taken is fewer than one third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

NMFS proposes to authorize incidental take of 15 marine mammal species (with 16 managed stocks). The total amount of takes proposed for authorization relative to the best available population abundance is less than 8.5 percent for all stocks which NMFS preliminarily finds are small numbers of marine mammals relative to the estimated overall population abundances for those stocks. Refer back to Table 3.

Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS preliminarily finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS Office of Protected Resources (OPR) consults internally whenever we propose to authorize take for endangered or threatened species. NMFS is authorizing the incidental take of four species of marine mammals which are listed under the ESA, including the North Atlantic right, fin, and sperm whale, and has determined that these activities fall within the scope of activities analyzed 107 in GARFO's programmatic consultation regarding geophysical surveys along the U.S. Atlantic coast in the three Atlantic Renewable Energy Regions (completed June 29, 2021; revised September 2021).

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to NEETMA for conducting high-resolution site characterization surveys off New Jersey for one year from the date of issuance, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. A draft of the proposed IHA can be found at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-other-energy-activities-renewable*.

Request for Public Comments

We request comment on our analyses, the proposed authorization, and any other aspect of this notice of proposed IHA for the proposed marine site characterization surveys. We also request at this time comment on the potential Renewal of this proposed IHA as described in the paragraph below. Please include with your comments any supporting data or literature citations to help inform decisions on the request for this IHA or a subsequent Renewal IHA.

On a case-by-case basis, NMFS may issue a one-time, one-year Renewal IHA following notice to the public providing an additional 15 days for public comments when (1) up to another year of identical or nearly identical activities as described in the Description of Proposed Activities section of this notice is planned or (2) the activities as described in the Description of Proposed Activities section of this notice would not be completed by the time the IHA expires and a Renewal would allow for completion of the activities beyond that described in the *Dates and Duration* section of this notice, provided all of the following conditions are met:

- A request for Renewal is received no later than 60 days prior to the needed Renewal IHA effective date (recognizing that the Renewal IHA expiration date cannot extend beyond one year from expiration of the initial IHA).
- The request for Renewal must include the following:

(1) An explanation that the activities to be conducted under the requested Renewal IHA are identical to the activities analyzed under the initial IHA, are a subset of the activities, or include changes so minor (*e.g.,* reduction in pile size) that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of reducing the type or amount of take).

(2) A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.

Upon review of the request for Renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings in the initial IHA remain valid.

Dated: May 4, 2022.

Kimberly Damon-Randall,

Director, Office of Protected Resources, National Marine Fisheries Service.

[FR Doc. 2022–09917 Filed 5–6–22; 8:45 am]

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648–XB882]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Tugs Towing Drill Rig in Cook Inlet, Alaska

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; proposed incidental harassment authorizations; request for comments on proposed authorizations.

SUMMARY: NMFS has received a request from Hilcorp Alaska LLC (Hilcorp) for authorization to take marine mammals incidental to tugboats towing a drill rig in Cook Inlet, Alaska. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue two successive incidental harassment authorizations (IHAs) to incidentally take marine mammals during the specified activities. NMFS is also requesting comments on a possible one-time, one-year renewal that could be issued under certain circumstances and if all requirements are met, as described in Request for Public Comments at the end of this notice. NMFS will consider public comments prior to making any final decision on the issuance of the requested MMPA authorizations and agency responses will be summarized in the final notice of our decision.

DATES: Comments and information must be received no later than June 8, 2022.

ADDRESSES: Comments should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service. Written comments should be submitted via email to *ITP.Young@noaa.gov.*

Instructions: NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period. Comments, including all attachments, must not exceed a 25-megabyte file size. All comments received are a part of the public record and will generally be posted online at *www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act* without change. All personal identifying information (*e.g.,* name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

FOR FURTHER INFORMATION CONTACT: Sara Young, Office of Protected Resources, NMFS, (301) 427–8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act.* In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the ''take'' of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are proposed or, if the taking is limited to harassment, a notice of a proposed incidental harassment authorization is provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other ''means of effecting the least practicable adverse impact'' on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as ''mitigation''); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth. The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) and NOAA Administrative Order (NAO) 216–6A, NMFS must review its proposed action (*i.e.,* the issuance of an IHA) with respect to potential impacts on the human environment. Accordingly, NMFS is preparing an Environmental Assessment (EA) to consider the environmental impacts associated with the issuance of the proposed IHAs. NMFS' EA will be made available at *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act* at the time of publication. We will review all comments submitted in response to this notice prior to concluding our NEPA process or making a final decision on the IHA requests.

Summary of Request

On January 13, 2022, NMFS received a request from Hilcorp for two IHAs to take marine mammals incidental to tugs towing a drill rig in Cook Inlet, Alaska. The application was deemed adequate and complete on March 8, 2022. Hilcorp's request is for take of small numbers of eleven species of marine mammals by Level B harassment only. Neither Hilcorp nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

NMFS previously issued Incidental Take Regulations (ITRs) to Hilcorp for a suite of oil and gas activities in Cook Inlet, Alaska (84 FR 37442; July 31, 2019) and issued three letters of authorization (LOAs) under those ITRs. The ITRs covered activities including: Two-dimensional (2D) and three-dimensional (3D) seismic surveys, geohazard surveys, vibratory sheet pile driving, and drilling of exploratory wells. On September 17, 2019, Cook Inletkeeper and the Center for Biological Diversity filed suit in the District of Alaska challenging NMFS's issuance of the ITRs and LOAs and supporting documents (the EA and Endangered Species Act (ESA) Biological Opinion). In a decision issued on March 30, 2021, the court ruled largely in NMFS's favor, but found a lack of adequate support in NMFS's record for the agency's determination that tug towing of drill rigs in connection with production activity will not cause take of beluga whales and remanded back to NMFS for further analysis of tug use under the MMPA, ESA, and NEPA. Hilcorp notified NMFS that all activities described in their initial ITR application (2018) and for which incidental take was authorized have already been completed or will not be completed in the remaining effective period of the ITRs. As a result, the only remaining activity to be analyzed is the use of tugs towing a jack-up rig. NMFS proposes to authorize incidental take from the tugs towing a jack-up rig through two sequential IHAs as the appropriate mechanism, given that there are no more activities occurring under the ITRs, no serious injury or mortality is expected, and Hilcorp's timing needs.

Description of Proposed Activity

Overview

Hilcorp Alaska, LLC (Hilcorp) plans to carry out activities that will occur over two separate one-year periods—from April 1, 2022 to March 31, 2023 (Year 1) and from April 1, 2023 to March 31, 2024 (Year 2). Hilcorp plans to use three ocean-going tugs to tow a jack-up rig in support of plugging and abandonment (P&A) of an existing well and to support production drilling at other locations in middle Cook Inlet and Trading Bay over the course of two years.

