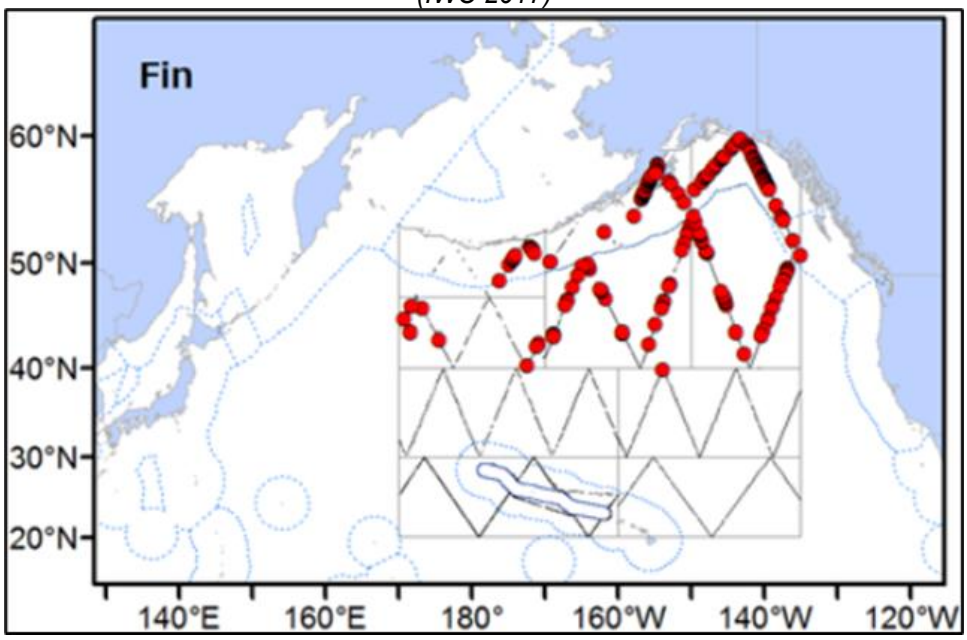
The critical habitat areas are bounded on the uplands by the Mean High Water (MHW) line, except for the lower reaches of specific tributary river (NMFS 2016). CIBW Critical Habitat Area 2 consists of nearshore areas of the Lower Cook Inlet, including Kachemak Bay. Habitat Area 2 is based on dispersed fall and winter feeding and transit areas in waters where whales typically occur in smaller densities or deeper waters.

I.4.2 Fin whale (*Balaenoptera physalus*) - Northeast Pacific Stock

Fin whales forage in cold, high latitude waters in the spring and early summer, and they return to lower, warmer latitudes for breeding in the winter. Although, the fin may remain in high latitude waters ranges during winter if prey is plentiful (Young *et al.* 2024). Their movement is greatly influenced by prey availability, and they tend to occur in deep, open oceanic waters, which makes them hard to track. When they occur in coastal waters, it is typically in deep waters that approach the coast (Jefferson *et al.* 2015).

Within Alaska waters, the fin whale occurs in the Gulf of Alaska year-round and is seen frequently in the Gulf of Alaska while foraging although calls are seldomly detected during early and mid-summer (Stafford *et al.* 2007 and Moore *et al.* 1998). They are typically observed in groups of six to ten individuals, but they can also be sighted in pairs, alone, or in large foraging aggregations (Clark 2008a). In 2010 to 2016 International Whaling Commission sponsored surveys, 218 fin whale schools (one or more whale) totaling 357 individuals were observed across the North Pacific (Figure I-18; IWC 2017).

Figure I-18. Fin Whale Sightings during 2010 to 2016 Survey Efforts. (IWC 2017)



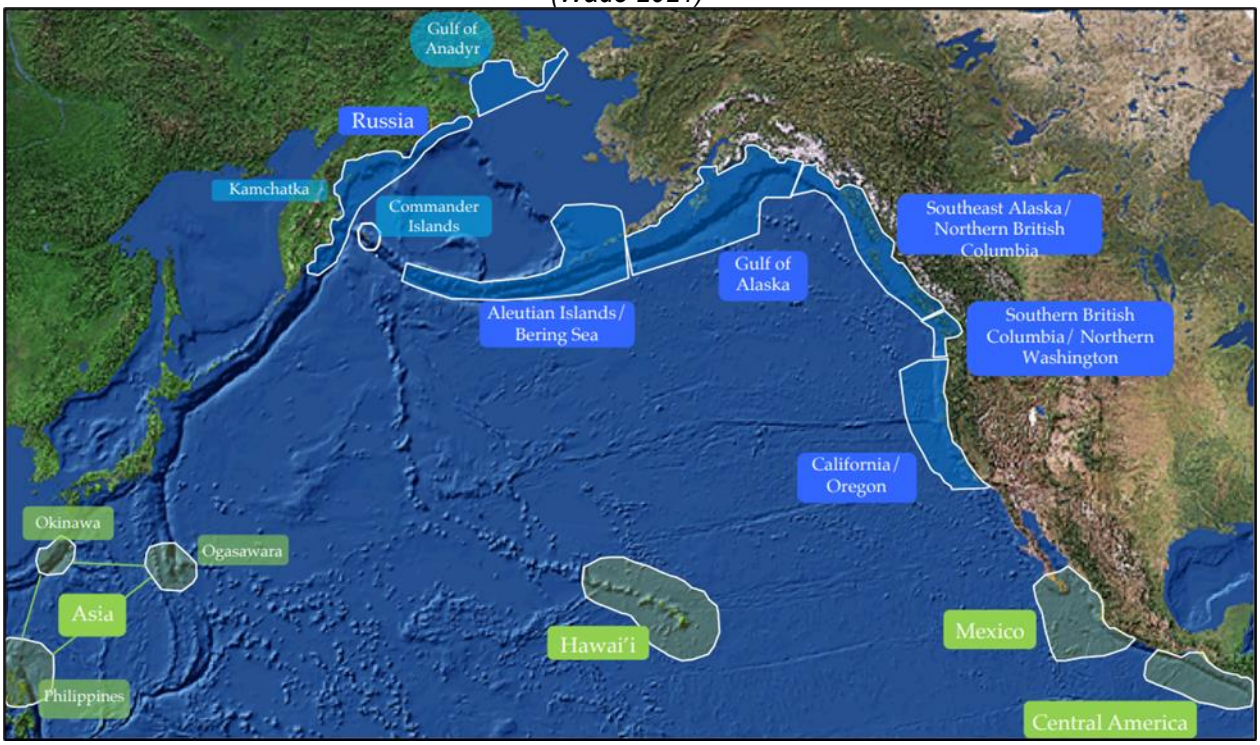
Although not listed as a marine mammal that may occur within the KBCHA according to the ADF&G 1993, *Kachemak Bay and Fox River Flats Critical Habitat Areas Management Plan*, fin whale has been noted to have occurred within the area (ADF&G 1993, 2025a). Although not commonly observed, fin whales most sightings occur near the entrance of the inlet and NMFS observed 28 individuals across 10 incidental sightings of fin whales during Cook Inlet beluga whale aerial surveys between 1993 and 2022 (Shelden *et al.* 2013, Shelden *et al.* 2015b, and Shelden *et al.* 2022). Furthermore, 23 individuals across eight sightings were observed in Lower Cook Inlet in fall 2019 (Fairweather Science 2020). Passive acoustic monitoring efforts between September and November 2019 indicated 8,383 fin whale detections within the Lower Cook Inlet (Table I-3; Castellote *et al.* 2020). The ESWG also provided feedback that fin whales, when occurring in Kachemak Bay, have been observed on the west side of the Spit, but the species could potentially occur on the east side (Attachment 1). Due to where they typically occur (i.e., in deep, open oceanic waters), the occurrence of fin whales is anticipated to occur predominately within the deep waters of the Lower Cook Inlet and infrequently within in Kachemak Bay where large numbers are not anticipated.

I.4.3 Humpback whale (*Megaptera novaeangliae*) – Mexico and Western North Pacific DPS

Compared to other whales with potential to occur within the Action Area, the humpback whale has a higher probability of being observed due to its conspicuous behaviors (i.e., breaching and water surface slapping). Humpback whales migrate in the late fall to wintering areas to mate and calve and in the spring to summer feeding areas to forage (Figure I-19). Their spring migration to summer feeding areas is largely driven by their preference for abundant prey sources in temperate and subpolar waters. When in summer feeding areas, humpback whales forage in coastal and inland waters until they

migrate to winter breeding areas in late fall. Groups of humpback whales forage cooperatively in summer but generally are observed alone or within small groups for short durations (Zimmerman and Karpovich 2008).

Figure I-19. Humpback Summer Feeding (Blue) and Winter Breeding (Green) Area. (Wade 2021)



Winter breeding and summer feeding areas are typically used by specific DPSs (Figure I-20) but have potential to extend to other areas. Table I-4 gives a data-supported probability of what specific stock of humpback would be encountered if one occurred within the Gulf of Alaska Summer Feeding Area (Figure I-19), which includes Kachemak Bay. Pacific humpback whales that share the same summer feeding and winter breeding areas are likely demographically independent due to a strong, maternally-inherited fidelity to migratory destinations (Young *et al.* 2024). Thus, NMFS evaluated North Pacific DPSs to identify demographically independent populations (DIPs). Demographic independence is , where population dynamics of the group is primarily a result of internal dynamics (e.g., individual births and deaths) rather than external dynamics (e.g., immigration; Young *et al.* 2024). The DIP and Unit (i.e., group likely comprised of multiple DIPs) with potential to occur in Kachemak Bay based on the of the humpback whale DPSs associated with the Gulf of Alaska are:

- Meixco DPS, Mexico – North Pacific Unit
- Hawai'i DPS, Hawai'i - Southeast Alaska / Northern British Columbia DIP
- Western North Pacific DPS, Marianas / Ogasawara - North Pacific Unit

Figure I-20. Humpback Whale DPS Associated with Winter Breeding Areas and Summer Feeding Areas.

(Young et al. 2024)

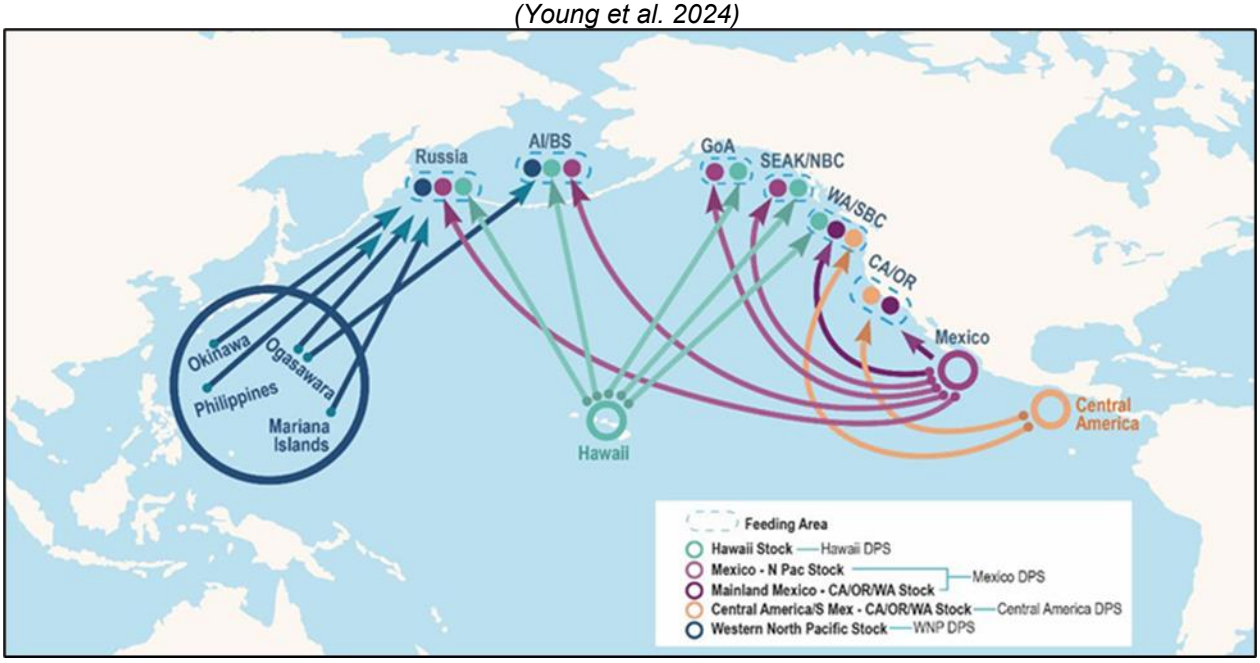


Table I-4. DPS Probability of Encountered Humpback within the Gulf of Alaska Summer Feeding Area.

Summer Feeding Area	Humpback Whale Stock			
	Western North Pacific	Hawaii	Mexico	Central America
Gulf of Alaska	1%	89%	11%	0%

Source: NMFS 2021, which used data from Wade 2021.
Note:
Probability is more than 100% due to rounding. Western North Pacific Probability was rounded to 1% instead of 0% to ensure the potential of their potential occurrence is retained.

Based on the probabilities provided in the table that were derived from NMFS guidance (NMFS 2021), the probability that a humpback whale encountered in the Gulf of Alaska Summer Feeding Area, which includes Kachemak Bay, is an ESA DPS (i.e., Western North Pacific or Mexico DPS) is 12 percent. The unlisted Hawaii DPS is the most likely to be encountered at 89%. As provided, the Western North Pacific Stock has been observed in the Gulf of Alaska summer feeding area even though its predominate summer feeding areas are Russia and the Aleutian Islands / Bering Sea.

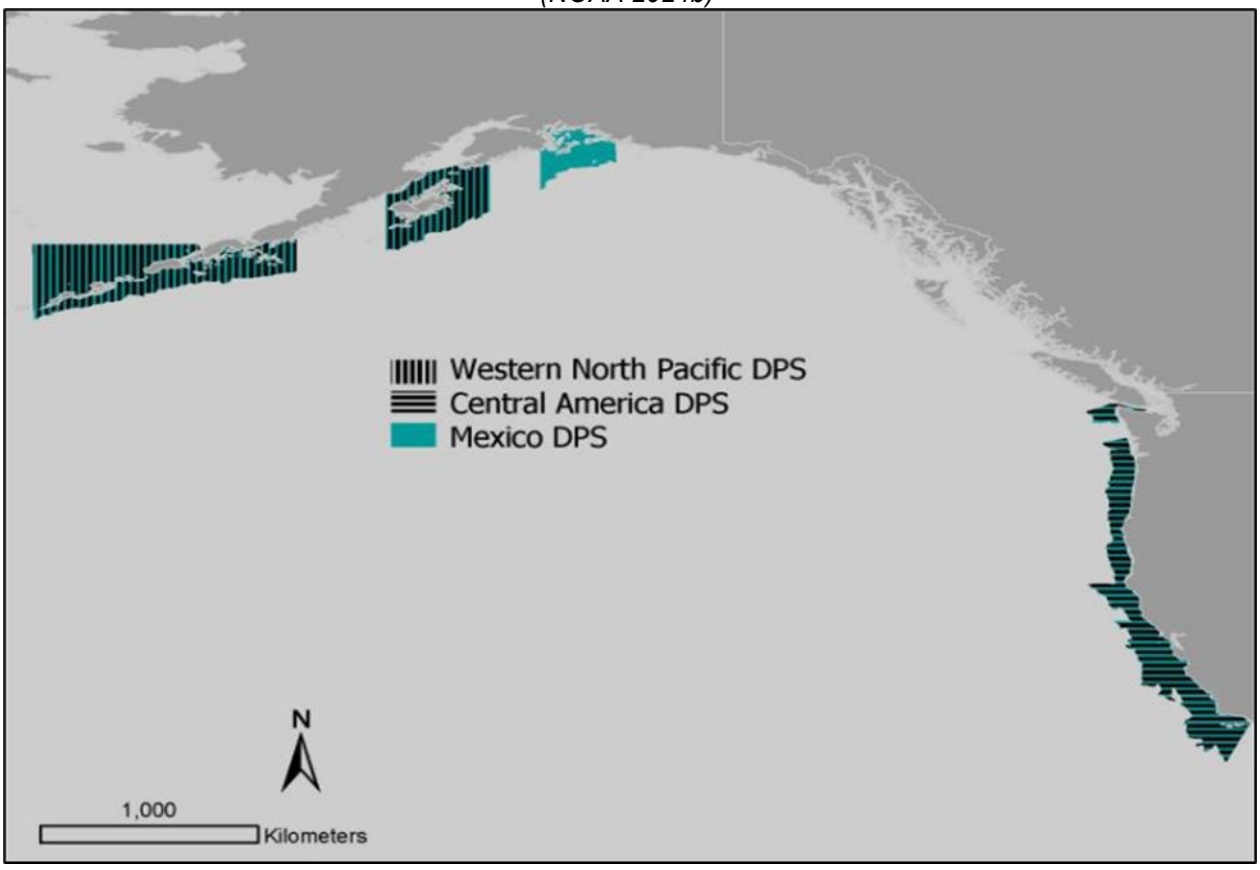
A large group of humpback whales (i.e., more than ten individuals) would unlikely occur within Kachemak Bay. Rather, it is more likely an individual or pair, perhaps up to a small group (less than 10) individuals, would be observed. In 1993 to 2022 NMFS aerial beluga whale surveys, 211 humpback whales were recorded across 97 sightings in the Lower Cook Inlet, including Kachemak Bay (Shelden *et al.* 2013, Shelden *et al.* 2015b, and Shelden *et al.* 2022). Humpback whale have been anecdotally observed to occur within and near the Project Area, and even within the existing Homer Harbor . They occur closer to shore when water depths are deeper during high tide (Attachment 1). The passive acoustic monitoring efforts between September and November 2019 indicated 1,458 humpback whale detections within the Lower Cook Inlet with 100 detections at the Port Graham site closet to Kachemak Bay (Table I-3; Castellote *et al.*

2020). The results of the survey showed an inverse trend of calls recorded between humpback whale and killer whale detections at their sites. I.e., the site with the most humpback calls was where the least killer whale calls were detected, and the site with least humpback calls (Port Graham) had the most killer whale calls detected during the survey.

Critical Habitat

The Action Area does not overlap with designated critical habitat for the humpback whale. The closest critical habitat to the Project Area is the Western North Pacific DPS critical habitat designated by the Final rule in 86 Federal Register (FR) 21082 (Figure I-21). The critical habitat is associated with the biological and physical features important to the conservation of the Western North Pacific DPS of humpback whale. Specifically, this area is a key seasonal feeding area for the Western North Pacific DPS and contains the biological prey features for this species.

Figure I-21. Humpback Whale Critical Habitat.
(NOAA 2024b)



I.4.4 Steller sea lion (*Eumetopias jubatus*) - Western U.S. DPS

Western U.S. DPS Steller sea lions are born at and west of Cape Suckling, Alaska (144°W longitude) throughout Alaska waters. They occur throughout their range year-round with most Steller sea lions occupying rookeries or haulouts during breeding season, which occurs late-May through July. When at sea, Steller sea lions typically travel and forage within 60 kilometers of land within nearshore waters with depths less than 400 meter (Wiles 2015). Outside breeding season, individual Steller sea lions, especially male and juveniles, disperse beyond their natal habitat (Sease and York 2003).

Steller sea lions are highly influenced by prey resources. As central place foragers, they return to their haulout or rookery after foraging activity (Jemison *et al.* 2018). They are also known as opportunistic predators and dietary generalists. They forage for a broad variety of fish and cephalopods and on rare occasion a pinniped or bird (Zimmerman and Rehberg 2008.

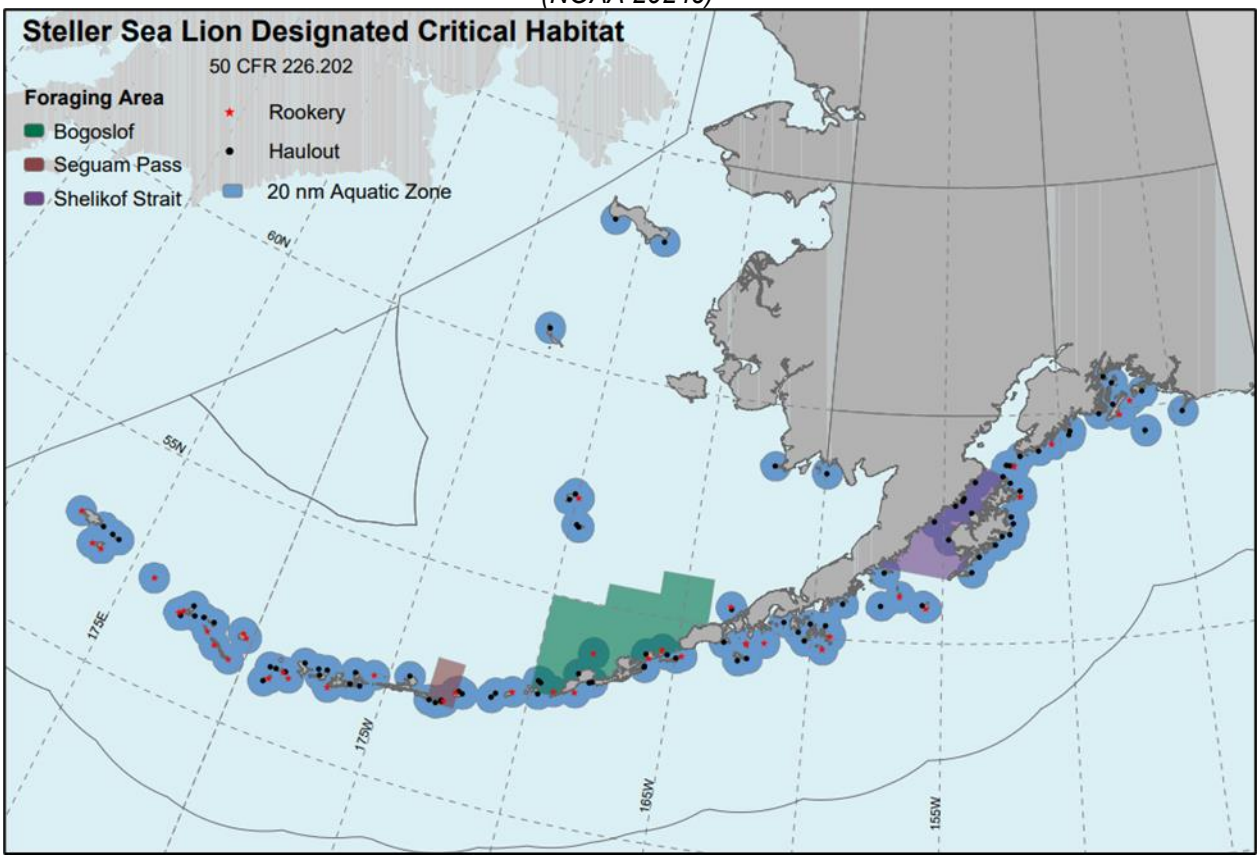
During 1993 to 2022 NMFS CIBW aerial surveys, 1,111 individual Steller sea lions were incidentally observed across 64 recorded sightings (Shelden *et al.* 2013, Shelden *et al.* 2015b, and Shelden *et al.* 2022). In the surveys, Steller sea lions predominately were occupying areas south of the East and West Forelands. According to Sweeney *et al.* 2017, about 3,600 Steller sea lions use terrestrial sites in Lower Cook Inlet. Furthermore, individuals are often seen foraging throughout the Lower Cook Inlet, including in Kachemak Bay. A Steller sea lion was observed during USACE winter waterfowl surveys traveling around the tip of the Spit from the west to the east side. The ESWG has collaborated the occurrence of Steller sea lions in and around the Project Area as well (Attachment 1).

Critical Habitat

The Steller sea lion critical habitat and special aquatic foraging areas (Figure I-22) were designated as critical habitat by 58 FR 45269. The numerous Steller sea lion rookeries, haulouts, and special aquatic foraging areas in Alaska are identified in the 58 FR 45269 and 50 CFR 226.202. Critical habitat is defined by three zones; terrestrial, air, and aquatic. Each zone extends out from the baseline or base point of major rookeries and haulouts in Alaska and are described as follows (50 CFR 226.202):

- Terrestrial Zone: extends 0.9 kilometers landward.
- Air Zone: extends 0.9 kilometers above the terrestrial zone, measured vertically from sea level.
- Aquatic Zone: extends 37 kilometers (20 nautical miles) seaward on State and Federally managed waters in Alaska west of 144°W longitude and extends 0.9 kilometers seaward in State and Federally managed waters in Alaska east of 144° W longitude.

Figure I-22. Steller Sea Lion Alaska Critical Habitat.
(NOAA 2024c)

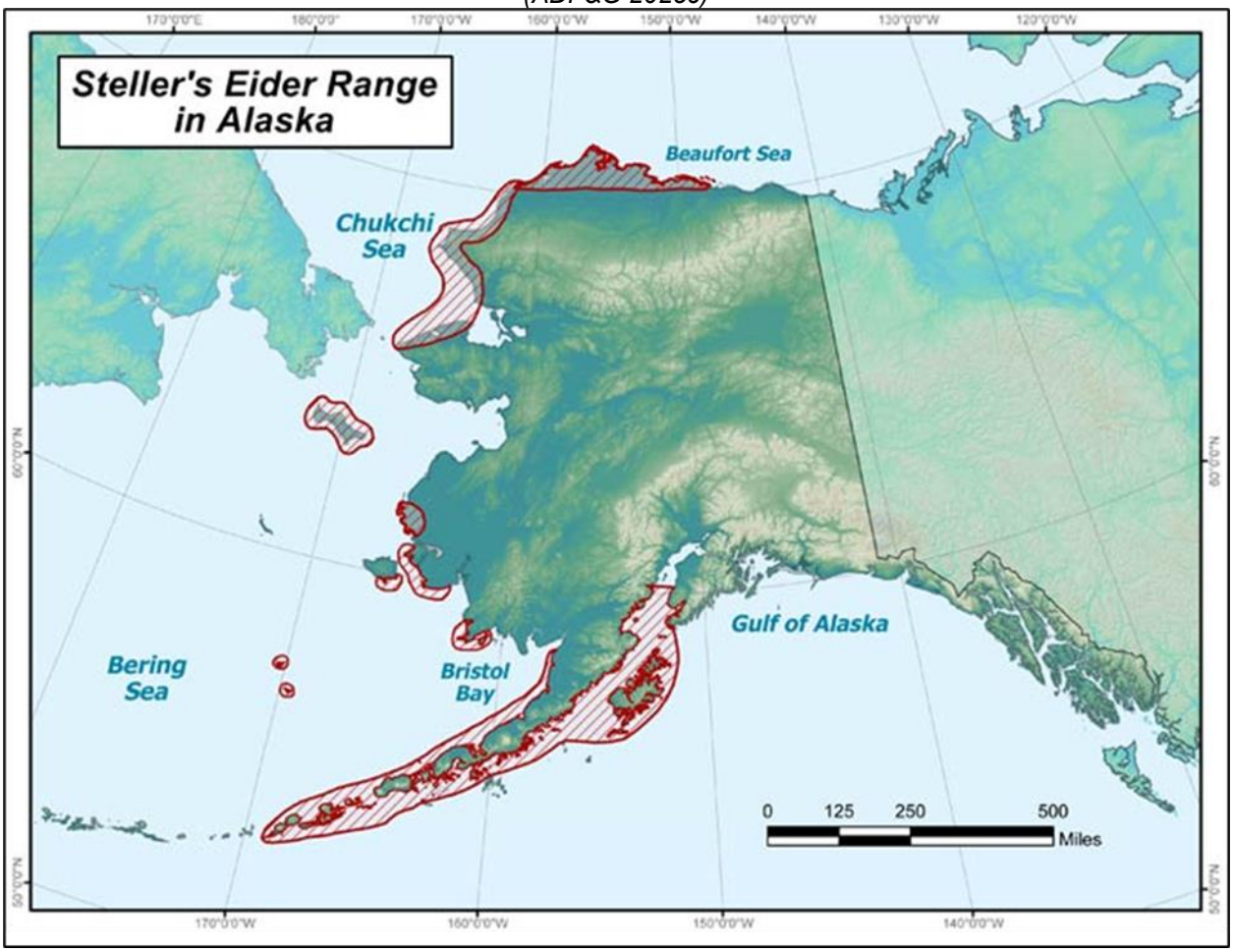


The Action Area is not within the boundaries of critical habitat and special foraging areas for Steller sea lions. The closest major rookery is the Sugarloaf Island Rookery at approximately 58 53.0N, 152 02.0 W. The closest major haulout is the Nagahut Rocks Haulout at approximately 59 06.0N, 151 46.0W. The 20 nautical mile boundary of this haulout reaches the border of the KBCHA. Sud Island and Ushagat Island Major Haulouts are the next closest major haulouts.

I.4.5 Steller's eider (*Polysticta stelleri*) – Alaska-Breeding Population

Steller's eiders are Holarctic species ranging across the Beringia and northern latitudes along coastal Alaska (Figure I-23). The Steller's eider is a small, compact sea duck and the smallest of the four eiders species. Steller's eiders spend the majority of their lives in the marine environment, occupying terrestrial habitats only during the nesting season (USFWS 2019). Studies have indicated Steller's eiders are opportunistic generalists in the marine environment and consume prey based on availability (Metzner 1993). According to the Stock Assessment for Steller's eiders, the non-breeding season marine factors that influence the species' survival and reproductive capacity include adequate quality and quantity of prey (e.g., marine invertebrates) and availability of preferred habitat including shallow nearshore mudflats, sand flats, rocky intertidal areas, deep ice-free waters in late winter, and eelgrass bed communities (USFWS 2019).

Figure I-23. Steller's Eider Range in Alaska.
(ADF&G 2025c)



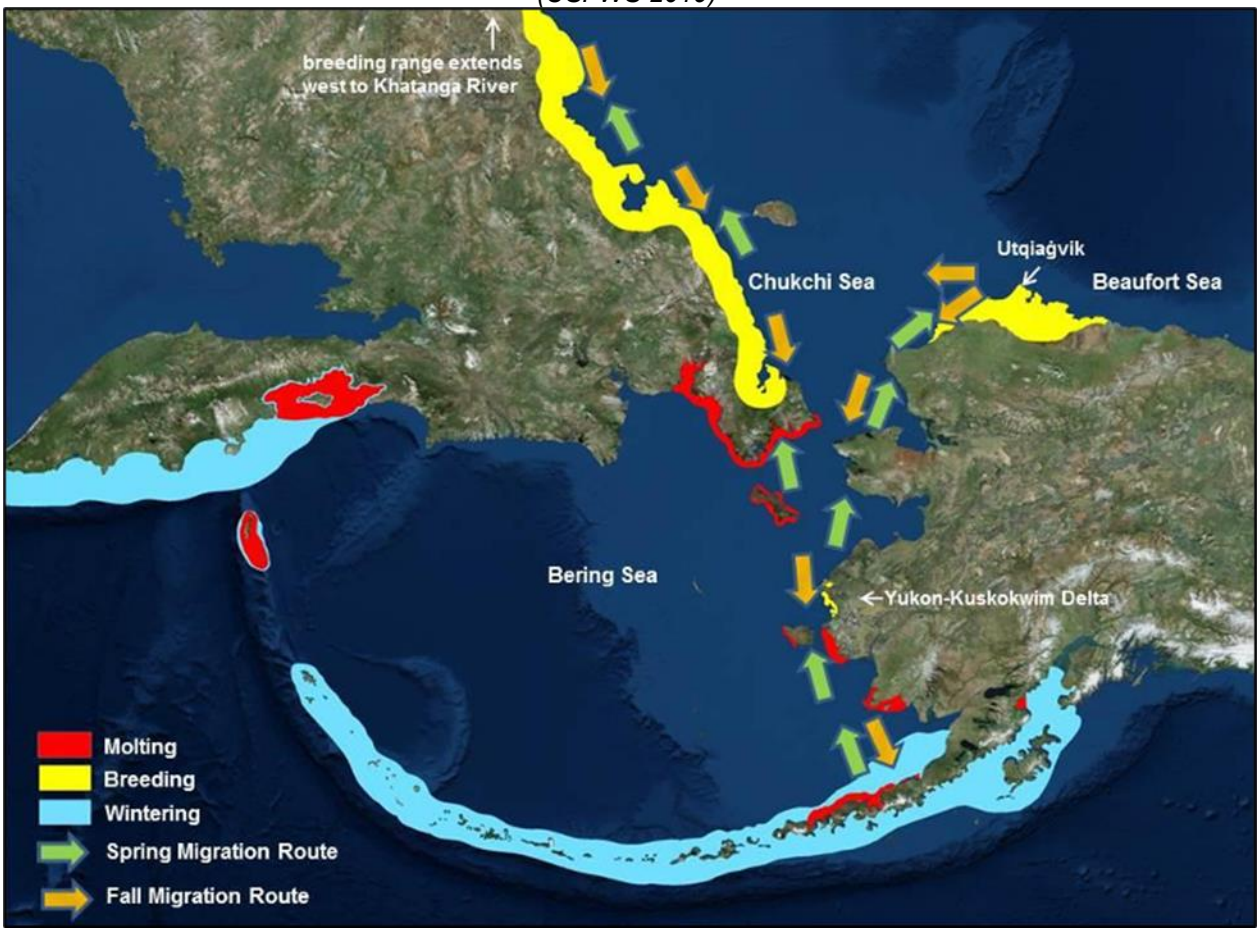
The Pacific-wintering population of Steller's eiders is composed of the Russian-Pacific breeding population and the Alaska-breeding population (USFWS 2002). The Russian-Pacific Breeding population nests east of the Khatanga River and winters in the southern Bering Sea and northern Pacific Ocean. The Alaska-breeding population consists of two breeding subpopulations, referred to as the northern and western Alaska subpopulations. The Alaska-breeding population of Steller's eiders was listed as threatened under the ESA in 1997 (62 FR 31748) and recognized as a DPS.
The Alaska-breeding Steller's eider migrates to southwest Alaska for molting and wintering (Figure I-24). Timing of departure from the breeding grounds near Utqiaġvik (and presumably the rest of the Arctic Coastal Plain) as well as arrival to molting areas differs between sexes, and varies depending on reproductive success (USFWS 2019):

- Sub-adults – arrive at molting areas in early August
- Males - migrate typically from late June to mid-July and arrive at molting areas in August.

- Presumed Failed Breeding Females – migrate typically from mid-July to early August and arrive at molting areas after males.

- Successful Breeding Females – migrate typically early September and arrive at molting areas after presumed failed breeding females.

Figure I-24. Steller's Eider Pacific-Wintering Population Distribution and Migration. (USFWS 2019)



There is also an apparent trend that low breeding effort years individuals, particularly females, migrate earlier and arrive at molting areas sooner (USFWS 2019). Pacific-wintering Steller's eiders prefer shallow molting areas with extensive eelgrass (*Zostera marina*) beds and intertidal mudflats and sand flats. Steller's eiders feed on invertebrates associated with eelgrass habitat and are associated with eelgrass for a large portion of their annual cycle making it important habitat for this species (USFWS 2019). After molt, Pacific-wintering Steller's eiders may remain in molting lagoons but also disperse to wintering areas in the Aleutian Islands, Alaska Peninsula, and western Gulf of Alaska including the Lower Cook Inlet (USFWS 2019).

During winter, a portion of the Pacific-wintering population occur in rocky intertidal areas, deeper nearshore waters, or in intertidal mudflats dominated by eelgrass. Typically, Steller's eiders are associated with protected nearshore environments that are

less than 10 meters in depth (Cottam 1939, Petersen 1981, USFWS 2002, Zydelis 2002). There has also been reports of substantial mid-winter use of habitat greater than 10 meters deep (Martin *et al.* 2015), and this species has been observed moving to deeper waters (up to 30 meters) when ice forms along the shoreline (USFWS 2019). Pair bonding and courtship behavior begins in late winter, and is completed prior to spring migration generally around April and May to breeding grounds (USFWS 2019). There is indication that intermixing between the Russian-Pacific Breeding and Alaska-breeding populations when bonding occurs in molting, wintering, and staging areas (USFWS 2021).