Dates and Duration

The schedule for Hilcorp's P&A and production drilling activities is provided in Table 1 below. The noise-producing rig-towing activities for which take is proposed would occur in between those activities, for approximately 16 days per year for Year 1 and Year 2.

TABLE 1—DATES AND DURATIONS OF PLANNED ACTIVITIES IN COOK INLET

Project type	Cook inlet region	Timing	Duration of activity * (days)
Year 1:			
Plug and Abandonment of Well 17589	Middle Cook Inlet	April–November	30
Production Drilling	Middle Cook Inlet Trading Bay	April–November	180
Year 2:			
Production Drilling	Middle Cook Inlet Trading Bay	April–November	180

* Duration is in reference to the supported activity that requires the jack-up rig to be in a specific location. It is not reflective of the duration or the number of days the jack-up rig is towed.

Specific Geographic Region

Hilcorp's proposed activities would take place in Cook Inlet, Alaska. For the purposes of this project, lower Cook Inlet refers to waters south of the East and West Forelands; middle Cook Inlet refers to waters north of the East and West Forelands and south of Threemile River on the west and Point Possession on the east; Trading Bay refers to waters from approximately the Granite Point Tank Farm on the north to the West Foreland on the south; and upper Cook Inlet refers to waters north and east of Beluga River on the west and Point Possession on the east. A map of the specific area in which Hilcorp plans to operate is provided in Figure 1 below.

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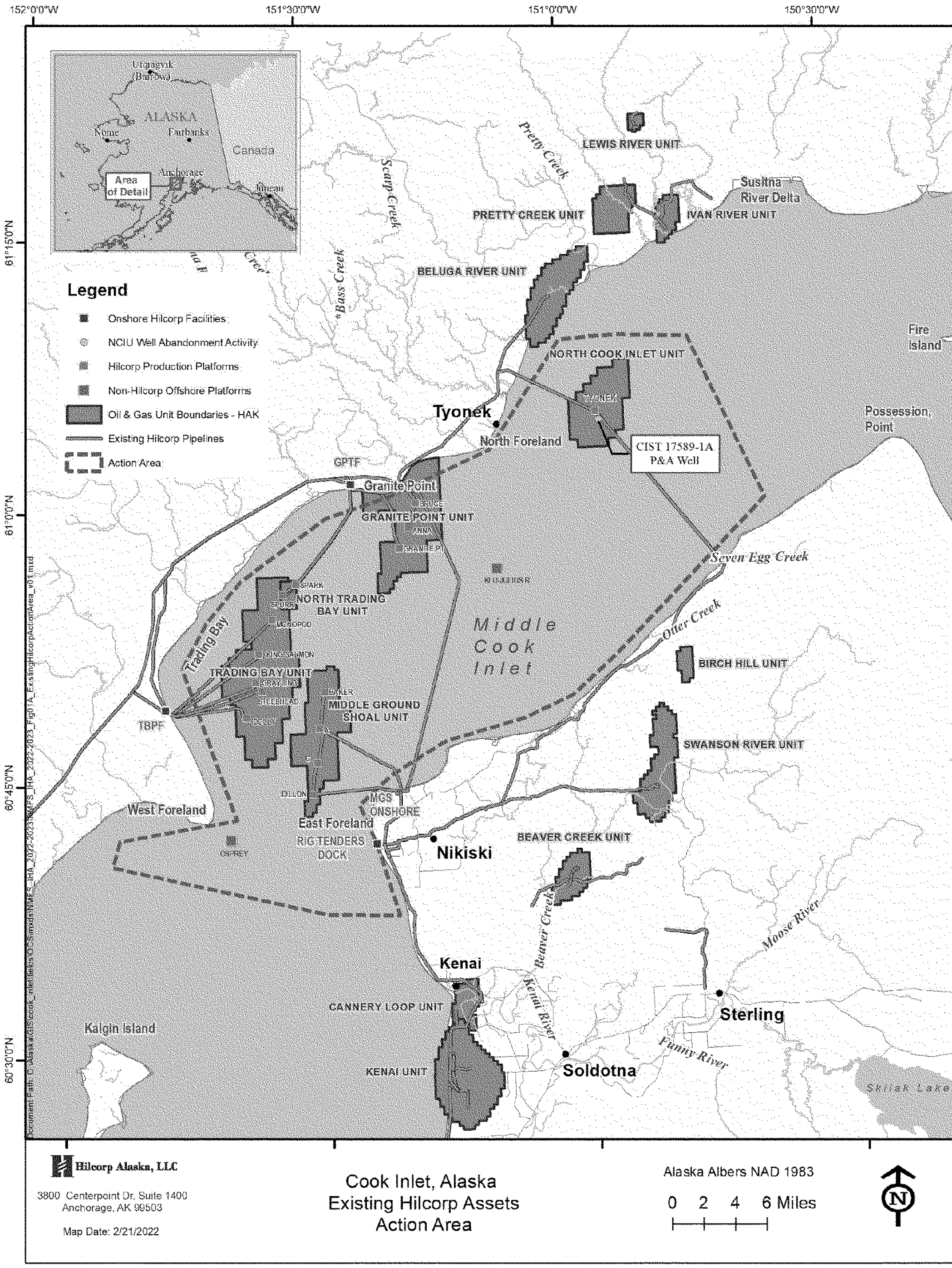

Figure 1. Map of Hilcorp's Proposed Activity Location

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Detailed Description of Specific Activity

Hilcorp proposes to use three tugs to pull and position a jack-up rig in support of well plugging and abandonment (P&A) and support of production drilling by using the rig as a temporary drilling platform. Hilcorp proposes to use the jack-up rig Spartan 151, or similar. A jack-up rig is a type of mobile offshore drill unit used in offshore oil and gas drilling activities. It is comprised of a buoyant mobile platform or hull with moveable legs that are adjusted to raise and lower the hull over the surface of the water. The Spartan 151 (or similar) will be towed via three ocean-going tugs. The horsepower (hp) of each of the three tugs used to tow the jack-up rig may range between 4,000 and 8,000. Three tugs are needed to safely and effectively pull the jack-up rig into the correct position where it can be temporarily secured to the seafloor. Specifications of the tugs anticipated for use are provided in Table 2 below. If these specific tugs are not available, the tugs contracted would be of similar size and power to those listed in Table 2.