USFWS Species List and PAL provided that individual Alaska-breeding population Steller's eiders overwinter in Kachemak Bay and that there is a "small population regularly using the waters offshore of Spit, near the existing harbor" (USFWS 2023b, 2024). Steller's eiders overwinter in Kachemak Bay and are generally expected to have migrated to breeding grounds by the end of April. Steller's eiders have been observed all around the Spit in areas of preferred habitat as described above. To inform this species abundance and distribution around the Spit during winter, USACE conducted Winter Steller's Eider Surveys in Kachemak Bay around the Spit in the 2024/2025 winter using a combination of boat and land-based methods and following the same sectors as prior USACE surveys conducted in the 2002/2003 and 2003/2004 winters. There were 11 sectors surveyed, and Steller's eiders were commonly observed on the west side of the Spit via boat surveys but also occur on the east side of the Spit to a lesser extent (Figure I-25 and Table I-5). Based on survey data, the peak abundance of Steller's eiders for months surveyed occurred in January for the 2002/2003 winter, March for the 2003/2004 winter, and February for the 2024/2025 winter.

Figure I-25. Steller's Eider 2002-2005 and 2025 Winter Surveys Sector Map.

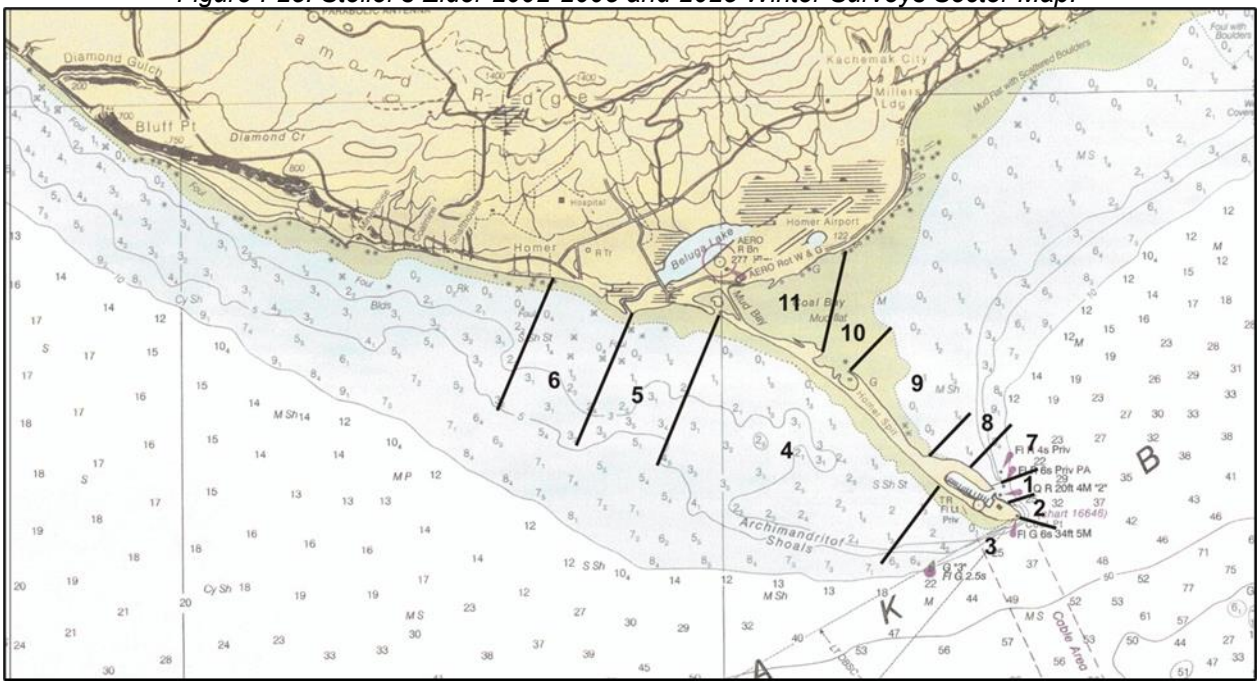


Table I-5. Steller's Eider 2002-2004 and 2025 Winter Surveys Observational Data.

DATE	MAP SECTOR										
	1	2	3	4	5	6	7	8	9	10	11
2002/2003 Winter Surveys											
2002, December 14-15	0	0	0	**253**	**150**	0	0	0	0	0	0
2003, January 15-16[1]	0	0	0	**596**	**90**	**1**	0	0	0	0	0
2003, March 5-7	0	0	0	**359**	**8**	0	0	0	0	0	0
2003/2004 Winter Surveys											
2004, January 15-17	0	0	0	**16**	0	0	0	0	0	0	0
2004, March 6-8	0	0	0	**140**	**10**	**4**	0	0	0	**3**	0
2024/2025 Winter Surveys											
2025, January 15-16[4]	0	0	0	0	0	0	0	0	0	0	0
2025, February 12-13[4]	0	0	0	**19**	**24**	0	0	**4**	0	0	0
2025, March 25[4]	0	0	0	0	0	0	0	0	0	0	0
SECTOR TOTALS	0	0	0	**1,383**	**282**	**5**	0	**4**	0	**3**	0

Notes:

[1] Sector 5 and 6 not surveyed January 17, 2003, due to weather.

[2] Sectors 5 through 11 not surveyed January 16 and 17, 2004, due to ice.

[3] Sectors 1 through 6 not surveyed March 7, 2004, due to rough seas.

[4] Homer, Alaska, experienced a very mild winter in 2025 that has potential to have impacted the distribution and use of Kachemak Bay in 2025 than if conditions were harsher.

In 2006, a final report assessing the distribution and abundance of Steller's eiders within the Cook Inlet in the 2003/2004 and 2004/2005 winters was published. With regards to the eight survey units included in the study (Larned 2006):

- Survey Unit 2E (west of Spit) and Survey Unit 3E (east of the Spit) are the Survey Units that overlap with the Proposed Action Area.
- Survey Unit 2E had the third highest abundance of Steller's eiders observed in the study.
- Survey Unit 2E had the second highest abundance of the three units on the east side of the Cook Inlet.
- Survey Unit 1E (towards Clam Gulch) had the most abundance on the east side of the Cook Inlet.
- Survey Unit 1E had the second highest abundance of Steller's eiders observed in the study.
- Survey Units 1E, 2E, and 3E had an average monthly abundance of approximately 463, 135, and 8 respectively.

The number and timing of the survey's Steller's eiders abundance peak estimates varied between the winters surveyed. In the eastern units, the peak abundance occurred February in the 2003/2004 winter and January in the 2004/2005 winter.

Figure I-26. Survey Units for Lower Cook Inlet Aerial Winter Steller's Eider Surveys. (Larned 2006)

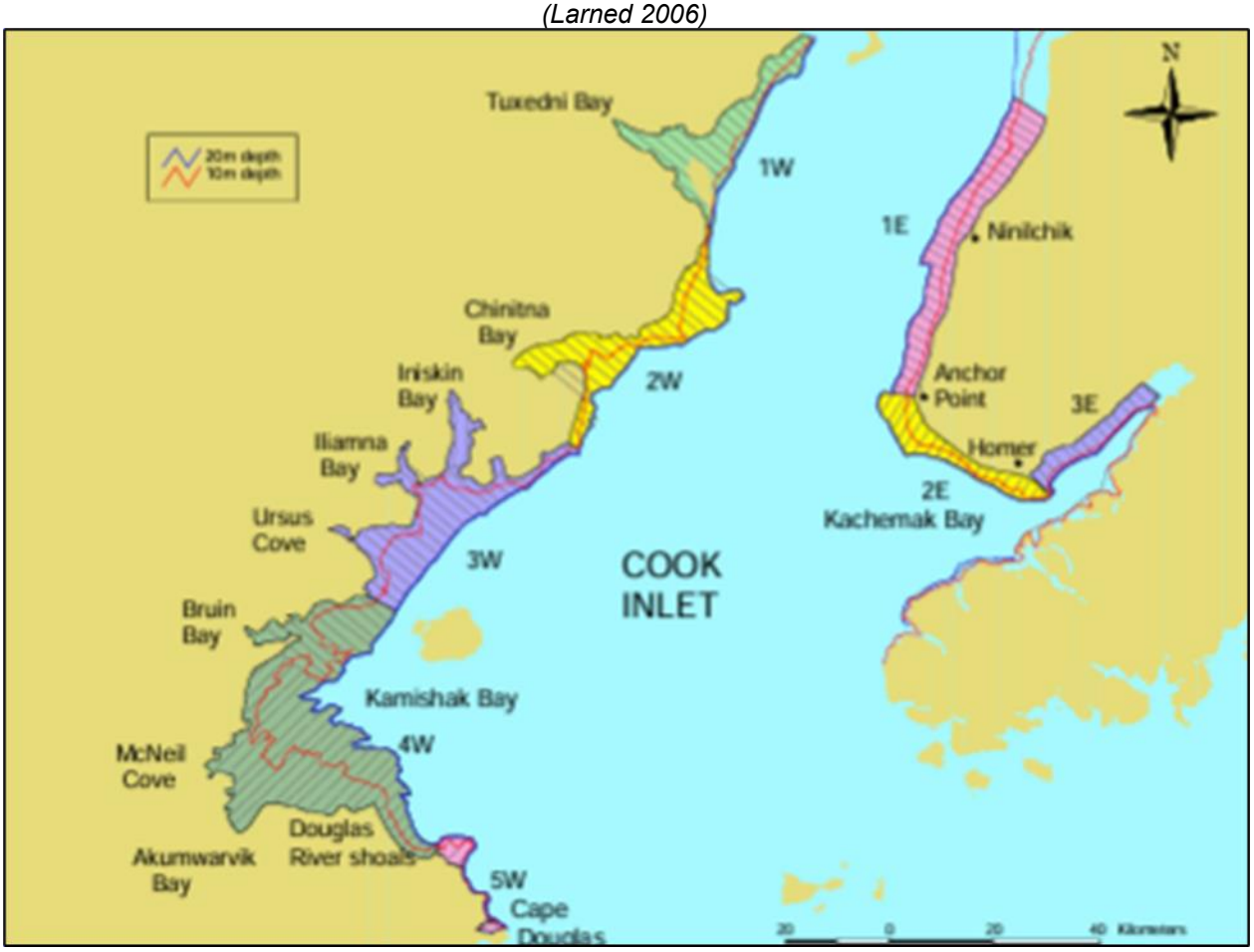


Table I-6. Lower Cook Inlet Aerial Winter Steller's Eider Surveys 2E and 3E Survey Unit Data.

Date of Survey	Survey Unit		Steller's Eider Total
	2E (West of Spit)	3E (East of Spit)	
Winter 2003/2004 Surveys			
January 23, 2004	219	0	219
February 11, 2004	338	40	378
February 16, 2004	Not Surveyed	17	17
March 11, 2004	101	18	119
March 23, 2004	117	50	167
April 12, 2004	128	Not Surveyed	128
April 13, 2004	61	27	88
Total	*964*	*152*	*1,116*
Winter 2004/2005 Surveys			
December 8, 2004	33[1]	0	33
January 6, 2005	82[1]	0[1]	82
February 3, 2005	73[1]	4[1]	77
March 4, 2005	425	0	425
March 7, 2005	178	39	178
April 12, 2005	35	0	35
Total	*826*	*43*	*869*
Total Across All Surveys	**1,790**	**195**	**1,985**

[1] This is the rounded-up average based on data from two crews reported numbers for the same day.

USACE and Larned surveys indicated less Steller's eiders were observed in Kachemak Bay east of the Spit when compared to the west side where various sized flocks and pairs were consistently observed. It is presumed that the Steller's eiders distribution and abundance were closely tied to the associated habitats and prey resources around the Spit. On the east side, there is a large expanse of nearshore shallow mudflats extending east and south from Mud Bay. The mudflats extend until just past the Fishing Lagoon. There are also known and presumed areas of eelgrass throughout the approximately 0 to -12 feet MLLW depth contour, although its presence and abundance during winter is presumed contingent on other environmental conditions like water temperature. The prime habitat at the east end, tip, and west side of the Spit is deep ice-free waters.

In USACE's and Larned's surveys described above, Steller's eiders were often associated with preferred winter habitat types but likely heavily influence by other environmental factors, including but not limited to, ice formation, water surface conditions, tides, and prey distribution and abundance. For example, in January 2005 winter conditions were mild and little sea ice was formed in Kamishak Bay, but temperatures from late January through most of February caused extensive ice coverage that displaced Steller's eiders from the area (Larned 2006). Ice formation in Kachemak Bay nearshore habitats would be a strong influence on the abundance and distribution of Steller's eiders around the Spit. In the 2024/2025 USACE Winter Steller's Eider Surveys, the winter conditions were especially mild compared to typical winter conditions experienced in Kachemak bay, and the east side of the Spit was free of ice. This could have impacts the normal distribution and abundance USACE observed in the 2024/2025 winter. Based on data, Steller's eider numbers in the Cook Inlet and Kachemak Bay appear to build through early winter, peak between January and February and then decline during spring migration around early March to late April (Larned 2006). Although, the timing of critical Steller's eider movements between breeding, molting, wintering, and staging areas varies between years based on the environmental conditions.

Kachemak Bay Birders (KBB) is an organization that has a mission "to promote the enjoyment and protection of Kachemak Bay native birds and their habitat through citizen science, field trips, education and stewardship" (KBB 2025b). This organization has various resources associated with bird species that occur within Kachemak Bay. The KBB, "Checklist of Birds, Kachemak Bay, Alaska," indicates the Steller's eider can be observed "nearly annual in small numbers within appropriate habitat" in spring and fall and "annually in small numbers with some effort in appropriate habitat" (KBB 2023). In the KBB 2018 to 2023 Christmas Bird Counts summaries, Steller's eiders were also observed in Kachemak Bay south of Munson Point (to the west of the Spit) in the December 15, 2018, event (KBB 2025a). The Christmas Bird Count Surveys are land-based surveys. The KBB has also recorded two separate Steller's eider observation events along the Spit Trip: (1) Trip Report 2-15-2025, six Steller's eiders were observed off the east side of the Spit near the Deep Water Dock and (2) Trip Report 1-18-2025, two Steller's eider were observed, location unspecified (KBB 2025b). A participant of the ESWG that is part of the KBB shared that Steller's eiders were observed around at the Deep Water Dock. eBird, a Cornell Lab online database of bird observations, is a

source of anecdotal observations of bird species. The KBB submits data to eBird. In Kachemak Bay, there are various eBird “hotspots” that USACE has reviewed for Steller’s eider surveys. eBird hotspots are public birding locations created by eBird users. Figure I-27 and Table I-7 are the results of USACE review and depict the hotspots with Steller’s eider observations.

Figure I-27. Kachemak Bay eBird Hotspot Locations.

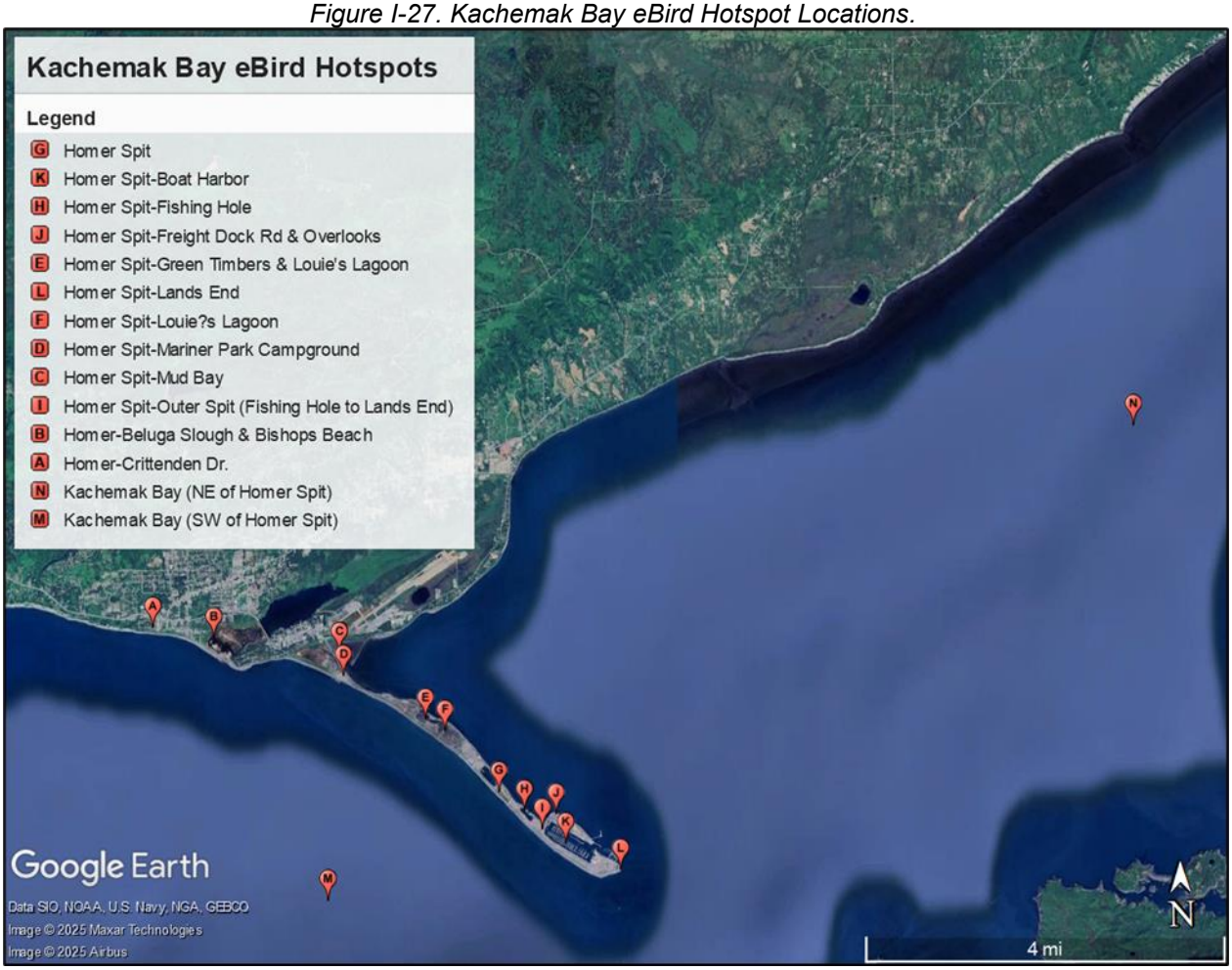


Table I-7. Anecdotal Steller's Eider Observations Derived from eBird Hotspot.

Observance Date	Hot Spot Name	Hot Spot Coordinates	Number Observed
March 15, 1991	Kachemak Bay (NE of Homer Spit)	59.6698, -151.2433	20
January 16, 2005	Kachemak Bay (SW of Homer Spit)	59.5962, -151.5015	4
February 12, 2017	Homer-Beluga Slough & Bishops Beach	59.6385, -151.5362	1
January 18, 2018	Homer Spit-Mud Bay	59.6358, -151.4965	7
February 26, 2023	Homer Spit-Fishing Hole	59.6100, -151.4387	12
March 10, 2023	Homer Spit-Green Timbers & Louie's Lagoon	59.6250, -151.4695	16
April 13, 2023	Homer Spit-Louie’s Lagoon	59.6230, -151.4635	20
March 3, 2024	Homer Spit-Mariner Park Campground	59.6321, -151.4953	7
March 10, 2024	Homer Spit-Boat Harbor	59.6047, -151.4258	13
January 3, 2025	Homer Spit-Outer Spit (Fishing Hole to Lands End)	59.6070, -151.4332	16
February 9, 2025	Homer Spit-Freight Dock Rd & Overlooks	59.6094, -151.4287	3
February 17, 2025	Homer Spit-Lands End	59.6003, -151.4086	1

Observance Date	Hot Spot Name	Hot Spot Coordinates	Number Observed
February 24, 2025	Homer-Crittenden Dr.	59.6404, -151.5555	13
March 1, 2025	Homer Spit	59.6131, -151.4467	30

Source: Hotspot Map from eBird 2021.
Note:
Listed observations were derived from a hotspot's Bird List filtered by "All Years." Hotspots reviewed were limited to those along the Spit, along the Homer City shoreline from "Homer—Crittenden Dr" to "Homer—Aleutian Tern Colony," and the hotspots in open water to the west and east of the Spit (i.e., Kachemak Bay [NE of Homer Spit] and [SW of Homer Spit] hotspots).

Critical Habitat

Critical habitat for the Alaska-breeding population of Steller's eiders was designated by Final Rule 66 FR 8850 in 2001 and encompassed approximately 1,811,984 acres. The critical habitat included historical breeding habitat on the Yukon-Kuskokwim Delta and four units of marine waters in southwest Alaska: Kuskokwim Shoals, Seal Islands, Nelson Lagoon, and Izembek Lagoon (Figure I-28). The critical habitat for Steller's eiders is outside of the Action Area.

Figure I-28. Steller's Eider Critical Habitat.
(USFWS 2023c)

I.5 Environmental Baseline

The “environmental baseline” refers to the condition of the listed species or its designated critical habitat in the Action Area, without the consequence caused by the project. It includes the past and present impacts of all Federal, State, or private actions and other anthropogenic activities in the Action Area, the anticipated impacts of all proposed Federal projects in the Action Area that have already undergone formal or early ESA Section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in the process. The consequences to listed species or designated critical habitat from existing and non-project discretionary activities and existing facilities are part of the environmental baseline (50 CFR 402.02). This section will focus on the existing anthropogenic and natural activities within the Action Area and their influence on listed species and critical habitat that may be adversely affected by the Proposed Project.

A number of anthropogenic activities have contributed to the current status of populations of ESA whales, Steller sea lions, and Steller’s eiders in the Cook Inlet. Recent BOs for projects in the Cook Inlet include:

- 2024 NMFS BO; Hilcorp Cook Inlet Tugs Towing and Jack-up Rig (AKRO-2023-03574)
- 2024 NMFS BO; USACE Furie Cook Inlet Towing and Drilling (AKRO-2023-03569)
- 2023 NMFS BO; Port of Alaska North Extension Stabilization Step 1 (AKRO-2022-03630)
- 2023 NMFS BO; Bureau of Ocean Energy Management Lease Sale 258 (AKRO-2022-02861)
- 2023 USFWS BO; Bureau of Ocean Energy Management Lease Sale 258 (2023-0029561)
- 2022 NMFS BO; Hilcorp Cook Inlet Tugs Towing a Jack-up Rig (AKRO-2021-03484)
- 2021 NMFS BO; Port of Alaska South Floating Dock (AKRO-2021-01051)
- 2020 NMFS BO; Port of Alaska Petroleum and Cement Terminal (AKRO-2018-01332
- 2020 NMFS BO; Alaska Liquefied Natural Gas Project (AKRO-2018-01319),

- 2019 NMFS BO; U.S. Environmental Protection Agency Proposed Approval of the State of Alaska's Mixing Zone Regulation Section of the State of Alaska's Water Quality Standards (AKRO-2018-00362)

- 2019 NMFS BO; Hilcorp Alaska and Harvest Alaska Oil and Gas Activities (AKRO-2018-00381)

- 2019 USFWS BO; Bureau of Ocean Energy Management Cook Inlet Oil and Gas Lease Sale 244 (07CAAN00-2016-F-0226-R001)

Table I-8 provides three recent BOs that will be used to inform the environmental baseline for this Draft BA. These BOs inform the environmental baseline through identification and description of each BO's Action Area stressors that impact the ESA species relevant to the project.

Table I-8. Recent Cook Inlet Biological Opinions Environmental Baseline Factors and Covered Species and Critical Habitat.

Year / Issuing Agency / Project / Consultation Number	General Action Area	Environmental Baseline Action Area Stressors	Species & Critical Habitat
2024 / NMFS / Hilcorp Cook Inlet Tugs Towing a Jack-up Rig / AKRO-2023-03574	Middle Cook Inlet and Trading Bay	• Coastal Development • Oil and Gas Development • Underwater Installations • Natural and Anthropogenic Sound • Sound and Habitat • Water Quality and Water Pollution • Fisheries • Tourism • Direct Mortality • Climate and Environmental Change	• Beluga Whale, Cook Inlet DPS and Critical Habitat • Fin Whale • Humpback Whale, Mexico and Western North Pacific DPSs • Steller Sea Lion, Western DPS and Critical Habitat
2023 / NMFS / Bureau of Ocean Energy Management Lease Sale 258 / AKRO-2022-02861[1]	Lower Cook Inlet	• Coastal Development • Road Construction • Port Facilities • Oil and Gas Development • Underwater Installations • Natural and Anthropogenic Sound • Water Quality and Water Pollution • Fisheries • Tourism • Direct Mortality • Climate Change • Natural Catastrophic Changes	• Beluga Whale, Cook Inlet DPS and Critical Habitat • Fin Whale • Humpback Whale, Mexico and Western North Pacific DPSs • Steller Sea Lion, Western DPS and Critical Habitat

Year / Issuing Agency / Project / Consultation Number	General Action Area	Environmental Baseline Action Area Stressors	Species & Critical Habitat
2023 / USFWS / Bureau of Ocean Energy Management Lease Sale 258 / 2023-0029561[2]	Lower Cook Inlet	• Predation • Disease • Hunting • Lead Poisoning • Collison with Man-made Structures • Habitat Loss and Change • Oil Spills and Other Contaminants • Climate Change	• Steller's Eider, Alaska-breeding Population • Northern Sea Otter, Southwest Alaska DPS and Critical Habitat

Sources:
[1] NMFS 2024a
[2] NMFS 2023
[3] USFWS 2023a

The ESA species with potential to occur within the Action Area are covered by at least one of the three BOs in Table I-8.

For the environmental baseline, this Draft BA will adopt the stressors identified in the 2023 NMFS "Bureau of Ocean Energy Management Lease Sale 258" BO. Within this framework, "road construction" and "port facilities" will be consolidated under the "coastal development" category, and "environmental change" will also be considered. The stressors from the 2023 USFWS BO will not be listed separately, as they are considered components of the broader NMFS environmental baseline stressors.

The 10 stressors that affect the survival and recovery of the relevant species are summarized as follows:

1. Coastal Development
2. Oil and Gas Development
3. Underwater Installations
4. Natural and Anthropogenic Sound
5. Water Quality and Water Pollution
6. Fisheries
7. Tourism
8. Direct Mortality
9. Environmental Change
10. Natural Catastrophic Changes

These 10 stressors, in conjunction with the species and critical habitat descriptions from Section I.4, will form the environmental baseline for this Draft BA.

I.5.1 Coastal Development

Southcentral Alaska is the state's most populated and industrialized region, with numerous cities, ports, and industrial facilities situated adjacent to Cook Inlet. This development has resulted in the loss and alteration of nearshore habitat and has degraded habitat quality through increased vessel traffic, noise, and pollution (NMFS 2023). Nearshore species like Cook Inlet beluga whales (CIBW) and the Western U.S. DPS of Steller sea lions are particularly prone to regular anthropogenic interaction. Key infrastructure includes major port facilities at Anchorage, Homer, and Seldovia; barge landings; and numerous boat launches. While port activities outside the Action Area (e.g., at the Port of Alaska) contribute significantly to regional traffic, activities within the Action Area at Homer and Seldovia are most likely to affect Steller sea lions.
Steller's eiders face a unique threat from collision with anthropogenic structures like communication towers and ship rigging, as they tend to fly low and fast (USFWS 2023a).

I.5.2 Oil and Gas Development

Cook Inlet contains significant oil and gas resources, with an estimated 500 million barrels of undiscovered oil and 19 trillion cubic feet of natural gas (Wiggin 2017; Schenk 2015). As of December 2023, there were 17 offshore platforms and over 394,000 acres of active leases in the region, as depicted in Figure 5-1 (NMFS 2024a). Ongoing exploration and production are expected to continue, contributing to the environmental baseline through increased noise from seismic surveys and drilling, wastewater discharges, habitat loss from facility construction, and the persistent risk of oil spills or gas blowouts (NMFS 2023).

I.5.3 Underwater Installations

Approximately 227 miles of undersea pipelines (78 miles for oil, 149 for gas) are installed in Cook Inlet, supplying natural gas to Southcentral Alaska (ADNR 2015). In addition to pipelines, other underwater installations include telecommunication cables and a tidal energy project. The construction and operation of these installations contribute to the environmental baseline through seafloor disturbance, temporary turbidity, increased vessel traffic, and underwater noise, all of which pose risks to marine mammals and their prey (NMFS 2023).

I.5.4 Natural and Anthropogenic Sound

The underwater acoustic environment in the Action Area is influenced by natural sources like tidal fluctuations and biological sounds, as well as significant anthropogenic noise from seismic surveys, oil and gas operations, construction, and vessel and aircraft traffic. Seismic surveys have historically used large air gun arrays with source levels

exceeding 240 dB, creating behavioral disturbance isopleths (160 dB) that can extend for miles (Rigzone 2012). Noise from vessel traffic is a major contributor, with traffic generally concentrated along the eastern portion of Cook Inlet (Figure 5-2). Kachemak Bay, in particular, experiences one of the highest levels of vessel traffic in the region (BOEM 2017; NMFS 2023).

I.5.5 Water Quality and Pollution

As the most industrialized region in Alaska, Cook Inlet receives pollutant loads from urban runoff, oil and gas activities, municipal wastewater effluent, and spills. Major sources include petrochemicals, stormwater runoff from facilities like the Port of Alaska (POA) and Joint Base Elmendorf-Richardson (JBER), and aircraft de-icing chemicals (NMFS 2023). While the Alaska Department of Environmental Conservation (ADEC) rated Southcentral Alaska's coastal waters as "good" and contaminant loads in CIBW are generally low compared to other populations, the nearshore habitats where they reside are where pollutant discharges are most concentrated (ADEC 2013; NMFS 2023). Between 2013 and 2023, over 126,000 gallons of oil were spilled in Cook Inlet, primarily from vessels and production facilities.

I.5.6 Fisheries

Fisheries in Cook Inlet affect the environmental baseline through entanglement risks, bycatch, and prey competition. The region supports major commercial and recreational fisheries for salmon, cod, and halibut. Reduced salmon returns in recent years have diminished prey availability for CIBW, potentially impacting their recovery (NMFS 2023). Entanglement in fishing gear is a documented source of injury and mortality for marine mammals in Alaska. From 2016-2020, entanglement accounted for 72% of human-caused mortality or serious injury to humpback whales (Freed et al. 2022). Steller sea lions are also frequently impacted, particularly by longline fisheries in the Gulf of Alaska (Young et al. 2024).

I.5.7 Tourism

Tourism is a growing industry in Lower Cook Inlet, with commercial vessel and flight-seeing tours operating primarily out of Homer. This activity adds to the overall vessel and aircraft traffic in the region, creating potential disturbances for marine mammals. Low-flying aircraft and close-quarter vessel approaches can disrupt normal behaviors, particularly for whales and for pinnipeds at haulouts (NMFS 2023).

I.5.8 Direct Mortality

Sources of direct anthropogenic mortality for protected species in the Action Area include vessel strikes, subsistence harvesting, poaching, and research activities. From 1978-2011, there were 108 recorded whale-vessel collisions in Alaska, most involving humpback whales (Neilson et al. 2012). Subsistence harvesting of CIBW has been suspended since 1999 due to the population's decline, though Steller sea lions are still

harvested under co-management agreements. Poaching, though illegal, is a known source of mortality for Steller sea lions (NMFS 2023; NMFS 2024a). Live stranding events, sometimes caused by attempts to evade predators or by navigating extreme tidal fluctuations, are a significant cause of mortality for CIBW, accounting for approximately 33% of deaths with a known cause (Young et al. 2024).

I.5.9 Environmental Change

Large-scale environmental changes affect the baseline conditions in Cook Inlet. Rising air and stream temperatures threaten salmon populations, a key prey species for CIBW, through increased thermal stress and pathogen virulence (von Biela et al. 2020; Mauger et al. 2017). Changes in glacial melt are also expected to alter freshwater hydrology and the physical and chemical characteristics of estuarine waters (NMFS 2023). These changes can affect the abundance and distribution of prey, potentially impacting the conservation value of designated critical habitat for CIBW and other species.

I.5.10 Natural Catastrophic Changes

The Cook Inlet region is tectonically active, and natural catastrophes such as earthquakes, volcanic eruptions, landslides, and tsunamis have the potential to immediately and significantly alter the physical environment. While infrequent, such events could substantially affect critical habitat by causing direct mortality to prey species, rendering habitat unsuitable, or degrading overall habitat quality (NMFS 2023).

I.6 Effects Analysis

The effects analysis evaluates the potential impacts of the proposed project on ESA-listed species and designated critical habitats. The analysis is structured into two main categories based on project activities: marine vessel traffic (Section I.6.1) and construction activities (Section I.6.2). For each category, the ten environmental stressors identified in Section I.5 are evaluated for applicability, and only the applicable stressors are carried forward for analysis.

I.6.1 Potential Effects of Marine Vessel Traffic

This section evaluates the potential effects on species and critical habitats resulting from the movement of marine vessels within the Action Area, as described in Section I.1.3.1. The applicability of the environmental baseline stressors to this specific activity is outlined in Table I-9.

Table I-9. Applicability of Environmental Stressors to Project Marine Vessel Traffic.

Stressor	Applicable	Rationale for Non-Applicability
Coastal Development	No	Vessel traffic does not involve the construction or permanent alteration of coastal infrastructure.
Oil and Gas Development	No	Project vessels and new small vessels introduced by the project are not supporting oil and gas activities.
Underwater Installations	No	Vessel traffic does not involve placing or building structures on the seafloor.
Natural and Anthropogenic Sound	**Yes**	**Vessels are a known source of underwater anthropogenic sound.**
Water Quality and Water Pollution	**Yes**	**Vessels carry a risk of accidental spills or discharges.**
Fisheries	**Yes**	**Increased mooring capacity accommodating for the wait-listed vessels are anticipated to increase recreational fishing.**
Tourism	No	Project vessels and new small vessels are not anticipated to be involved in tourism activities.
Direct Mortality	**Yes**	**Vessel movement creates a risk of collision with marine mammals.**
Environmental Change	No	The project's potential to contribute to large-scale environmental change is negligible.
Natural Catastrophic Changes	No	The project does not influence natural catastrophic events.

Impacts will be broken down by applicable stressors, and each stressor will be analyzed for its short-term (construction), long-term (post-construction operations), and cumulative impacts.

I.6.1.1 Natural and Anthropogenic Sound (Auditory and Visual Disturbance)

The project would contribute to underwater noise through the temporary use of slow, low-frequency commercial vessels and the permanent addition of smaller, faster, high-frequency personal-use vessels. While this introduces different acoustic signatures, the effects are localized in an already noisy environment and are expected to result in minor behavioral avoidance rather than significant disruption. Therefore, the project's contribution to auditory and visual disturbance is considered marginal and discountable.

Short-Term Effects

During construction, vessel traffic would consist primarily of large, slow-moving tugs and barges. These vessels produce continuous, low-frequency sound (Richardson *et al.* 1995), with most energy below 1 kilohertz (Blackwell and Greene 2003). Using data from Richardson et al. 1995, the distance to the 120 dB re 1 µPa RMS Level B Harassment threshold is estimated to be 1,166 meters for an empty barge and 2,155 meters for a full barge. Given the temporary and transient nature of these movements, it is anticipated that mobile marine animals would detect and avoid them before sound levels become disruptive.

Long-Term Effects

Post-construction, the permanent addition of smaller, personal-use vessels would introduce higher-frequency, more variable noise, which can cause startle responses. Animals in this busy area may be habituated to some level of vessel presence, and reactions are typically minor (Richardson *et al.* 1995). For hauled-out pinnipeds, close vessel approach can cause them to move (Calkins *et al.* 1982; Kucey 2005), though this risk is reduced at slower speeds.

Cumulative Effects

The marginal increase in sound from the new vessels would combine with the existing soundscape from the Homer Harbor. Given that the project concentrates activity in an already disturbed area, the cumulative impact on the overall acoustic environment of Kachemak Bay is not expected to be significant.

I.6.1.2 Water Quality and Water Pollution (Invasive Species and Contaminants)

The primary risks to water quality are the introduction of invasive species and contamination from spills. The risk of invasive species is highest during construction but minimal long-term. Contamination risk is offset by long-term safety benefits provided by the project, such as reduced harbor congestion and dedicated spill response capacity. For these reasons, the overall adverse effects to water quality from the project are considered discountable.

Short-Term Effects

The primary risks are the introduction of invasive species from the ballast water and hull fouling of non-local logistical vessels and the potential for accidental spills. During this phase, all materials would be managed and secured in accordance with regulations, minimizing spill risk.

Long-Term Effects

Long-term risks include the introduction of invasive species (e.g., European green crab) from personal-use boats trailered from other regions and chronic, low-level pollution from small fuel spills and exhaust. However, the project also provides significant long-term risk-reduction benefits by reducing harbor congestion, providing secure moorage, and creating dedicated capacity for marine spill response vessels.