TABLE 2—DESCRIPTION OF TUGS TOWING THE JACK-UP RIG

Vessel name	Specifications
M/V Bering Wind.	22-m length × 10-m breadth, 144 gross tonnage
M/V Anna T ...	32-m length × 11-m breadth, 160 gross tonnage
M/V Bob Franco.	37-m length × 11-m breadth, 196 gross tonnage

The amount of time the tugs are under load transiting, holding, and positioning the jack-up rig in Cook Inlet is tide-dependent. The power output of the tugs depends on whether the tugs are towing with or against the tide and can vary across a tide cycle as the current increases or decreases in speed over time. Hilcorp proposes to make every effort to transit with the tide (which requires lower power output) and minimize transit against the tide (which requires higher power output).

The jack-up rig will be mobilized and demobilized via towing by three ocean-going tugs from and to the Rig Tenders Dock in Nikiski, Alaska. A high slack tide is necessary for the tugs to approach close enough to shore to attach and mobilize the jack-up rig from the Rig Tenders Dock. Because Hilcorp's production platforms/well sites are north of the initial mobilization site, the tugs will begin their transit from Nikiski against an outgoing tide. To minimize transit time against the outgoing tide and reduce power output, the tugs will first tow the jack-up rig to a location near the Offshore Systems Kenai dock for approximately three hours, which provides protection from the fast outgoing tidal current. Protection from the outgoing tidal current will allow the tugs to expend less power holding the jack-up rig in position than they would if they continued to transit against the tide. The tugs will begin transiting north again when the tide changes to an incoming tide, which is about six hours after the high slack tide. Towing the jack-up rig northward with an incoming tide requires less than half power, generally only 20 to 30 percent of total power output (Durham 2021, pers. comm.).

A high slack tide is preferred to position the jack-up rig on an existing platform or well site. The relatively slow current and calm conditions at a slack tide enables the tugs to perform the fine movements necessary to safely position the jack-up rig within several feet of the platform. Positioning and securing the jack-up rig is generally performed at high slack tide rather than low slack tide to pin the legs down at an adequate height to ensure the hull of the jack-up rig remains above the water level of the subsequent incoming high tide. Because 12 hours elapse between each high slack tide, tugs are generally under load for those 12 hours, even if the towed distance is small, as high slack tides are preferred to both attach and detach the jack-up rig from the tugs. Once the tugs are on location with the jack-up rig at high slack tide (12 hours from the previous departure), there is a 1 to 2-hour window when the tide is slow enough for the tugs to initiate positioning the jack-up rig and pin the legs to the seafloor on location. The tugs are estimated to be under load, generally at half-power conditions or less, for up to 14 hours from the time of departure through the initial positioning attempt of the jack-up rig. If the first positioning attempt takes longer than anticipated, the increasing current speed prevents the tugs from safely positioning the jack-up rig on location. If the first positioning attempt is not successful, the jack-up rig will be pinned down at a nearby location and the tugs will be released from the jack-up rig and no longer under load. The tugs will remain nearby, generally floating with the current. Approximately an hour before the next high slack tide, the tugs will re-attach to the jack-up rig and reattempt positioning over a period of 2 to 3 hours. Positioning activities are generally at half power. If a third attempt is needed, the tugs would be under load holding or positioning the jack-up rig on a second day for up to 5 hours. The vast majority of the time, the jack-up rig can be successfully positioned over the platform in one or two attempts.

A location-to-location transport (*e.g.,* platform-to-platform) of a jack-up rig is conducted similarly to the mobilization from the Rig Tenders Dock described above with one main difference. In a location-to-location transport in middle Cook Inlet or Trading Bay, there is no harbor available for temporary staging to avoid transiting against the tide. Maintaining position of the jack-up rig against the tidal current can require more than half power (up to 90 percent power at the peak tidal outflow). However, greater than half power effort is only needed for short periods of time during the maximum tidal current, expected to be no more than three hours maximum. During a location-to-location transport, the tugs will transport the jack-up rig traveling with the tide in nearly all circumstances except in situations that threaten the safety of humans and/or infrastructure integrity. There may be a situation wherein the tugs pulling the jack-up rig begin transiting with the tide to their next location, miss the tide window to safely set the jack-up rig on the platform or pin it nearby, and so have to transport the jack-up rig against the tide to a safe harbor. Tugs may also need to transport the jack-up rig against the tide if large pieces of ice or extreme wind events threaten the stability of the jack-up rig on the platform.

Although the variability in power output from the tugs can range from an estimated 20 percent to 90 percent throughout the hours under load with the jack-up rig, as described above, the majority of the hours (spent transiting, holding, and positioning) occur at half power or less. See the Estimated Take section below for more detail on assumptions related to power output.

Year 1—For the first year of activity, Hilcorp proposes use of three tugs to pull the jack-up rig for plugging and abandonment (P&A) of Well 17589, which began in 2021 but was not completed due to equipment sourcing issues. Prior to pinning the jack-up rig legs to the seafloor, a multi-beam sonar may be used to ensure the seafloor is clear of debris that may impact the ability to pin down the legs of the platform. The multibeam echosounder emits high frequency (240 kilohertz [kHz]) energy in a fan-shaped pattern of equidistant or equiangular beam spacing. The multi-beam sonar operates at a frequency outside of marine mammal hearing range and is not addressed further in our analysis. After the rig is secure, divers enter the water and use hand tools to complete the P&A process. In addition to the hand tools, the divers will also use water jets to wash away debris and marine growth on the structure (*e.g.,* a CaviDyne CaviBlaster). Based on measurements conducted by Hilcorp during 2017 use of water jets, the source level for the CaviBlaster® was estimated as 176 decibels (dB) re 1 micropascal (μPa) root mean square (rms) with a Level B harassment threshold of 860 m, with most energy concentrated above 500 Hz with a dominant tone near 2 kHz. Hilcorp plans to put a protected species observer (PSO) on watch to monitor the full extent of the harassment zone and shutdown when an animal approaches the zone during water jet use. Because of this, Hilcorp is not requesting take associated with water jet use and it is not considered further in our analysis.

Hilcorp also plans to tug the jack-up rig to existing platforms in middle Cook Inlet and Trading Bay in support of production drilling activities from existing platforms and wellbores. Production drilling itself creates some small level of noise due to the use of generators and other potentially noise-generating equipment. Furie Operating Alaska, LLC, performed detailed underwater acoustic measurements in the vicinity of the Spartan 151 in 2011 (Marine Acoustics Inc. 2011) northeast of Nikiski Bay in water depths of 24.4 to 27.4 m (80 to 90 ft). Primary sources of rig-based acoustic energy were identified as coming from the D399/D398 diesel engines, the PZ–10 mud pump, ventilation fans, and electrical generators. The source level of one of the loudest acoustic sources, the diesel engines, was estimated to be 137 dB re 1 μPa rms at 1 m in the 141 to 178 Hz frequency range. Based on this measured level, the 120 dB rms acoustic received level isopleth would be approximately 50 m away from where the energy enters the water (jack-up leg or drill riser). This small radius would overlap substantially with the physical footprint of the platform and other equipment, so Hilcorp is not requesting take for this activity and it is not considered further in our analysis. In support of these activities, helicopters and support vessels transit from the mainland to the production sites to mobilize personnel and supplies. Helicopters will fly at 1,500 ft or higher unless human safety is at risk or it is operationally impossible (*e.g.,* takeoff and landing points are so close together the aircraft cannot reach 1,500 ft). Vessel trips to and from the location of the jack-up rig are expected to increase by two trips per day above normal activity levels.

Year 2—For the second year of activity, Hilcorp does not plan to conduct P&A activities with the jack-up rig and will only be tugging the jack-up rig in support of production drilling activities.

The specific configuration of tugs towing the jack-up-rig as proposed by Hilcorp has not been analyzed previously. Hilcorp contracted JASCO Applied Sciences to conduct a sound source verification (SSV) of their tugs in operation in Cook Inlet during October 2021. This SSC measured tugs pulling the jack-up-rig at various power outputs. This SSV returned a source level of a source level of 167.3 dB re 1 μPa for the 20 percent power scenario and a source level of 205.9 dB re 1 μPa for the 85 percent power scenario. Assuming a linear scaling of tug power, a source level of 185 dB re 1 μPa was then calculated as a single point source level for three tugs operating at 50% power output. This is approximately five dB higher than the literature summary described below.

Hilcorp conducted a literature review of available source level data for tugs under load in varying power output scenarios. Table 3 below provides values of measured source levels for tugs varying from 2,000 to 8,2000 horsepower. For the purposes of this table, berthing activities could include tugs either pushing or pulling a load. The sound source levels appear correlated to speed and power output, with full power output and higher speeds generating more propeller cavitation and greater sound source levels than lower power output and lower speeds. Additional tug source levels are available from the literature but they are not specific to tugs under load but rather measured values for tugs during activities such as transiting, docking, and anchor pulling. For a summary of these additional tug values, see Table 7 in Hilcorp's application.

TABLE 3—LITERATURE VALUES OF MEASURED TUG SOURCE LEVELS

Vessel	Vessel length (m)	Speed (knots)	Activity	Source level @1 m (re: 1 μPa)	Horsepower	Reference
Eagle	32	9.6	Towing barge	173	6,770	Bassett *et al.* 2012.
Valor	30	8.4	Towing barge	168	2,400	
Lela Joy	24	4.9	Towing barge	172	2,000	
Pacific Eagle	28	8.2	Towing barge	165	2,000	
Shannon	30	9.3	Towing barge	171	2,000	
James T Quigg	30	7.9	Towing barge	167	2,000	
Island Scout	30	5.8	Towing barge	174	4,800	
Chief	34	11.4	Towing barge	174	8,200	
Lauren Foss	45	N/A	Berthing barge	167	8,200	Austin *et al.* 2013.
Seaspan Resolution	30	N/A	Berthing at half power	180	6,000	Roberts Bank Terminal 2 Technical Report 2014.
Seaspan Resolution	30	N/A	Berthing at full power	200	6,000	

The Roberts Bank Terminal 2 Technical Report (2014), although not in Cook Inlet, includes repeated measurements of the same tug operating under different speeds and loads. This allows for a comparison of source levels from the same vessel at half power versus full power, which is an important distinction for Hilcorp's activities, as a small fraction of the total time spent by tugs under load will be at greater than 50 percent power. The Seaspan Resolution's half-power berthing scenario has a sound source level of 180 dB re 1 μPa at 1 m. In addition, the Roberts Bank Report (2014) analyzed 650 tug transits under varying load and speed conditions and reported mean tug source levels of 179.3 dB re 1 μPa at 1 m, the 25th percentile was 179.0 dB re 1 μPa at 1 m, and 5th percentile source levels were 184.9 dB re 1 μPa at 1 m.

Based solely on the literature review, a source level of 180 dB for a tug under load would be appropriate. However, Hilcorp's use of a three tug configuration would increase the literature source level to approximately 185dB. As one or two tugs are primarily under load, the third tug sits off to the side. NMFS still considers these tugs to be simultaneous sources. When considered in conjunction with the additional tugs present in the configuration as well as the SSV conducted by JASCO for Hilcorp's specific configuration, a source level of 185 dB for tugs towing a jack-up rig was carried forward for analysis.

Proposed mitigation, monitoring, and reporting measures are described in detail later in this document (please see Proposed Mitigation and Proposed Monitoring and Reporting).

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SARs; *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*) and more general information about these species (*e.g.,* physical and behavioral descriptions) may be found on NMFS's website (*https://www.fisheries.noaa.gov/find-species*).

Table 4 lists all species or stocks for which take is expected and proposed to be authorized for this action, and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. For taxonomy, we follow the Committee on Taxonomy (2021). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS's SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS's stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS's U.S. 2020 SARs (*e.g.,* Muto *et al.* 2021). All values presented in Table 4 are the most recent available at the time of publication and are available in the 2020 SARs (Muto *et al.* 2021) and draft 2021 SARs (available online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports*).

TABLE 4—MARINE MAMMAL SPECIES OR STOCKS FOR WHICH TAKE IS EXPECTED AND PROPOSED TO BE AUTHORIZED

Common name	Scientific name	Stock	ESA/MMPA status; strategic (Y/N) [1]	Stock abundance (CV, N_{min}, most recent abundance survey) [2]	PBR	Annual M/SI [3]
Order Cetartiodactyla—Cetacea—Superfamily Mysticeti (baleen whales)						
Family Eschrichtiidae:						
Gray whale	*Eschrichtius robustus*	Eastern Pacific	-, -, N	26,960 (0.05, 25,849, 2016).	801	131
Family Balaenidae:						
Humpback whale	*Megaptera novaeangliae*	Western North Pacific	E, D, Y	1,107 (0.3, 865, 2006)	3	2.8
Minke whale	*Balaenoptera acutorostrata*	Alaska	-, -, N	N/A (see SAR, N/A, see SAR).	UND	0
Family Balaenopteridae (rorquals):						
Fin whale	*Balaenoptera physalus*	Northeastern Pacific	E, D, Y	see SAR (see SAR, see SAR, 2013).	see SAR	0.6
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae:						
Beluga whale	*Delphinapterus leucas*	Cook Inlet	E, D, Y	279 (0.061, 267, 2018)	see SAR	0
Killer whale	*Orcinus orca*	Alaska Resident	-, -, N	2,347 c (N/A, 2347, 2012).	24	1
Killer whale	*Orcinus orca*	Gulf of Alaska, Aleutian Islands, and Bering Sea Transient.	-, -, N	587 c (N/A, 587, 2012)	5.87	0.8
Family Phocoenidae (porpoises):						
Harbor porpoise	*Phocoena phocoena*	Gulf of Alaska	-, -, Y	31,046 (0.21, N/A, 1998)	UND	72
Dall's porpoise	*Phocoenoides dalli*	Alaska	-, -, N	see SAR (0.097, see SAR, 2015).	see SAR	37
Order Carnivora—Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions):						
Steller sea lion	*Eumetopias jubatus*	Western	E, D, Y	52,932 a (see SAR, 52,932, 2019).	318	254
California sea lion	*Zalophus californianus*	U.S	-, -, N	257,606 (N/A,233,515, 2014).	14011	>320
Family Phocidae (earless seals):						
Harbor seal	*Phoca vitulina*	Cook Inlet/Shelikof	-, -, N	28,411 (see SAR, 26,907, 2018).	807	107