Cumulative Effects

The potential for chronic pollution and invasive species introduction from the new vessels would add to the existing baseline risk. However, the project's offsetting benefits are expected to mitigate this increase. When considered with other activities in the

Action Area, the project is not expected to substantially alter the cumulative risk profile for water quality.

I.6.1.3 Fisheries (Increased Recreational Pressure)

The project would not affect fisheries during construction. Post-construction, it would facilitate a marginal increase in recreational fishing pressure. This may cause minor prey competition for ESA species but is not expected to have a measurable effect, as the increase is a small fraction of the existing, managed fishery. The impact is considered discountable.

Short-Term Effects

There are no effects on fisheries from marine vessel traffic during the construction phase.

Long-Term Effects

The addition of moorage for small vessels is presumed to lead to a permanent, marginal increase in recreational fishing pressure. This could indirectly affect ESA-listed species through minor prey competition and localized disturbance in foraging areas.

Cumulative Effects

The minor increase in recreational fishing from this project would add to the substantial existing pressure in Kachemak Bay. However, because all fishing activities are managed by the Alaska Department of Fish and Game (ADF&G) through regulations that control overall harvest, the project's marginal contribution is not expected to significantly alter the cumulative availability of prey for ESA species.

I.6.1.4 Direct Mortality (Vessel Strike and Entanglement)

The risk of direct mortality stems from vessel strikes and entanglement. The short-term risk during construction is low due to slow vessels. The long-term risk increases with the addition of faster personal-use boats, but the overall contribution to the baseline risk in a busy harbor is marginal. With mitigation measures in place, the effect is considered discountable.

Short-Term Effects

During construction, the use of large, slow-moving vessels (tugs and barges) presents a low risk of vessel strikes. The temporary, localized increase in traffic is not expected to lead to a measurable increase in mortality risk.

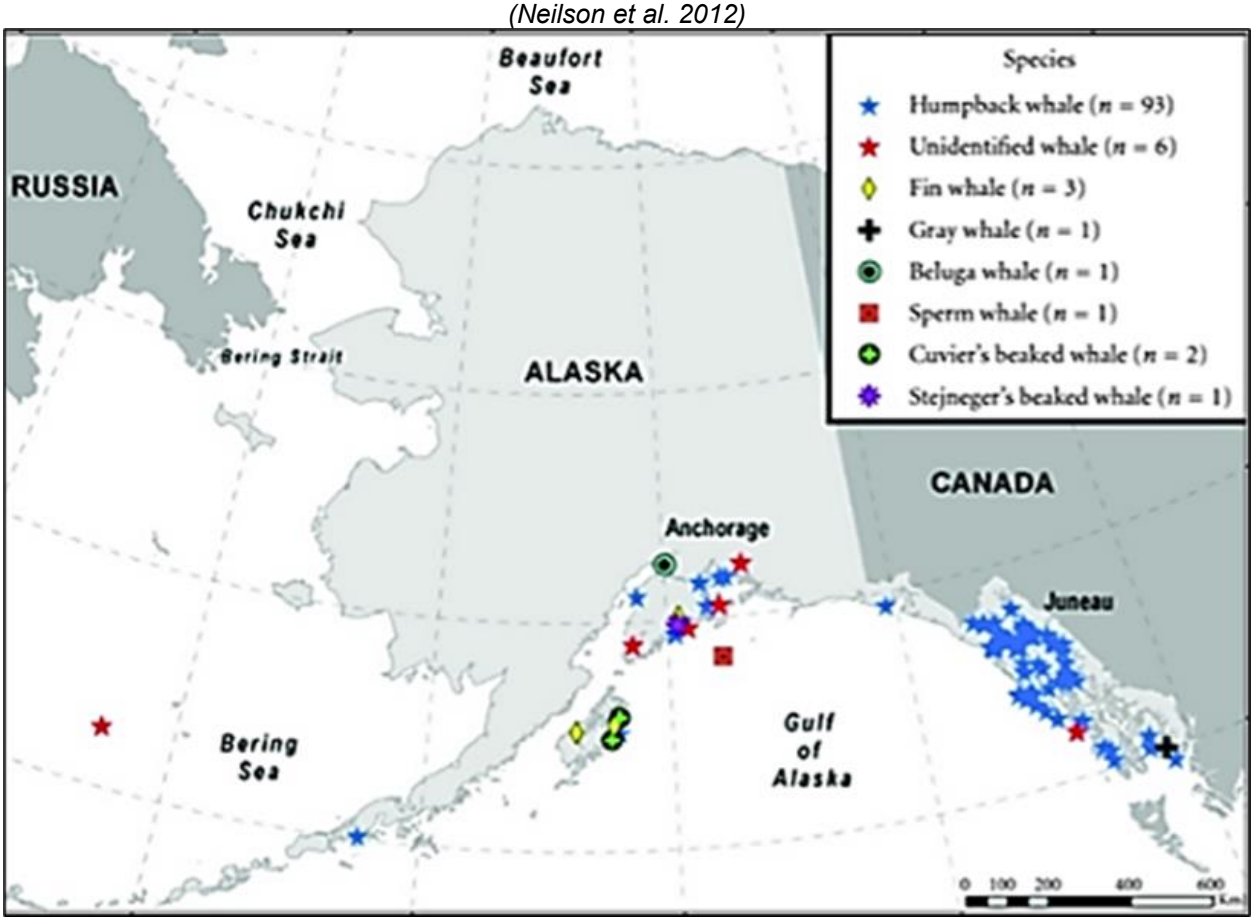
Long-Term Effects

The permanent influx of smaller, personal-use recreational vessels introduces a different risk profile. These vessels often operate at higher, more variable speeds, potentially increasing the risk of a lethal strike (Vanderlaan and Taggart 2007). The increased activity also raises the potential for marine debris and lost fishing gear, which can lead to entanglement.

Cumulative Effects

The project's marginal increase in strike and entanglement risk would combine with the existing risk from all other vessel traffic in the Action Area. As shown in Figure I-29, vessel collisions already occur within Alaska. Although the project adds to the total number of vessels, its contribution to the overall cumulative risk is very small, especially when considering the proposed mitigation measures (Section I.2).

Figure I-29. Reported Whale-Vessel Collisions in Alaska, 1978 to 2011. (Neilson et al. 2012)



I.6.2 Potential Effects of Marine Construction Activities

This section evaluates the potential effects on species and critical habitats resulting from the marine construction activities described in Section I.1.3.2. The applicability of the environmental baseline stressors to this specific activity is outlined in Table I-10.

Table I-10. Applicability of Environmental Stressors to Marine Construction Activities.

Stressor	Applicable	Rationale for Non-Applicability
Coastal Development	**Yes**	**Construction of a harbor facility is a form of coastal development.**
Oil and Gas Development	No	Construction activities are not in support of oil and gas development.
Underwater Installations	**Yes**	**The project involves placing permanent structures on the seafloor.**
Natural and Anthropogenic Sound	**Yes**	**Construction activities, especially pile driving, are a major source of intense sound.**
Water Quality and Water Pollution	**Yes**	**Construction can increase turbidity, release contaminants, and carries a risk of spills.**
Fisheries	No	Construction activities are not related to the fishing industry.
Tourism	No	Construction activities are not related to tourism.
Direct Mortality	**Yes**	**Benthic organisms can be crushed, and motile species can be harmed by equipment.**
Environmental Change	No	The project's contribution to large-scale environmental change is negligible.
Natural Catastrophic Changes	No	The project does not influence natural catastrophic events.

Impacts would be broken down by applicable stressors, and each stressor would be analyzed for its short-term (construction), long-term (post-construction operations), and cumulative impacts.

I.6.2.1 Coastal Development and Underwater Installations (Habitat Loss and Alteration)

Construction would result in the direct, permanent loss of benthic and intertidal habitat under the footprint of the new structures. This would permanently displace sessile organisms and eliminate a small area of foraging habitat for mobile species. While these effects are permanent and adverse, their localized nature within a large, dynamic area means they are not likely to adversely affect the survival and recovery of ESA-listed species.

Short-Term Effects

During construction, temporary impacts to habitat would occur in areas adjacent to the direct footprint due to anchoring, the spudding of barges, and the movement of equipment. This can cause temporary disturbance and compaction of the benthos, which is expected to recover following the completion of activities.

Long-Term Effects

The most significant long-term effect is the permanent conversion of soft-bottom habitat to hard-surfaced, developed habitat within the project's physical footprint. This eliminates all benthic life in that specific area and precludes its use as foraging ground. The new structures create a different habitat type that may be colonized by different

species and may also cause minor, localized changes to current and sedimentation patterns.

Cumulative Effects

The permanent habitat loss from this project would add to the existing footprint of coastal development in and around the Homer Harbor. This represents an incremental loss of natural habitat in Kachemak Bay. However, the project footprint is small relative to the total available habitat in the bay, and it is concentrated in an area already heavily modified by human activity.

I.6.2.2 Natural and Anthropogenic Sound (Auditory and Visual Disturbance)

Construction, particularly pile driving, would generate intense, impulsive underwater noise with the potential for behavioral harassment and, at close ranges, physical injury to marine species. These effects are acute but temporary and limited to the construction period. With the implementation of mitigation measures, the project may affect, but is not likely to adversely affect, ESA-listed species due to noise.

Short-Term Effects

This is the period of greatest acoustic impact. Impulsive sounds from impact pile driving and non-impulsive sounds from vibratory pile driving would dominate the soundscape. These sounds can cause marine mammals and birds to be displaced from the area; disrupt important behaviors like foraging, migrating, and communicating (masking); and potentially cause temporary hearing loss (Temporary Threshold Shift [TTS]) or permanent injury (Permanent Threshold Shift [PTS]) if an animal is very close to the source (Richardson *et al*. 1995; Hansen *et al*. 2020).

The sound source levels (SLs) and calculated underwater acoustic shutdown zones for ESA marine mammal species were based on NMFS acoustic thresholds for marine mammals (NMFS 2024b; Table I-11) and developed for dredging (Table I-12 and Figure I-30) and for pile driving (Table I-13, Figure I-31, and Figure I-32).

Table I-11. Underwater Level B Harassment Acoustic Thresholds for Marine Mammals.

Sound Source Type[1]	Underwater Level B Harassment Acoustic Threshold[1]	Associated Construction Activity
Continuous	120 dB re 1 μPa_{rms}	• Dredging via hydraulic dredge • Vibratory pile driving
Non-explosive impulsive	160 dB re 1 μPa_{rms}	• Impact pile driving
Intermittent	160 dB re 1 μPa_{rms}	• Mechanical dredging via clamshell or long-armed excavator

Source: NMFS 2024b

Table I-12. Dredging Isopleths for Behavioral Disturbance of Marine Mammals.

Sound Source Type	Sound Level in Root Mean Square (dB)	Transmission Loss Coefficient	Behavioral Disturbance Threshold[1] (dB Root Mean Square)	Noise Exposure Radius (Meters)[4]
Mechanical (Intermittent / Impulsive)	147[2]	15	160	Not Applicable[5]
	146[2]			Not Applicable[5]
Hydraulic (Vibratory)	154.9[3]	15	120	212.2
	152.9[3]			156.1

Source(s):
[1] NOAA 2024
[2] Dickerson *et al.* 2001
[3] Ferguson 2022
Note(s):
[4] Noise exposure radius is the distance at which noise would attenuate to or below the applicable threshold.
[5] There is no potential for behavioral disturbance as source level is below behavioral disturbance threshold.

Figure I-30. Maintenance Dredging Underwater Acoustic Isopleths for Behavioral Disturbance of Marine Mammals.

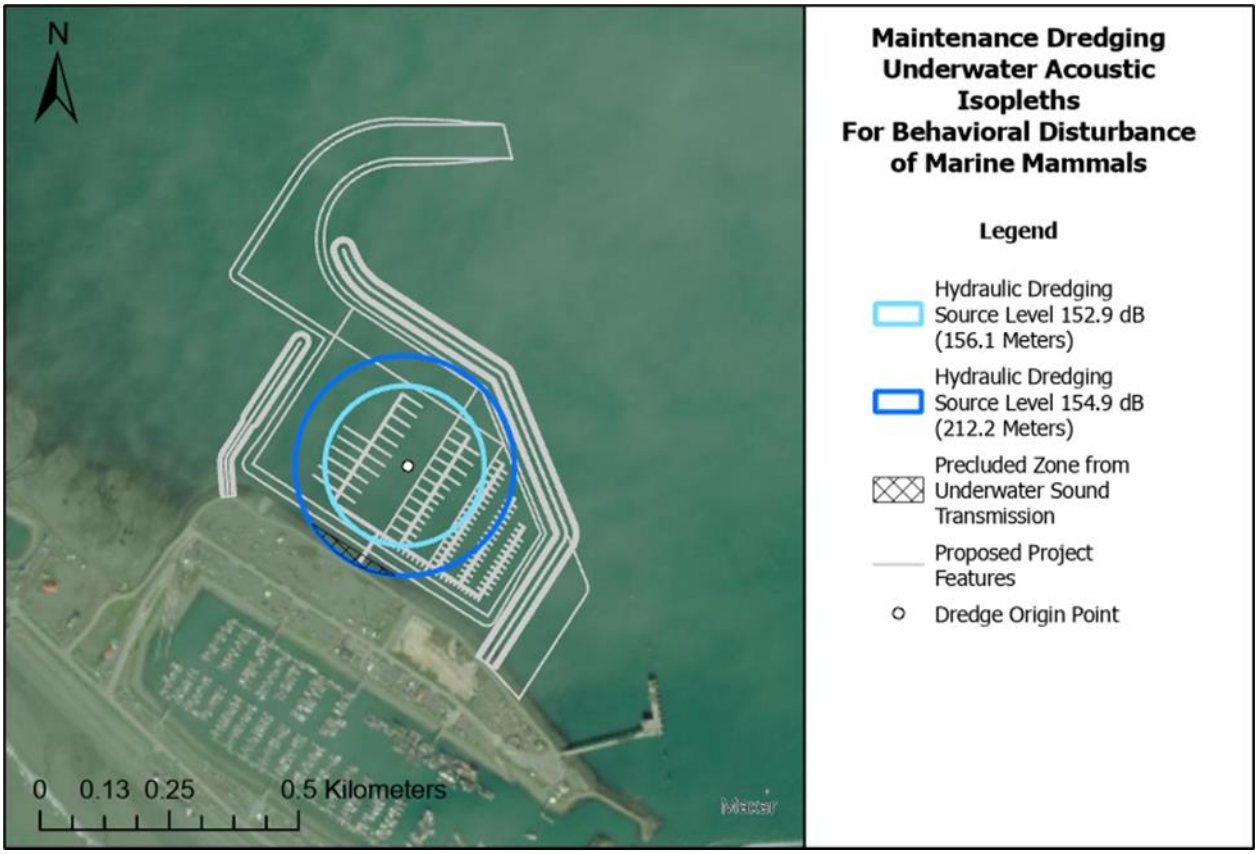


Table I-13. Pile Driving Isopleths for Behavioral Disturbance of Marine Mammals.

Sound Source Type	Pile Material	Pile Size Diameter (Inches)[1]	Peak Sound Level (dB)	Sound Level in Root Mean Square (dB)	Sound Exposure Level (dB)	Behavioral Disturbance Threshold[1] (dB RMS)	Noise Exposure Radius (Meters)[4]
Without Attenuation							
Impact (Impulsive)	Steel Pipe	14 – 18	200[2]	185[2]	175[2]	160	464.5
		24	205[3]	190[3]	175[3]		1.000.0
Vibratory (Continuous)		18	-	155[2]	-	120	2,154.4
		20 – 24	-	163[2]	-		7,356.4
With Attenuation[5]							
Impact (Impulsive)	Steel Pipe	14 – 18	200[2]	185[2]	175[2]	160	215.4
		24	205[3]	190[3]	175[3]		464.2
Vibratory (Continuous)		18	-	155[2]	-	120	1,000.0
		20 – 24	-	163[2]	-		3,415.5

Source(s):
[1] NOAA 2024
[2] CalTrans 2023
[3] Values adopted from the NMFS Multi-Species Pile Driving Calculator "Impact Proxy Sound Levels" Tab.
Note(s):
[4] Noise exposure radius is the distance at which noise would attenuate to or below the applicable threshold.
[5] Adopts the NMFS recommended default value of 5 dB.

Figure I-31. Unattenuated Pile Driving Underwater Acoustic Isopleths for Behavioral Disturbance of Marine Mammals.

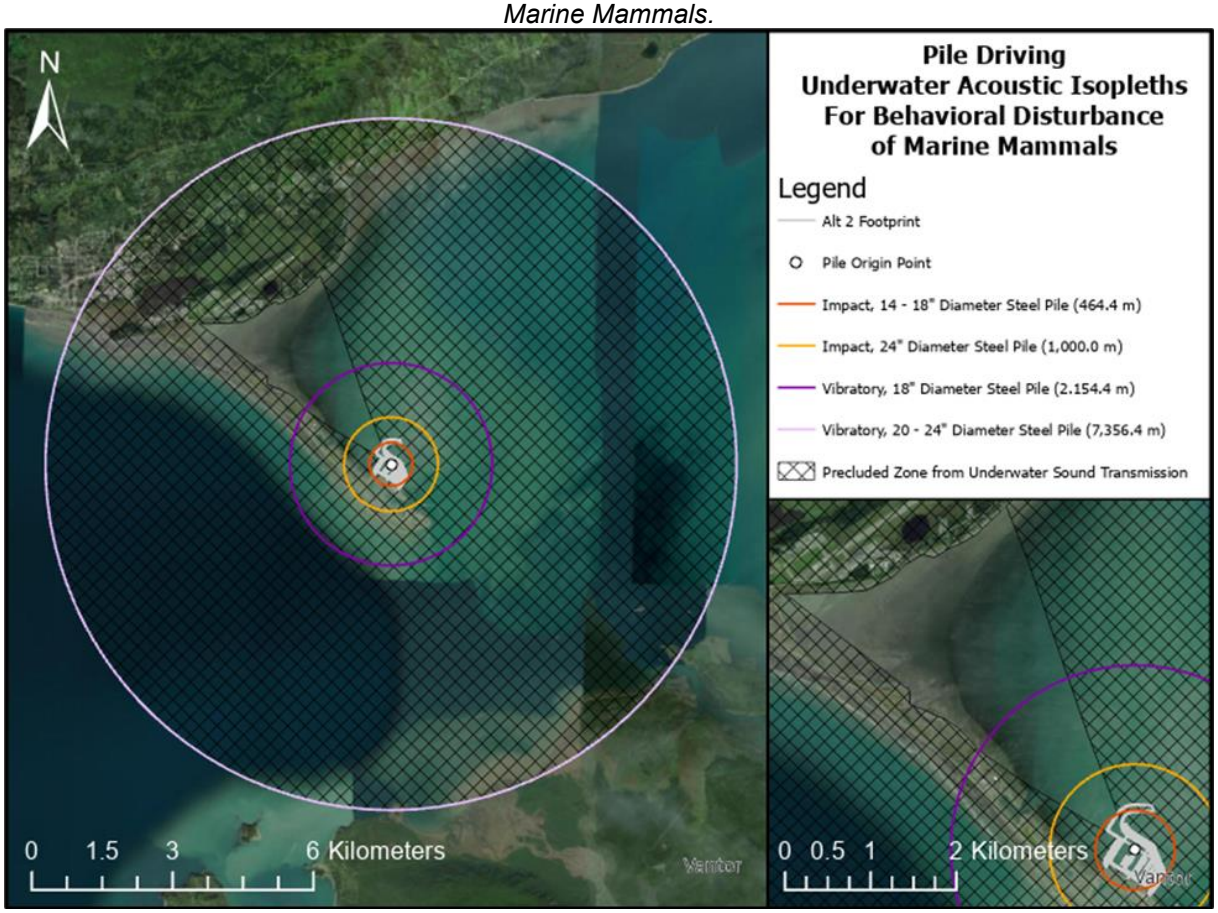
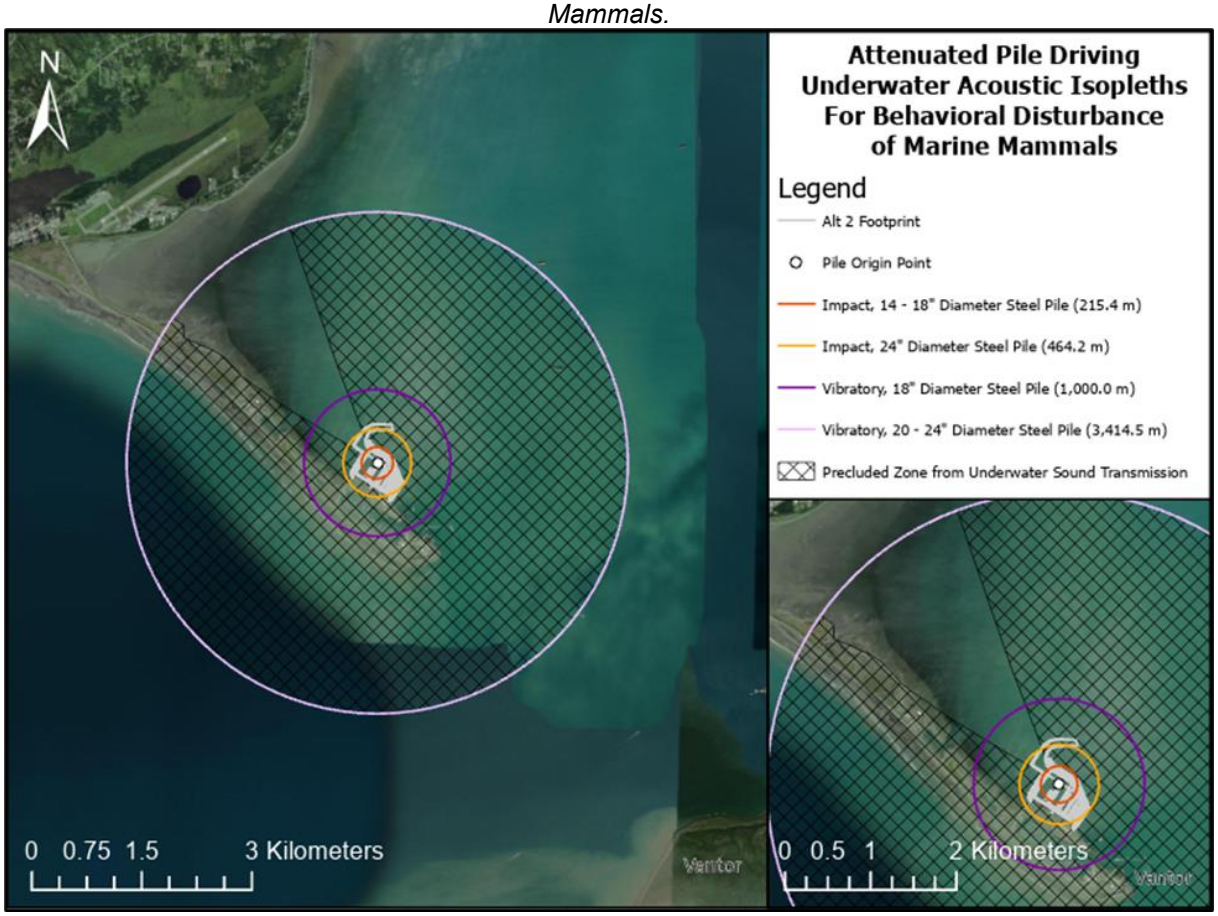


Figure I-32. Attenuated Pile Driving Underwater Acoustic Isopleths for Behavioral Disturbance of Marine Mammals.



The SLs and calculated underwater acoustic shutdown zones for ESA Steller's eiders were based on USFWS underwater acoustic thresholds for diving birds (specifically, marbled murrelets [*Brachyramphus marmoratus*]; USFWS 2011). Noise from the intermittent, repetitive sounds of mechanical dredging is expected to be below the 150 dB USFWS informal threshold for behavioral disturbance, resulting in negligible noise impacts. For maintenance dredging, a hydraulic cutterhead suction dredge would generate a continuous sound source where data indicated a 1.56 to 2.13 meters in-water shutdown zone from the dredge (Ferguson 2022). Due to this extremely small radius, the impacts from underwater noise are considered negligible. An in-air acoustic shutdown zone was also established specifically for Steller's eiders, as other ESA-listed species in the area are marine mammals not expected to haul out where they would be exposed to significant in-air noise. To determine the shutdown distance, the project adopted the 660-foot (201-meter) buffer established for bald eagle nests under the Bald and Golden Eagle Protection Act (50 CFR 22.270). This zone would be active for project construction activities occurring from October through May, which corresponds to the period when Steller's eiders may be present in Kachemak Bay.

Table I-14. Pile Driving Isopleths for Behavioral Disturbance of Diving Birds.

Sound Source Type	Pile Material	Pile Size Diameter (Inches)[1]	Peak Sound Level (dB)	Sound Level in Root Mean Square (dB)	Sound Exposure Level (dB)	Behavioral Disturbance Threshold[1] (dB RMS)	Noise Exposure Radius[2,4] (Meters)
Without Attenuation							
Impact (Impulsive)	Steel Pipe	14 – 18	200[3]	185[3]	175[3]	150	2,154.4
		24	205[4]	190[4]	175[4]		4,641.6
Vibratory (Continuous)		18	-	155[3]	-		21.5
		20 – 24	-	163[3]	-		73.6
With Attenuation[5]							
Impact (Impulsive)	Steel Pipe	14 – 18	200[3]	185[3]	175[3]	150	1,000
		24	205[4]	190[4]	175[4]		2,154.4
Vibratory (Continuous)		18	-	155[3]	-		10.0
		20 – 24	-	163[3]	-		34.1

Source(s):
[1] USFWS 2011
[2] NOAA 2024
[3] CalTrans 2023
[4] Values adopted from the NMFS Multi-Species Pile Driving Calculator "Impact Proxy Sound Levels" Tab.
Note(s):
[4] Noise exposure radius is the distance at which noise would attenuate to or below the applicable threshold.
[5] Adopts the NMFS recommended default value of 5 dB.

Figure I-33. Unattenuated Pile Driving Underwater Acoustic Isopleths for Behavioral Disturbance of Diving Birds.

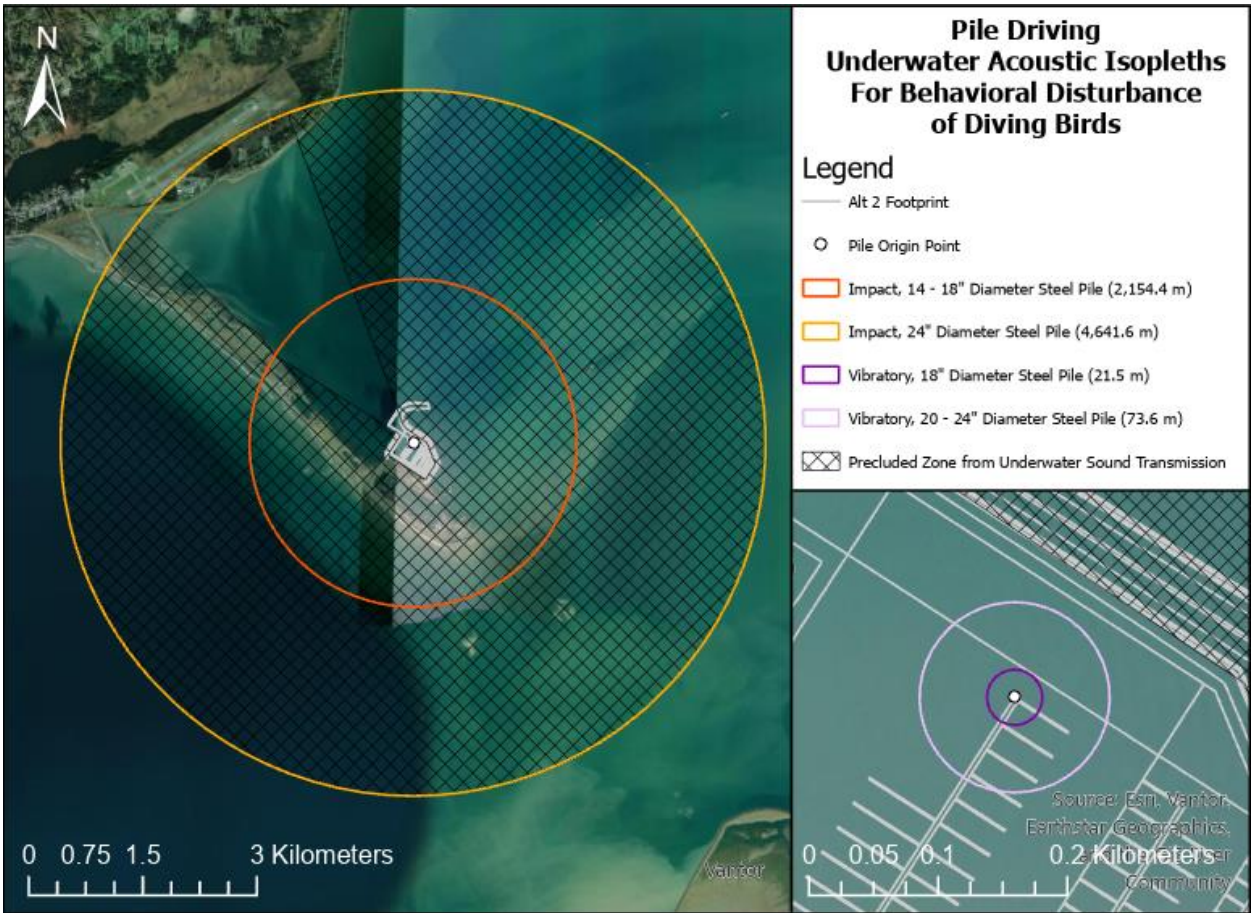
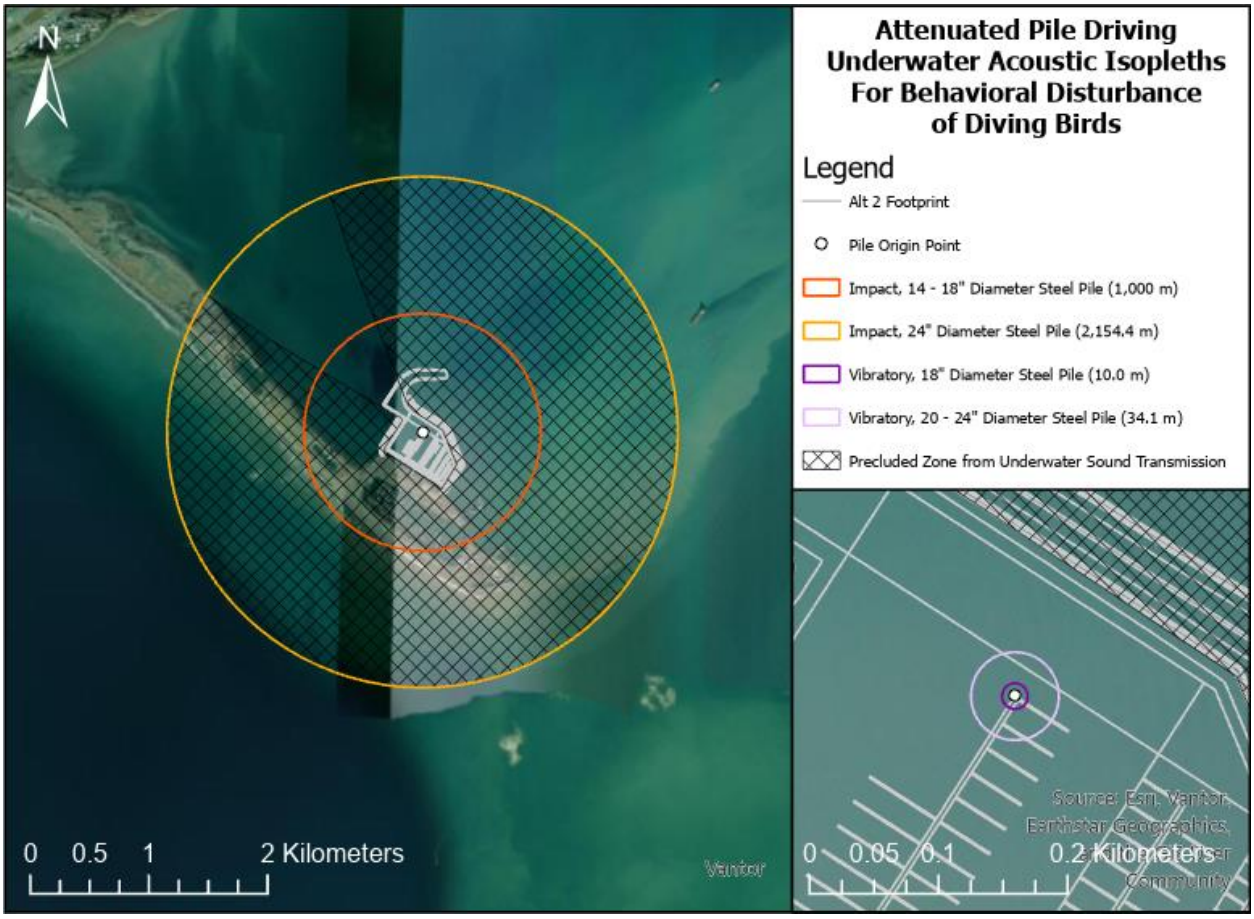


Figure I-34. Attenuated Pile Driving Underwater Acoustic Isopleths for Behavioral Disturbance of Diving Birds.



The "preclusion zone" on the figures shows where underwater sound is blocked by terrain or project features.

To illustrate the maximum underwater acoustic extent, the dredging figure is based the dredged prism rather than origin of the dredge. Underwater noise extending beyond the breakwater would primarily occur when the dredge is dredging the entrance channel.

To illustrate the maximum underwater acoustic extent, the pile driving figures are based on a worst-case scenario, using the pile location closest to the new harbor's entrance. This provides a spatial reference for the largest potential sound isopleth extending into the surrounding waters.

Long-Term Effects

There are no long-term effects on the acoustic environment from construction activities, as all noise generation ceases once construction is complete.

Cumulative Effects

The intense but temporary noise from construction would add to the baseline underwater soundscape. If other projects with significant noise-generating activities were to occur simultaneously, the cumulative noise level could lead to a larger zone of avoidance and greater disruption for marine life. However, construction noise is transient, and its cumulative impact depends on the timing and location of other regional projects.

I.6.2.3 Water Quality and Water Pollution (Turbidity and Contaminants)

Construction activities would temporarily degrade local water quality by increasing turbidity and introducing the risk of contaminant release or spills. These effects are short-lived and localized. With the implementation of BMPs, the effects on water quality are not likely to adversely affect ESA-listed species or their critical habitat.

Short-Term Effects

During construction, water quality can be affected by three primary pathways. First, activities like pile driving would resuspend bottom sediments, creating a temporary turbidity plume that can reduce light penetration, affect filter-feeding organisms, and potentially reduce foraging efficiency for visual predators in the immediate vicinity. Second, construction could disturb and remobilize historical contaminants buried in the sediment, making them bioavailable for a short period. Finally, the use of heavy machinery on-site and on barges introduces a risk of accidental fuel, hydraulic fluid, or other chemical spills, which can be toxic to marine life (Geraci and Aubin 1990; Helm *et al.* 2015).

Long-Term Effects

While the effects of the initial construction process are temporary, the project introduces a recurring, long-term impact on water quality through the need for annual maintenance dredging. Each year, dredging activities would cause temporary and localized degradations in water quality similar to those seen during initial construction. This includes the resuspension of sediments, creating temporary turbidity plumes, and the potential to remobilize any contaminants that may have accumulated in the harbor over the preceding year. Additionally, the operation of dredging equipment introduces a recurring, low-level risk of accidental spills. These periodic, short-duration impacts would define the long-term effect on water quality.

Cumulative Effects

The temporary turbidity and spill risk from both initial construction and future annual maintenance dredging could combine with other sources of pollution in the Action Area (e.g., stormwater runoff, vessel discharges). However, these impacts are transient and

localized, and their contribution to the overall cumulative water quality status of Kachemak Bay is expected to be negligible.

I.6.2.4 Direct Mortality (Crushing and Entrapment)

Construction activities would cause the direct mortality of non-motile benthic organisms within the project's permanent footprint. There is also a minimal risk of motile species being harmed by equipment. While mortality of some organisms is unavoidable, the effect on ESA-listed species populations is discountable.