[1] Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

[2] NMFS marine mammal stock assessment reports online at: *www.nmfs.noaa.gov/pr/sars/.* CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance. In some cases, CV is not applicable depending on the methodology described in the stock assessment report (SAR) and the date of last available survey data. Where necessary, NMFS refers reader to the SAR for more detail.

[3] These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.,* commercial fisheries, ship strike). Annual mortality and serious injury often cannot be determined precisely and is in some cases presented as a minimum value or range.

As indicated above, all 11 species (with 12 managed stocks) in Table 4 temporally and spatially co-occur with the activity to the degree that take could reasonably occur, and we have proposed authorizing it. In addition, the northern sea otter may be found in Cook Inlet, Alaska. However, sea otters are managed by the U.S. Fish and Wildlife Service and are not considered further in this document.

Gray Whale

The eastern North Pacific stock of gray whales occurring in Cook Inlet are likely migrating to summer feeding grounds in the Bering, Chukchi, and Beaufort seas, although some whales are known to feed near Kodiak Island (Carretta *et al.* 2014). Gray whales generally breed every two years during November and December while undertaking the southern migration (Jones and Swartz 2009). Gray whales have been reported feeding near Kodiak Island, in southeastern Alaska, and south along the Pacific Northwest (Allen and Angliss 2013). Most gray whales migrating through the Gulf of Alaska region are thought to take a coastal route and (Ferguson *et al.* 2015) delineated the migratory corridor biologically important area (BIA) boundaries based on the extent of the continental shelf.

Most gray whales calve and breed from late December to early February in protected waters along the western coast of Baja California, Mexico. In spring, the Eastern North Pacific stock of gray whales migrates ~8,000 km (5,000 mi) to feeding grounds in the Bering and Chukchi seas before returning to their wintering areas in the fall (Rice and Wolman 1971). Northward migration, primarily of individuals without calves, begins in February; some cow/calf pairs delay their departure from the calving area until well into April (Jones and Swartz 1984). Gray whales approach the lower Cook Inlet in late March, April, May, and June, and leave again in November and December (Consiglieri *et al.* 1982; Rice and Wolman 1971) but migrate past the mouth of Cook Inlet to and from northern feeding grounds. Some gray whales do not migrate completely from Baja to the Chukchi Sea but instead feed in select coastal areas in the Pacific Northwest, including lower Cook Inlet (Moore *et al.* 2007).

Most of the population follows the outer coast of the Kodiak Archipelago from the Kenai Peninsula in spring or the Alaska Peninsula in fall (Consiglieri *et al.* 1982; Rice and Wolman 1971). Though most gray whales migrate past Cook Inlet, small numbers have been noted by fishers near Kachemak Bay, and north of Anchor Point (BOEM 2015). During the NMFS aerial surveys, gray whales were observed in the month of June in 1994, 2000, 2001, 2005 and 2009 on the east side of Cook Inlet near Port Graham and Elizabeth Island but also on the west side near Kamishak Bay (Shelden *et al.* 2013). One gray whale was sighted as far north at the Beluga River. Additionally, summering gray whales were seen offshore of Cape Starichkof by marine mammal observers monitoring Buccaneer's Cosmopolitan drilling program in 2013 (Owl Ridge 2014). During Apache's 2012 seismic program, nine gray whales were observed in June and July (Lomac-MacNair *et al.* 2013). During Apache's seismic program in 2014, one gray whale was observed (Lomac-MacNair *et al.* 2014). During SAExploration's seismic survey in 2015, no gray whales were observed (Kendall *et al.* 2015). No gray whales were observed during the 2019 Hilcorp seismic survey in lower Cook Inlet (Fairweather Science 2020) or during the 2018 Cook Inlet Pipeline (CIPL) project (Sitkiewicz *et al.* 2018).

Humpback Whale

Humpback whales are found throughout southern Alaska in a variety of marine environments, including open-ocean, near-shore waters, and areas with strong tidal currents (Dahlheim *et al.* 2009). Most humpback whales are migratory and spend winters in the breeding grounds off either Hawaii or Mexico. Humpback whales are regularly present and feeding in Cook Inlet in the summer. Current threats to humpback whales include vessel strikes, spills, climate change, and commercial fishing operations (Muto *et al.* 2021).

Humpback whales worldwide were designated as ''endangered'' under the Endangered Species Conservation Act in 1970, and were listed under the ESA at its inception in 1973. However, on September 8, 2016, NMFS published a final decision that changed the status of humpback whales under the ESA (81 FR 62259), effective October 11, 2016. The decision recognized the existence of 14 distinct population segments (DPSs) based on distinct breeding areas in tropical and temperate waters. Five of the 14 DPSs were classified under the ESA (4 endangered and 1 threatened), while the other 9 DPSs were delisted. Humpback whales found in the project area are predominantly members of the Hawaii DPS, which is not listed under the ESA. However, based on analyses of photo-identification studies in Alaska, members of the Mexico DPS and the Western North Pacific DPS, which are listed as threatened and endangered respectively, are thought to occur in Cook Inlet. Approximately one percent of all humpback whales in Cook Inlet are thought to belong to the endangered Western North Pacific DPS and 11 percent are thought to belong to the threatened Mexico DPS. All other humpback whales present are thought to belong to the non-listed Hawaii DPS (Wade *et al.* 2021). Members of different DPSs are known to intermix on feeding grounds; therefore, all waters off the coast of Alaska should be considered to have ESA-listed humpback whales. Critical habitat was recently designated near the entrance of lower Cook Inlet for Western North Pacific DPS and Mexico DPS humpback whales (86 FR 21082; April 21, 2021); however, Hilcorp's action area does not spatially overlap with any critical habitat designated for humpback whale DPS.