Short-Term Effects

The direct mortality of benthic organisms within the project footprint is a permanent effect, as this habitat is permanently converted. There are no ongoing long-term effects leading to direct mortality from construction once it is complete.

Long-Term Effects

The most significant long-term effect is the permanent conversion of soft-bottom habitat to hard-surfaced, developed habitat within the project's physical footprint. This eliminates all benthic life in that specific area and precludes its use as foraging ground. The new structures create a different habitat type that may be colonized by different species and may also cause minor, localized changes to current and sedimentation patterns.

Cumulative Effects

The project's contribution to direct mortality adds to the mortality caused by all other forms of development and human activity in the region. However, the loss of benthic invertebrates from the project's small footprint does not represent a significant loss at the population or ecosystem level and is not expected to impact the availability of prey for ESA-listed species.

I.7 Determination of Effects

This evaluation assumes that the mitigation measures (Section I.2), including the monitoring of shutdown zones (Section I.6.2.2) by PSOs, are fully implemented and effective. The successful implementation of these measures is intended to ensure that adverse effects from project stressors are avoided or reduced to a level that is either extremely unlikely to occur (discountable) or so minor it cannot be meaningfully evaluated or detected (insignificant). With these measures in place, the potential for harassment that would constitute a "take" under the ESA (and MMPA) is considered discountable.

The resulting effect determinations are summarized in Table I-15.

Table I-15. Summary of ESA Section 7 Determinations.

Species Common Name	Species Scientific Name	Listed Population	ESA Status	Species Effect Determination	
				Species	Critical Habitat
Species under the Jurisdiction of the National Marine Fisheries Service					
Fin whale	*Balaenoptera physalus*	Northeast Pacific	Endangered	**May affect, not likely to adversely affect**	Not applicable
Steller sea lion	*Eumetopias jubatus*	Western U.S. DPS	Endangered	**May affect, not likely to adversely affect**	**No effect**
Beluga whale	*Delphinapterus leucas*	Cook Inlet	Endangered	**May affect, not likely to adversely affect**	**No adverse modification**
Humpback whale	*Megaptera novaeangliae*	Western North Pacific	Endangered	**May affect, not likely to adversely affect**	Not applicable
		Mexico	Threatened	**May affect, not likely to adversely affect**	Not applicable
Species under the Jurisdiction of the United States Fish and Wildlife Service					
Steller's eider	*Polysticta stelleri*	Alaska Breeding	Threatened	**May affect, not likely to adversely affect**	**No effect**

With the implementation of the proposed mitigation measures, any potential for adverse impacts to ESA-listed species is anticipated to be discountable or insignificant. Because the project effects are not likely to be adverse, formal consultation is not required, and an ITA under the MMPA will not be pursued. USACE will request informal consultation with the NMFS and USFWS to seek their concurrence with these determinations.

The "no effect" determinations are appropriate wherein the species or its critical habitat does not have a presence within the Action Area and therefore no potential for effect from project stressors is anticipated.

The project would not adversely modify designated Cook Inlet Beluga Whale (CIBW) Critical Habitat Area 2 because it does not cause significant adverse impacts to the habitat's essential biological or physical features. The analysis confirms the project: (1) is not located within five miles of high-flow anadromous fish streams, (2) is unlikely to reduce prey concentrations or increase harmful materials, (3) would not restrict CIBW passage, and (4) is located within an area already characterized by high levels of anthropogenic activity and underwater noise.

I.7.1 Species Determinations

I.7.1.1 Beluga whale (*Delphinapterus leucas*) - Cook Inlet DPS

The project ***may affect*** beluga whales, because project activities create the potential for:

- Marine vessel strike, auditory and visual disturbance, and contamination stressors.

- Construction activity habitat modification, auditory and visual disturbance, and contamination stressors.

However, with the implementation of proposed mitigations, the project is ***not likely to adversely affect*** beluga whales, because mitigation measures, including PSOs and mandatory shutdown zones, are designed to prevent exposure to sound levels that would cause injury (Level A harassment) or significant behavioral disturbance (Level B harassment). Any potential for acoustic disturbance is therefore considered insignificant or discountable.

I.7.1.2 Fin whale (Balaenoptera physalus) - Northeast Pacific Stock

The project ***may affect*** fin whales, because project activities create the potential for:

- Marine vessel strike, auditory and visual disturbance, and contamination stressors.

- Construction activity habitat modification, auditory and visual disturbance, and contamination stressors.

However, with the implementation of proposed mitigations (Section I.2), the project is ***not likely to adversely affect*** fin whales, because the use of noise attenuation systems and shutdown zones monitored by observers would ensure that fin whales are not exposed to injurious or harassing sound levels. The potential for adverse acoustic effects is discountable

I.7.1.3 Humpback whale (Megaptera novaeangliae) – Mexico and Western North Pacific DPS

The project ***may affect*** humpback whales, because project activities create the potential for:

- Marine vessel strike, auditory and visual disturbance, and contamination stressors.

- Construction activity habitat modification, auditory and visual disturbance, and

contamination stressors.

However, with the implementation of proposed mitigations, the project is ***not likely to adversely affect*** humpback whales, because the robust mitigation protocol, including soft-start procedures and monitored clearance zones, is designed to avoid exposing humpback whales to sound levels that would cause harassment. Therefore, the potential for adverse effects is insignificant or discountable.

I.7.1.4 Steller sea lion (Eumetopias jubatus) - Western U.S. DPS

The project ***may affect*** Steller sea lions, because project activities create the potential for:

- Marine vessel strike, auditory and visual disturbance, and contamination stressors.

- Construction activity habitat modification, auditory and visual disturbance, and contamination stressors.

However, with the implementation of proposed mitigations, the project is ***not likely to adversely affect*** Steller sea lions, because mandatory shutdown zones would be implemented to prevent exposure to sound levels exceeding harassment thresholds. Given their mobility, any potential for disturbance would be temporary and insignificant, making adverse effects discountable.:

I.7.1.5 Steller's eider (Polysticta stelleri) – Alaska-Breeding Population

The project ***may affect*** Steller's eiders, because project activities create the potential for:

- Marine vessel and construction activity creating auditory and visual disturbance.

- Localized and temporary habitat modification or avoidance.

However, with the implementation of proposed mitigations, the project is ***not likely to adversely affect*** Steller's eiders, because measures to minimize general construction noise and activity would prevent significant disruption to foraging or resting behaviors. Any potential disturbance would be localized and temporary, resulting in insignificant effects.

I.7.2 Critical Habitat Determinations

I.7.2.1 Beluga whale (*Delphinapterus leucas*) - Cook Inlet DPS

With the implementation of proposed mitigations (Section I.2), the project is anticipated to have **no adverse modification** to CIBW Critical Habitat. The project does not cause significant adverse impact to the habitat's biological or physical features essential to

CIBW conservation, as it avoids key prey aggregation areas and does not impede passage.

I.7.2.2 Steller sea lion (Eumetopias jubatus) - Western U.S. DPS

There is no designated Steller sea lion critical habitat within the project Action Area. Thus, the project would have **no effect** on Steller sea lion critical habitat.

I.7.2.3 Steller's eider (Polysticta stelleri) – Alaska-Breeding Population

There is no designated Steller's eider critical habitat within the project Action Area. Thus, the project would have **no effect** on Steller's eider critical habitat.

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I.9 Preparers

This Draft BA has been prepared by the Environmental Resources Section of USACE Alaska District The individuals that contributed to the preparation of this Draft BA are listed below in Table I-16.

Table I-16. List of Preparers.

Name/Organization	Education	Resource Area	Years of Experience
Kayla Campbell/USACE	B.S., Molecular and Cellular Biology	Primary Author and Document Preparer	5

Attachment 1:
ESWG Meeting Minutes from August 23, 2023

RECORDED MEETING

Meeting Minutes
Homer Navigation Improvements Study, AK
August 23, 2023
2:00 pm to 4:00 pm

Administrative Information

Meeting: August Environmental Stakeholder Working Group Meeting

Meeting Type/Location: Virtual / Webex at:
https://usace1.webex.com/usace1/j.php?MTID=mcc7899f83879138e85ec155880ef0cf0

Meeting Topic(s): Admin Actions, Fieldwork, Footprint Resources, Avifauna, Status Updates

Meeting Agenda:

- Attendance
- Administrative Topics
  - Status of Previous "To Do(s)" and "Request(s) for Information"
  - Meeting Minutes
  - Non-Meeting Correspondence Management
  - Final ESWG Guidance
- Study, Environmental Resource Fieldwork
- Environmental Resources Topics
  - Resources within Alternatives' Footprint
  - Avifauna
- Study Status and Important Upcoming Study Dates
- Open Discussion

Attendance (16 Individuals): *Name (Organization, if Applicable)*

Project Delivery Team (PDT) Members (6 Individuals)			
Kayla Campbell	*USACE*	*Tyler Teese*	*USACE*
KC Kent	*HDR*	*Curtis Lee*	*USACE*
Mike Rouse	*USACE*	*Amy Woodruff*	*City of Homer (P&H)*
Non-PDT Members (10 Individuals)			
George Matz	*KBB*	*Marilyn Sigman*	*FANWRS*
Robert Archibald	*Friends*	*Lauren Sutton*	*KBRR Staff*
Laurie Daniel	*KBRR Community Council*	*Katie Gavenus*	*CACS*
Michael Opheim	*CRRC*	*David Erikson*	
Debbie Tobin	*UAA*	*Dave Seris*	*USCG*

CACS = Center for Alaskan Coastal Studies
CRRC = Chugach Regional Resources Commission
FANWRS = Friends of Alaska National Wildlife Refuges
Friends = The Friends of Kachemak Bay State Park
KBB = Kachemak Bay Birders
KBRR = Kachemak Bay Research Reserve
P&H = Port and Harbor
UAA = University of Anchorage Alaska
USCG = United States Coast Guard
USACE = United States Army Corps of Engineers

Status of Previous Meeting To Do(s) and Request(s) for Information

This section lists out the "to do(s)" (i.e., identified tasks) or requests for information that were identified during the previous ESWG meeting(s).

To Do(s)

Status	Task
G	USACE will incorporate modified Fist to Five methodology into Section 3.f. of the guidance memo prior to sending draft for member comment/revision.
G	USACE will send out Meeting Minutes from July 10, 2023, meeting with updated draft guidance and slides with CONCEPTUAL figures of current array of alternatives.
G	No later than July 18, 2023: Members will provide comments on the July 10, 2023, "Meeting Minutes".
G	No later than July 21, 2023: USACE will incorporate July 10, 2023, Meeting Minutes comments received by July 18, 2023, as prudent, and resend notes.
G	No later than July 25, 2023: Members will provide ESWG Guidance comments/tracked revisions to USACE Point of Contact Kayla Campbell at kayla.n.campbell@usace.army.mil. Comments will be tracked via the comment tracker established for group correspondence.
G	No later than 2 weeks prior to next meeting: USACE will incorporate ESWG Guidance revisions and address comments received by July 25, 2023, as prudent, prior to implementation of guidance.
Y	No later than 2 weeks prior to next meeting: Organizations will identify a representative and share such with USACE. ***Task is enduring (i.e., will continue to apply throughout group activities)***
B	No later than 2 weeks prior to next meeting: Individuals will determine if they are "Required" or "As Required" at ESWG meetings with rationale for determination. ***It will be self-determined by individuals and organizations each meeting based off agenda.***
R	No later than 1 week prior to next meeting: Individuals will have to had acknowledged/agreed to the ESWG Guidance as described in the guidance to remain on the email distribution list to continue to receive ESWG information, which will enable them to fulfill meeting roles "as required" pending meeting agendas. ***Extending deadline to after this meeting but before the next ESWG meeting, deadline to be determined. In the meantime, individuals/organizations may acknowledge/agree with ESWG Final Guidance and/or request removal from group.***
B	No later than next meeting: USACE will establish a ESWG Meeting Distribution List based on organization and individual feedback. ***Task will no longer apply. One email distribution list will be maintained.***
G	No later than next meeting: The project delivery team will discuss/consider the combination of current alternatives in combination to expanding the current harbor footprint by removing material internally on the eastern face and whether that would lessen the footprint of expansion outside the current harbor.
G	NCCOS and KBNERR will coordinate/share information and data with HDR that will support HDR sediment transport modeling within Kachemak Bay.

Status indicator: **G**reen = complete, **Y**ellow = pending, **R**ed = modification or requires information, **B**lack = no longer applicable.
Bold, italicized font are remarks.

Request(s) for Information (RFI)

Information Request	Response
Has the project delivery team for the study considered the combination of expanding the current harbor with the current array of alternatives to minimize the footprint of any expansion outside of the current harbor?	Expansion of the current harbor footprint was considered as a potential standalone alternative and combined with other alternatives. A response addressing this common inquiry will be represented on the City of Homer's FAQ page about the study.

To Do(s) and Request(s) for Information

This section lists out the "to do(s)" (i.e., identified tasks) or requests for information that were identified during the meeting.

To Do(s)

Status	Task
Gr	Organizations will identify a representative and share such with USACE.
G	**By August 25, 2023:** Kayla Campbell will share the August 23, 2023, Meeting Minutes with the ESWG via email.
G	**By September 1, 2023:** September meeting date and time is shared with ESWG via email.
G	**By September 8, 2023:** Members will share August 23, 2023, Meeting Minutes feedback with Kayla Campbell at kayla.n.campbell@usace.army.mil
G	**By September 15, 2023:** Kayla Campbell will share Final August 23, 2023, Meeting Minutes with ESWG.
Y	**1 week prior to the September ESWG Meeting:** Individuals will have to had acknowledged/agreed to the ESWG Guidance as described in the guidance to remain on the email distribution list to continue to receive ESWG information, which will enable them to fulfill meeting roles "as required" pending meeting agendas.
Y	**1 week prior to the September ESWG Meeting:** Non-meeting correspondence and September ESWG Meeting agenda is shared with ESWG via email.
Gr	Individuals will self-determine if they are "Required" or "As Required" at next ESWG meeting based off the provided agenda.

Note 1: Status indicator: **G**reen = complete, **Y**ellow = pending/on-going, **R**ed = modification or requires information, **B**lack = no longer applicable, **Gr**ey = enduring
Note 2: Bold, italicized font are remarks.

Request(s) for Information (RFI)

Information Request	Response
Will there will be a plan to include a survey of ecosystem services of this project (e.g., carbon sequestration in mud bay, eel grass beds as habitat for multiple species, etc)?	*Pending*

Note: This table represents RFIs from ESWG member for study's project delivery team (USACE, HDR, and the City of Homer)

Blue font indicates added based on meeting discussion.
Red font indicates added post-meeting from meeting email correspondence.

Summary and Highlights

After the administrative topics, discussion-based topics were covered. To assist discussions, a figure for the "study footprint" was shown. The "study footprint" represented the area anticipated to most likely to be directly impacted by potential alternatives' construction. This footprint was shared to facilitate initial discussions and data gathering and confirmation for the study and generally focused on direct impacts. Although not mentioned during the meeting, typically a study area called a "region of influence" is developed to capture all areas reasonably assumed to be impacted, both directly and indirectly, by construction of the alternative.

The first discussion topic ("Resources within the Alternative's Footprint") covered various resources (e.g., important habitat, species, sediment type, cultural resources, etc) likely located in or near the "study footprint". Some key highlights from the general environmental resource discussions are as follows:

- Cultural resources: USACE is seeking potential cultural resource information from members that may not be available in literature or on online databases. This could include past activities in and around the area, debris washed ashore, old trucks/bicycles, etc. An example shared during group discussion was potential old coal railroad artifacts.
- Invasives species: Species mentioned included the flatbottom sea star, European green crab, tunicates, and pigeons. It was noted that the flatbottom sea star is considered "indigenous" but outcompetes other sea star species.
- Subsistence: Homer was identified as being part of a non-subsistence area according to Alaska Statute 16.05.258. However, subsistence was determined to be important to the cultural and lifestyle of the Homer and nearby communities. Thus, there were perspectives that the line between personal use and subsistence is blurry for Homer and other communities using Kachemak Bay. Specific focus during subsistence discussions were clam/mussel harvesting and set netting.
- Marine mammals and the sunflower sea star: discussions centered around a pre-developed list based on online mapper information from NMFS. Three species were mentioned for potential addition to the list while two were annotated for potential removal based off discussions. General/anecdotal observations were shared as it related to where they generally occur. Noise impacts and vessel strikes were mentioned for potential impact consideration.

Avifauna was the second and last discussion topic on the agenda. Highlights of discussions are as follows:

- Overall Kachemak Bay has international value to bird species and this includes the area specific to the "study footprint".
- Specific species discussed due to their status, abundance, presence, and/or activities within the "study footprint" included the: black turnstone, rock sandpipers. Steller's eiders, kittiwakes, glaucous winged gulls, semi-palmated plovers.
- Bird habitat in and near the "study footprint" is valuable to the species that use it for foraging, resting, and breeding. This area of Kachemak Bay appears to be used extensively for foraging by waterfowl and ducks and the current harbor rocky infrastructure is ideal nesting and resting habitat. The current harbor also acts as a windbreak for many bird species to rest within.

- Potential direct impacts from breakwater construction would be conversion of foraging habitat to resting/nesting habitat. There would likely be various indirect impacts to consider with such a conversion (e.g., impacts to circulation of Kachemak Bay and/or displacement of foraging areas).

Following schedule discussions, important upcoming dates/events were mentioned:

- 9/23/2023: Tentative City of Homer Study Public Workshop with USACE presence.
- Next ESWG Meeting: Late-September (post-9/23/2023) after the aforementioned City of Homer meeting. Would be after 1:00 pm, to be determination.

Before ending the meeting, open discussion included a comment about ensure that the various types and levels of impacts are taken into consideration in the study.