The DPSs of humpback whales that were identified through the ESA listing process do not necessarily equate to the existing MMPA stocks. The stock delineations of humpback whales under the MMPA are currently under review. Until this review is complete, NMFS considers humpback whales in Cook Inlet to be part of the Central North Pacific stock, with a status of endangered under the ESA and designations of strategic and depleted under the MMPA (Muto *et al.* 2021).

In the summer, humpback whales are regularly present and feeding in the Cook Inlet region, including Shelikof Strait, Kodiak Island bays, and the Barren Islands, in addition to Gulf of Alaska regions adjacent to the southeast side of Kodiak Island (especially Albatross Banks), the Kenai and Alaska peninsulas, Elizabeth Island, as well as south of the Aleutian Islands. Humpbacks also may be present in some of these areas throughout autumn (Muto *et al.* 2017).

Humpback whales have been observed during marine mammal surveys conducted in Cook Inlet; however, their presence is largely confined to lower Cook Inlet. During SAExploration's 2015 seismic program, three humpback whales were observed in Cook Inlet; two near the Forelands and one in Kachemak Bay (Kendall *et al.* 2015). During NMFS Cook Inlet beluga whale aerial surveys from 2000 to 2018, there were 88 sightings of 191 estimated individual humpback whales in lower Cook Inlet (Shelden *et al.* 2017). They have been regularly seen near Kachemak Bay during the summer months (Rugh *et al.* 2005). There are observations of humpback whales as far north as Anchor Point, with recent summer observations extending to Cape Starichkof (Owl Ridge 2014). Several humpback whale sightings occurred lower Cook Inlet between Iniskin Peninsula and Kachemak Bay near Augustine, Barren, and Elizabeth Islands (Shelden *et al.* 2013, 2015, 2017). There were two sightings of three humpback whales observed near Ladd Landing north of the Forelands on the recent Harvest Alaska Cook Inlet Pipeline Extension (CIPL) project (Sitkiewicz *et al.* 2018). There were 14 sightings of 38 humpback whales observed in the 2019 Hilcorp lower Cook Inlet seismic survey in the fall (Fairweather Science 2020). This higher number of humpback whales was expected in the lower Cook Inlet region than Hilcorp's proposed work in the late summer/fall period.

Ferguson *et al.* (2015) identified a biologically important area (BIA), in which humpback whales are known to concentrate for feeding, in the Gulf of Alaska region. The BIA encompasses the waters east of Kodiak Island (the Albatross and Portlock Banks), a target for historical commercial whalers based out of Port Hobron, Alaska (Ferguson *et al.* 2015; Reeves *et al.* 1985; Witteveen *et al.* 2007). This BIA also includes waters along the southeastern side of Shelikof Strait and in the bays along the northwestern shore of Kodiak Island. The highest densities of humpback whales around the Kodiak Island BIA occur from July–August (Ferguson *et al.* 2015). This BIA lies directly south but does not spatially overlap with Hilcorp's proposed action area.

Minke Whale

Minke whales are a non-ESA listed cetacean not commonly found in the Cook Inlet region. Minke whales are not designated as depleted under the MMPA or listed as threatened or endangered under the ESA. Presumably, minke whales breed in warm, low latitude waters during winter, give birth every other year to one calf, and reach sexual maturity at 7 to 9 m (23 to 30 ft) in length (Perrin and Brownell 2009). Potential threats to and vulnerabilities of minke whales include anthropogenic sound emissions underwater, impacts on prey distribution, climate change, fishing operations, vessel strikes, and oil and gas operations (Muto *et al.* 2018).

Minke whales are most abundant in the Gulf of Alaska during summer and occupy localized feeding areas (Zerbini *et al.* 2006). Concentrations of minke whales have occurred along the north coast of Kodiak Island and along the south coast of the Alaska Peninsula (Zerbini *et al.* 2006). The most recent estimate for minke whales specifically between Kenai Fjords and the Aleutian Islands is 1,233 individuals (Zerbini *et al.* 2006). No population estimate for minke whales in the entirety of the north Pacific exists (Muto et al, 2019). During shipboard surveys conducted in 2003, three minke whale sightings were made, all near the eastern extent of the survey from nearshore Prince William Sound to the shelf break (MML, 2003). Minke whales become scarce in the Gulf of Alaska in fall; most whales are thought to leave the region by October (Consiglieri *et al.* 1982). Minke whales are migratory in Alaska, but recently have been observed off Cape Starichkof and Anchor Point year-round (Muto *et al.* 2017).

During Cook Inlet-wide aerial surveys conducted from 1993 to 2004, minke whales were encountered three times (1998, 1999, and 2006), both times off Anchor Point 26 km (16 miles [mi]) northwest of Homer (Shelden *et al.* 2013, 2015, 2017; Shelden and Wade 2019). A minke whale was also reported off Cape Starichkof in 2011 and 2013, suggesting this location is regularly used by minke whales, including during the winter. Several minke whales were recorded off Cape Starichkof in early summer 2013 during exploratory drilling (Owl Ridge 2014), suggesting this location may be used by minke whales year-round. During Apache's 2014 survey, a total of two minke whale groups (totaling three individuals) were observed during this time period, one sighting to the southeast of Kalgin Island and another sighting near Homer (Lomac-MacNair *et al.* 2014). SAExploration noted one minke whale near Tuxedni Bay in 2015 (Kendall *et al.* 2015). There were eight sightings of eight minke whales observed in the 2019 Hilcorp lower Cook Inlet seismic survey in the fall (Fairweather Science 2020). This higher number of minke whales suggests these offshore waters of lower Cook Inlet may be utilized by minke whales in greater numbers than previously estimated, particularly during the fall period. No minke whales were observed during the 2018 CIPL project (Sitkiewicz *et al.* 2018).

Fin Whale

Fin whales are listed as endangered under the ESA in 1990 and depleted under the MMPA. For management purposes, three stocks of fin whales are currently recognized in United States (U.S.) Pacific waters: Alaska (Northeast Pacific), California/Washington/Oregon, and Hawaii. Recent analyses provide evidence that the population structure should be reviewed and possibly updated, however substantially new data on the stock structure is lacking (Muto *et al.* 2019).The Northeast Pacific stock is categorized as a strategic stock. No critical habitat has been designated or proposed for fin whales in the North Pacific.

Fin whales are usually observed as individuals traveling alone, although they are sometimes observed in small groups. Rarely, large groups of 50 to 300 fin whales can travel together during migrations (NMFS 2010a). Fin whales in the Cook Inlet have only been observed as individuals or in small groups. Fin whales are vulnerable to natural and anthropogenic variables. Impacts on prey quality and distribution could affect distribution and energetics. The natural range of fin whales could be expanded due to sea ice melting and expanded available habitat. This could also result in increased exposure to shipping and other commercial activities. Toxicity and resulting deaths, as seen in recent years, from harmful algal blooms producing biotoxins could result from warming waters (Muto *et al.* 2021).

In the U.S. Pacific waters, fin whales are found seasonally in the Gulf of Alaska, Bering Sea, and as far north as the northern Chukchi Sea (Muto *et al.* 2019). Surveys conducted in coastal waters of the Aleutians and the Alaska Peninsula found fin whales occurred primarily from the Kenai Peninsula to the Shumagin Islands and were abundant near the Semidi Islands and Kodiak Island (Zerbini *et al.* 2006). An opportunistic survey conducted on the shelf of the Gulf of Alaska found fin whales concentrated west of Kodiak Island in Shelikof Strait, and in the southern Cook Inlet region. In the northeastern Chukchi Sea, visual sightings and acoustic detections have been increasing, which suggests the stock may be re-occupying habitat used prior to large-scale commercial whaling (Muto *et al.* 2019). Most of these areas are feeding habitat for fin whales. Watkins *et al.* (2000), and Stafford *et al.* (2007) documented high rates of calling along the Alaska coast beginning in August/September and lasting through February. Fin whales are regularly observed in the Gulf of Alaska during the summer months, even though calls are seldom detected during this period (Stafford *et al.* 2007). Instruments moored in the southeast Bering Sea detected calls over the course of a year and found peaks from September to November as well as in February and March (Stafford *et al.* 2010). Delarue *et al.* (2013) detected calls in the northeastern Chukchi Sea from instruments moored from July through October from 2007 through 2010.

Fin whales are rarely observed in Cook Inlet and most sightings occur near the entrance of the inlet. During the

NMFS aerial surveys in Cook Inlet from 2000 to 2018, 10 sightings of 26 estimated individual fin whales in lower Cook Inlet were observed (Shelden *et al.* 2013, 2015, 2017; Shelden and Wade 2019). There were eight sightings of 23 fin whales observed in the 2019 Hilcorp lower Cook Inlet seismic survey in the fall (Fairweather Science 2020). This higher number of fin whale sightings suggests these offshore waters of lower Cook Inlet may be utilized by fin whales in greater numbers than previously estimated, particularly during the fall period.

Beluga Whale

The Cook Inlet beluga whale stock is a small geographically isolated population that is separated from other beluga populations by the Alaska Peninsula. The population is genetically distinct from other Alaska populations suggesting the Peninsula is an effective barrier to genetic exchange (O'Corry-Crowe *et al.* 1997). The Cook Inlet beluga whale population is estimated to have declined from 1,300 animals in the 1970s (Calkins 1989) to about 340 animals in 2014 (Shelden *et al.* 2015). The current population estimate is 279 animals (Shelden and Wade 2019). In 1999, beluga hunters agreed to a moratorium on hunting to protect the species, from 2000 through 2005 one strike per year was allowed and taken in all but 2004, and since 2006 no Cook Inlet belugas have been harvested by subsistence users (Muto *et al.* 2021).

NMFS designated the population as depleted under the MMPA in 2000 and listed it as endangered under the ESA in 2008 when the population failed to recover following a moratorium on subsistence harvest (65 FR 34590; May 31, 2000). In April 2011, NMFS designated critical habitat for the beluga under the ESA (76 FR 20180; April 11, 2011). NMFS finalized the Conservation Plan for the Cook Inlet beluga in 2008 (NMFS 2008a) and the Recovery Plan for Cook Inlet beluga whales in 2016 (NMFS 2016a). During the most recent 10-year time period (2008 to 2018), the population of Cook Inlet belugas experienced a decline of about 2.3 percent per year (Wade *et al.* 2019). Threats that have the potential to impact this stock and its habitat include the following: Changes in prey availability due to natural environmental variability, ocean acidification, and commercial fisheries; climatic changes affecting habitat; predation by killer whales; contaminants; noise; ship strikes; waste management; urban runoff; construction projects; and physical habitat modifications that may occur as Cook Inlet becomes increasingly urbanized (Moore *et al.,* 2000, Lowry *et al.,* 2006, Hobbs *et al.,* 2015, NMFS, 2106). Planned projects that may alter the physical habitat of Cook Inlet include highway improvements; mine construction and operation; oil and gas exploration and development; and expansion and improvements to ports.

Generally, female beluga whales reach sexual maturity at 9 to 12 years old, while males reach maturity later (O'Corry-Crowe 2009); however, this can vary between populations. For example, in Greenland, males in a population of beluga whales were found to reach sexual maturity at 6 to 7 years of age and females at 4 to 7 years. (Heide-Joregensen and Teilmann 1994). Suydam (2009) estimated that 50 percent of females were sexually mature at age 8.25 and the average age at first birth was 8.27 years for belugas sampled near Point Lay. Mating behavior in beluga whales typically occurs between February and June, peaking in March (Burns and Seaman 1986; Suydam 2009). In the Chukchi Sea, the gestation period of beluga whales was determined to be 14.9 months, with a calving interval of two to three years and a pregnancy rate of 0.41, declining after 25 years of age (Suydam 2009). Calves are born between mid-June and mid-July and typically remain with the mother for up to 2 years of age (Suydam 2009).

Several studies (Johnson *et al.* 1989; Klishin *et al.* 2000; Finneran *et al.* 2002; Erbe 2008; white *et al.* 1978; Awbrey *et al.* 1988; Ridgway *et al.* 2001; Finneran *et al.* 2005; Castellote *et al.* 2019) describe beluga whale hearing capabilities. One study on beluga whales captured and released in Bristol Bay, Alaska measured hearing ranges at 4 to 150 kHz with greatest variation between individuals at the high end of the auditory range in combination with frequencies near the maximum sensitivity (Castellote *et al.* 2014). All animals tested heard well up to 128 kHz, with two individuals hearing up to 150 kHz (Castellote *et al.* 2014). Beluga whales are included in the NMFS-identified mid-frequency functional hearing group.

The Cook Inlet beluga stock remains within Cook Inlet throughout the year (Goetz *et al.* 2012a). Two areas, consisting of 7,809 square kilometers (km^2) of marine and estuarine environments considered essential for the species' survival and recovery, were designated critical habitat. However, in recent years the range of the beluga whale has contracted to the upper reaches of Cook Inlet (Rugh *et al.* 2010). Area 1 of the Cook Inlet beluga whale critical habitat encompasses all marine waters of Cook Inlet north of a line connecting Point Possession (61.04° N, 150.37° W) and the mouth of Threemile Creek (61.08.55° N, 151.04.40° W), including waters of the Susitna, Little Susitna, and Chickaloon Rivers below the mean higher high water line (MHHW). This area provides important habitat during ice-free months and is used intensively by Cook Inlet beluga between April and November for feeding and other biological functions (NMFS 2016a).