Detailed Notes

- **Attendance**
    - See "08-23-2023_Meeting Minutes_Administrative Information" for list of attendees.
- **Administrative Topics**
    - **Status of Previous "To Do(s)" and "Request(s) for Information"**
        - See "08-23-2023_Meeting Minutes_ Status of Previous Meeting To Dos and Requests for Information" document)
        - Went over the status of the tasks and responses to questions from the July 10, 2023, meeting.
            - Organizations providing the names of representatives will be an enduring task. "Enduring" mean this task will continue to be applied for the duration of the ESWG.
            - Individuals/organizations self-identifying as "Required" or "As Required" at ESWG meetings will not be generalized. Instead, I recommend moving forward that based off the Meeting Agenda, individuals/organizations will determine whether their attendance is required, as in there are agenda topics of high interest and/or value and/or individual/organization can provide knowledge or experience relevant to agenda topics).
            - Change in prior bullet made the purpose of a separate email distribution no longer applicable to ESWG activities and was thus removed as a task.
            - The date members will need to acknowledge/agree to the ESWG Final Guidance is being extended. Members will need to agree/acknowledge at a minimum before the next meeting (in September).
    - **Meeting Minutes**
        - Format was changed based off feedback from a ESWG member. Content will be separated into separate documents to support differing needs for members.
    - **Non-Meeting Correspondence Management**
        - The purpose of this document is to maintain record of non-meeting correspondence as well as facilitate discussions and provide consistent responses with group members outside meetings.
        - Correspondence comments will generally be summarized while responses will vary in detail.
        - Plan is to share this document about 1 week prior to each meeting.
        - Comments/Responses will be "Locked in" when document is sent to the group. This means the comments/responses will not change, but still be accessible for reference by members within updated versions of the document. There is potential that prior "locked in comments" will differ from

prior information or subsequent information shared. This is due to the nature of study which develops as we progress, things change, and new information is received.

- **Final ESWG Guidance**
  - Shared with the group and members are requested to acknowledge/agree prior to the September meeting at a minimum, and it will be required for attending that meeting.

- **Study Footprint**
  - Figure representing where direct construction/infrastructure impacts are anticipated for the study's potential alternatives was shared.
    - This does not mean indirect impacts are not being consider. This was just to help facilitate initial discussions on resources that would have the most potential for direct impacts that will inform indirect impacts further.
    - A region of influence (ROI) is typically established that represent the total area that direct AND indirect impacts of a proposed action would be reasonably assessed to occur. This would be greater than the direct study footprint represented in the study footprint figure for this meeting's discussions.
  - See "08-23-2023_Meeting Minutes_Study Footprint Figure".
- **Study Fieldwork**
  - Initially, fieldwork was going to be conducted this fall. However, this is being readjusted to 2024 summer/fall timeframe.
  - Goal would be to collect monthly data as able and reasonable to confirm old data and information and/or gather site specific data and information.
  - Types of fieldwork planned with general purpose of fieldwork in parenthesis:
    - Grab Samples (preliminary chemical/sediment analysis to inform later detailed analysis required for various permits)
    - Beach Seining in combination with eDNA (fish species focused)
    - Fauna Surveys (Marine Mammals, Bird Species, and other visual observations would be annotated)
    - Bottom Trawling (benthic-focused)
    - Drop Camera (seafloor visual/benthic survey)
    - Conductivity, Temperature, and Depth (water conditions)
  - Geotechnical sediment sampling efforts and circulation modeling are being conducted for the study as well.
- **Environmental Resources Topics**
  - **(Potential) Resources within Alternatives' Footprint**
    - Cultural resources on the Spit or in the water?
      - Tyler Teese further expanded that databases have historical findings and data for the site but not everything gets recorded.

Blue font indicates notes were added during meeting discussion.
Red font indicates notes were added post-meeting.

Thus, if members have anything they have come across or observed in or near the study footprint / Kachemak Bay in general that may have cultural significance to share that information with him (Tyler Teese) and/or Kayla Campbell. This could include information about old vehicles and/or items and debris observed in and around the area.

- Old coal railroad artifacts near Coal Point Park were mentioned as a potential consideration.
- Potential point of contact mentioned by name was Janet Klein and other older, homesteader kids (from meeting chat) who in their 70s and 80s for information about culturally important resources on that side of the Spit.
- Kayla Campbell mentioned USACE is planning further outreach with Tribes for cultural resources and for inclusion in this group.

- Area excluded from Kachemak Bay State Critical Habitat.
- 1990s ADF&G indicated blue mussels and hardshell clams.
- Nearshore Fish Atlas data and Essential Fish Habitat.
    - When HTI constructed the entrance to the barge basin, a permit extension was required to work on the beach that involved a track hoe and 20-yard rock trucks. King Salmon were using the barge basin prior to construction completion in the spring.
- What is the Marine Mammal / Sunflower Sea Star prevalence in area like? (Reference “08-23-2023_Meeting Minutes_ Potential Marine Mammals Species List” document).
    - Notes from the meeting and email correspondence for this topic will be included on the “08-23-2023_Meeting Minutes_ Potential Marine Mammal Species List” document.
- Bird resources (next discussion topic).
- In-water monitoring stations (ex. Invasive species and phytoplankton monitoring stations) in/near footprint.
    - KBNERR has ongoing Pier 1 beach monitoring and should have information about sunflower sea stars and crab species.
- Specific invasive species of concern: non-native tunicates, rodents such Norway rat (*Rattus norvegicus*) and the European green crab (*Carcinus maenas).*
    - Potential Point of contact for invasive tunicates information would be Catie Bursch, who worked with Kachemak Bay Research Reserve in the past.
    - Flatbottom sea star (i.e., Northern Pacific seastar, *Asterias amuresis*) is present in the area, and not necessarily nonindigenous. However, they outcompete other native sea stars and there is no records indicating they are native, but early records do indicate they existed at Kodiak before being observed

in Kachemak Bay. They are persistent and abundant around harbor pilings at the mouth of the harbor and in landward. This species is known to transfer by vessel ballast water
    - Monitoring European green crab and traps along Kachemak Bay Spit.
    - Colonial tunicate invasives.
    - Impacts of invasives what will they replace/most impact.
    - Non-indigenous invasive pigeons.
- Is location specifically tied and/or important to subsistence activities?

  Subsistence Definition (Alaska Statute 16.05.940 and Title VIII of Alaska National Interest Lands Conservation Act, Section 803): "*"customary and traditional" uses of wild resources for various uses including food, shelter, fuel, clothing, tools, transportation, handicrafts, sharing, barter, and customary trade."*
- Personal use within study footprint area includes beach seining and use of setnets for coho salmon near Pier 1, fishing area in Fish Lagoon and outside in the bay in and near the barge use area and along that beach.
- Clam harvesting occurred heavily in this area in the past. Currently is not conducted in the same frequency due to the decrease in populations of clams and mussels in this area as well as clam harvesting closure. However, if the population was to recover and such activities were allowed, there would be an anticipated uptake in this activity and a concern/consideration of the alternative should include impacts to recovery and or loss of opportunity in that area for clam/mussel harvesting if the population was to recover. (Ninilchik is a case example for razor clams recovery). The clam harvest closure included Homer Spit for the last 14 years or so.
- Homer's sportfish department (ADFG Sports Fish Department (Phone 907-235-6930) should have data on clams and mussels in the area and would be a good point of contact for this resource.
- Subsistence and personal use were noted to be a blurred line for Homer, because although Homer is considered urban and non-subsistence area (Alaska Statute 16.05.258), the activities do correlate with subsistence in the traditional sense to various members of this group.
- Marine water (Salinity of 15-29 ppt; 18-30%).
    - Will inform the types of screening levels used for chemical analysis conducted on sediment that would potentially be dredged.
- Kelp forest/eelgrass potential within substrate.
- Sediment composition and type: presume generally finer (58-97% silt/clay content) with a silt over a clay layer rather than coarser sediment throughout area. Information has indicated that coal has potential to be in the substrata of the seabed.
    - In the past, a drilling rig got stuck in mud bay (further east) and parts were left in place – can see location in site bathymetry (https://www.ncei.noaa.gov/maps/bathymetry/)

- Potential beneficial use ideas for dredged material?
    - Dependent on the composition/type of sediment.
- In-water and shoreline recreation/land use in study footprint?
- Other important data/information on resources not covered?

- **Avifauna** (i.e., bird species, bird habitat, and other biological and/or physical features of the alternatives that are important to birds, like prey resources).
    - Study sediment circulation modeling will inform potential impacts to this resource.
    - Information was shared by Friends of Alaska National Wildlife Refuge and the Kachemak Bay Birders for this resource that can be used to inform USACE analysis. Cornell Lab of Ornithology's eBird online database, USFWS online Information for Planning and Consultation (IPaC) online application, USFWS Planning Aid Letter, ADF&G Planning Aid Letter, Important Bird Area GeoHub, and other databases and literature may be used.
    - Refer to "Checklist of Birds, Kachemak Bay" online document sent by George Matz, representative for the Kachemak Bay Birders. Are there ways to identify data specific to the study footprint?
    - Kachemak Bay is an Important Bird Areas and Western Hemisphere Shorebird Reserve Network (WHSRN) Site of International Importance. Habitat adjacent to Homer Spit is also an Important Bird Area.
        - However, within the overall footprint of these areas, what is the relative value of the alternatives' footprint? What factors make it more valuable than nearby habitat in Kachemak Bay? What factors make it less valuable?
        - Value of habitat is highly dependent on the species being discussed. The current harbor and area east of the Homer Spit offers different habitat than other areas in Mud Bay.
        - Foraging activities and prey within the waters of the "Study footprint", east of the current harbor and adjacent to the spit are important.
        - Protected refuge (infrastructure acts as a windbreak) for resting activities and rocky during high tide breakwater/infrastructure for nesting and resting activities are important features of the current harbor for bird species. A specific species mentioned that uses the harbor's rocks was the black turnstone.
        - Freshwater ducks are observed in the current harbor as are other ducks and waterfowl. Waterfowl and ducks are seen in the area east in the study footprint as well.
        - Diversity across mud bay (includes the current study footprint) for habitat is a key feature of Kachemak Bay that makes it internationally significant location for bird species.

- There are likely trade-off that would come with an implementation of a construction alternative in waters east of the spit (i.e., conversion of foraging areas into roosting habitat).
- Indirect impacts to consider is a constructed breakwater's impact on the circulation of Kachemak Bay and how that impacts the nutrients transportation throughout mud bay that supports a wide variety and number of bird species. For example, the use of the area east of Homer Spit depends on ice dynamics during periods of freezing and thawing, winds, and currents. Thus, would recommend consideration of an expanded Harbor footprint on these dynamics.
- Rock sandpiper feed in mud bay.
- Marilyn Sigman has personally surveyed the area in spring – her and George Matz, who represent organizations that are participating in the ESWG, will be good follow-up points of contacts for further information.

▪ ESA-listed, Threatened Steller's Eider – is this species observed often in the study footprint? If yes:
  - When (e.g., seasonality and/or months)? In what numbers? Observed activities?
  - Steller's eiders are known to occur within the area near and at the current harbor over winter (also fall and spring).

▪ In general, for the study footprint:
  - What bird species are most observed? What are the predominant bird activities in the area? What months is the study footprint the most populated by bird species? Is there a reason for this high abundance? What months is the study footprint the least populated by bird species? Is there a reason for this low abundance?
  - Breeding in and around the current harbor infrastructure – Kittiwakes appear to breed in the harbor and their nests need to be taken into account if those areas are to be disturbed (i.e., noise disturbance from construction activities should be considered).
  - Breeding by the industrial dock (by the coast guard dock) appears to occur with kittiwakes and glaucous winged gulls. Note, herring gulls and glaucous-winged gulls interbreed in Cook Inlet, so some of the nesting pairs in the Harbor are glaucous-winged, Herring, or hybrids.
  - Consider seasonality and subsequent avoidance, minimization, and/or permits that would be implemented/required for potential construction activities in and around this area as it relates to bird species.
  - North of fishing hole, in the supratidal areas and beach area by RV park – semi-palmated plovers have been observed displaying

breeding behaviors and potentially successfully breeding from spring into summer (June).

- Other avian related discussions?
  - There is often a balancing act for mitigations as it relates to potential project designs/constructions and their impacts to environmental resources. For avifauna, seasonality as it relates to the where, in what abundance, what type, and type of activities being conducted by birds is a strong consideration for types of mitigations implemented as it relates to the timing of construction activities.
  - Take into consideration that international valuable resources (key stop over for shorebirds, waterfowl/ducks) would potentially be impacted.
  - There is a concern of sediment drifting/covering of critical feeding areas like Mud Bay and the westside of the Homer Spit.
  - Data from the Coastal Observation and Seabird Survey Team (COASST) is available that shares data about dead birds found on monitored beaches. University of Washington facilitates the protocols and training.
- There is potential for this resource to be a topic of discussion again in a future ESWG meeting.

- **Study Status and Important Upcoming Dates**
  - A status update of the study will be shared in detail during the City of Homer Public Workshop in September for the study.
  - Important Upcoming Dates:
    - 9/23/2023: **Tentative** City of Homer Study Public Workshop with USACE presence.
    - Next ESWG Meeting: Late-September (post-9/23/2023) after the aforementioned City of Homer meeting. Would be after 1:00 pm, **to be determination**.
- **Open Discussion**
  - The multiple levels of impacts that would result from potential construction alternatives need to be considered (i.e., direct/physical impacts, indirect impacts, future impacts, current impacts, cumulative impacts, and intangible impacts, etc), Some indirect are going to be more critical than the direct and need a full consideration for the study's design and potential expansion of the harbor. This should not only include things like constructed breakwaters but potential infrastructure (e.g., infrastructure wastewater and/or potential pollutants).
  - A question was asked in meeting chat whether there will be a plan to include a survey of ecosystem services of this project (e.g., carbon sequestration in mud bay, eel grass beds as habitat for multiple species, etc.

Potential Marine Mammals Species List

List developed from feedback shared by NMFS and USFWS as well as NMFS and USFWS online resources. Apply overall to Kachemak Bay and does not necessary indicate listed species would occur in the Alternatives' footprint.

Northern sea otter, harbor seal, and harbor porpoise likely would be the most commonly occurring species in the study footprint.

Species that have been observed in the area but not listed and notes therein:

- Elephant seals – Have been observed in area both living and dead. Found dead between Anchor Point and Homer. These may be uncommon/very rarely occurring but with warming climate trends their frequency in this area may become more frequent/common.
- Guadalupe fur seal – The observation in Kachemak Bay of this species was the northern most record to have been made. Like with the Elephant seals, there is potential with warming climate that frequency could increase.
- California sea lions – Have been observed in area.

It was noted and affirmed that the underwater and in-air noise impacts from construction and increased vessel activities are something that should be considered especially as it relates to marine mammals. Vessel strike impacts should be considered as well for implementation of study alternatives.

Table 1. Potential Marine Mammal List

Species	Population / Stock / Region	MMPA Status	ESA Status
Beluga whale (*Delphinapterus leucas*)	Cook Inlet	Protected, Depleted	Endangered
	Anecdotally observed near Miller's Landing potentially around summer 2019. In the 80s and 90s behind ice rink area it appeared that killer whales were predating beluga whales according to individuals who were students at the time. In the 80s off the spit in mud bay there were numerous beluga whales closer to shore (not common to be that close) when a pod of killer whales was further out in the bay. There is potential there was a correlation between the two events and that the beluga whales were pushed further towards the shoreline to avoid the killer whales that were potentially predating the beluga. Predating and occurrence of beluga whales was also perhaps occurring where there was crabbing and hydrophone data collection for whales and porpoises on the other side of the spit. The hydrophones recorded a lot of calls.		
Dall's porpoise (*Phocoenoides dalli*)	Alaska	Protected	-
	Generally, seem to occur in outer bay but not necessarily in study area in recent years. Dead Dall's porpoise have been identified in the Lower Cook Inlet / west of the Homer Spit. In an autopsy of one Dall's, it was potentially determined to be an inconclusive death.		
Fin whale (*Balaenoptera physalus*)	Northeast Pacific	Protected, Depleted	Endangered
	Typically observed on the west side of the spit but indicates potential to occur in study footprint as well.		

Blue font indicates notes were added during meeting discussion.
Red font indicates notes were added post-meeting.

Species	Population / Stock / Region	MMPA Status	ESA Status
Gray whale (*Eschrichtius robustus*)	Eastern North Pacific	Protected	-
	Dead individuals of gray whale with Dall's porpoise have been identified in the Lower Cook Inlet / west of the Homer Spit.		
Harbor porpoise (*Phocoena phocoena*)	Gulf of Alaska	Protected	-
	Can be present in / near the study footprint.		
Harbor seal (*Phoca vitulina richards*i)	Gulf of Alaska	Protected	-
	Can be present in / near the study footprint. Have been seen in the current harbor hauling out on the raft systems.		
Humpback whale (*Megaptera novaeangliae*)	Western North Pacific	Protected, Depleted	Endangered
	Hawaii		-
	Mexico	Protected	Threatened
	Can be present in / near the study footprint. Humpback whale has been in the harbor (event occurred a couple years or so ago) and high tide they can be seen closer to shore.		
Killer whale (*Orcinus orca*)	Eastern North Pacific Alaska Resident	Protected	-
	GOA/AI/BS Transient Stock		
	Can be present in / near the study footprint and resident and transient have been observed last fall (2022) and this summer (2023). Potential there is predation of other marine mammals (i.e., beluga whales) from this species.		
Minke whale (*Balaenoptera acutorostrata*)	Alaska	Protected	-
	Do occur in/near area. Most likely during high tide when closer to shore.		
Northern fur seal (*Callorhinus ursinus*) **Potentially strike from list due to lack of evidence that they occur in Kachemak Bay**	California	Protected	-
	Eastern Pacific	Protected, Depleted	
	No known observations from group attending. Although online mappers have this species ranging in this area, it is not always accurate.		
Pacific white-sided dolphin (*Lagenorhynchus obliquidens* **Potentially strike from list due to lack of evidence that they occur in Kachemak Bay**	North Pacific	Protected	
	Perhaps was observed in the mid-90s by a water taxi driver. However, other known and/or indications were not known by meeting attendees outside of that. So perhaps a vagrant individual.		
Steller sea lion (*Eumetopias jubatus*)	Eastern U.S. DPS	Protected	-
	Western U.S. DPS	Protected. Depleted	Endangered
	Can be present in / near the study footprint.		
Sunflower sea star (*Pycnopodia helianthoides*)	---	N/A	Proposed
	Can be present in / near the study footprint.		
Northern sea otter (*Enhydra lutris kenyoni*)	Southcentral Alaska Stock	Protected	-
	Can be present in / near the study footprint.		

Blue font indicates notes were added during meeting discussion.
Red font indicates notes were added post-meeting.

Study Footprint Figure

Note: This area represents where direct impacts from construction and establishment of infrastructure would most likely occur. This does not mean that indirect and/or impacts outside of this area would not be consider. Rather, it is to focus discussions on the direct impacts that would inform the informal impacts, which could be just as or more important.