Since 1993, NMFS has conducted annual aerial surveys in June, July, or August to document the distribution and abundance of beluga whales in Cook Inlet. The collective survey results show that beluga whales have been consistently found near or in river mouths along the northern shores of middle and upper Cook Inlet. In particular, beluga whale groups are seen in the Susitna River Delta, Knik Arm, and along the shores of Chickaloon Bay. Small groups had also been recorded farther south in Kachemak Bay, Redoubt Bay (Big River), and Trading Bay (McArthur River) prior to 1996, but very rarely thereafter. Since the mid-1990s, most beluga whales have been concentrated in shallow areas near river mouths north and east of Beluga River and Point Possession (Hobbs *et al.* 2008). Based on these aerial surveys, there is a consistent pattern of beluga whale presence in the northernmost portion of Cook Inlet from June to October (Rugh *et al.* 2000, 2004a, 2004b, 2005, 2006, 2007).

Though Cook Inlet beluga whales can be found throughout the inlet at any time of year, generally they spend the ice-free months in the upper Cook Inlet, shifting into deeper waters in middle Cook Inlet in winter (Hobbs *et al.* 2008). In 1999, one beluga whale was tagged with a satellite transmitter, and its movements were recorded from June through September of that year. Since 1999, 18 beluga whales in upper Cook Inlet have been captured and fitted with satellite tags to provide information on their movements during late summer, fall, winter, and spring. Using location data from satellite-tagged Cook Inlet belugas, Ezer *et al.* (2013) found most tagged whales were in the lower to middle inlet during January through March, near the Susitna River Delta from April to July) and in the Knik and Turnagain Arms from August to December.

During the spring and summer, beluga whales are generally concentrated near the warmer waters of river mouths where prey availability is high and predator occurrence is low (Moore *et al.* 2000). Beluga whales in Cook Inlet are believed to mostly calve between mid-May and mid-July, and concurrently breed between late spring and early summer (NMFS 2016a), primarily in upper Cook Inlet. Beluga movement was correlated with the peak discharge of seven major rivers emptying into Cook Inlet. Boat-based surveys from 2005 to the present (McGuire and Stephens 2017), and initial results from passive acoustic monitoring across the entire inlet (Castellote *et al.* 2016) also support seasonal patterns observed with other methods, and other surveys confirm Cook Inlet belugas near the Kenai River during summer months (McGuire and Stephens 2017).

During the summer and fall, beluga whales are concentrated near the Susitna River mouth, Knik Arm, Turnagain Arm, and Chickaloon Bay (Nemeth *et al.* 2007) where they feed on migrating eulachon (Thaleichthys pacificus) and salmon (*Onchorhyncus spp.*) (Moore *et al.* 2000). Data from tagged whales (14 tags between July and March 2000 through 2003) show beluga whales use upper Cook Inlet intensively between summer and late autumn (Hobbs *et al.* 2005). Critical Habitat Area 1 encompasses this summer distribution.

As late as October, beluga whales tagged with satellite transmitters continued to use Knik Arm and Turnagain Arm and Chickaloon Bay, but some ranged into lower Cook Inlet south to Chinitna Bay, Tuxedni Bay, and Trading Bay (McArthur River) in the fall (Hobbs *et al.* 2005). Data from NMFS aerial surveys, opportunistic sighting reports, and satellite-tagged beluga whales confirm they are more widely dispersed throughout Cook Inlet during the winter months (November to April), with animals found between Kalgin Island and Point Possession. In November, beluga whales moved between Knik Arm, Turnagain Arm, and Chickaloon Bay, similar to patterns observed in September (Hobbs *et al.* 2005). By December, beluga whales were distributed throughout the upper to middle Cook Inlet. From January into March, they moved as far south as Kalgin Island and slightly beyond in central offshore waters. Beluga whales also made occasional excursions into Knik Arm and Turnagain Arm in February and March despite ice cover greater than 90 percent (Hobbs *et al.* 2005). Critical Habitat Area 2 encompasses some of the fall and winter feeding grounds in middle Cook Inlet.

Ferguson *et al.* (2015) delineated one 'Small' and 'Resident' BIA for Cook Inlet beluga whales. Small and Resident BIAs are defined as ''areas and time within which small and resident populations occupy a limited geographic extent'' (Ferguson *et al.* 2015). The Cook Inlet beluga whale BIA was delineated using the habitat model results of Goetz *et al.* 2012 and the critical habitat boundaries and overlaps with both Critical Habitat Areas 1 and 2.

During Apache's seismic test program in 2011 along the west coast of Redoubt Bay, lower Cook Inlet, a total of 33 beluga whales were sighted during the survey (Lomac-MacNair *et al.* 2013). During Apache's 2012 seismic program in mid-inlet, a total of 151 sightings consisting of an estimated 1,463 beluga whales were observed (Lomac-MacNair *et al.* 2014). During SAExploration's 2015 seismic program, a total of eight sightings of 33 estimated individual beluga whales were visually observed during this time period and there were two acoustic detections of beluga whales (Kendall *et al.* 2015). During Harvest Alaska's recent CIPL project on the west side of Cook Inlet in between Ladd Landing and Tyonek Platform, a total of 143 beluga whale sightings (814 individuals) were observed almost daily from May 31 to July 11, even though observations spanned from May 9 through September 15 (Sitkiewicz *et al.* 2018). There were two beluga whale carcasses observed by the project vessels in the 2019 Hilcorp lower Cook Inlet seismic survey in the fall which were reported to the NMFS Marine Mammal Stranding Network (Fairweather Science 2020). Both carcasses were moderately decomposed when they were sighted by the PSOs. Daily aerial surveys specifically for beluga whales were flown over the lower Cook Inlet region, but no beluga whales were observed.

Killer Whale

Based on data regarding association patterns, acoustics, movements, and genetic differences, eight killer whale stocks are now recognized within the Pacific U.S. Exclusive Economic Zone. Two different stocks of killer whales inhabit the Cook Inlet region of Alaska: The Alaska Resident Stock and the Gulf of Alaska, Aleutian Islands, Bering Sea Transient Stock (Muto *et al.* 2021). The Alaska Resident Stock and the Gulf of Alaska, Aleutian Islands, Bering Sea Transient Stock of killer whales are not designated as depleted under the MMPA or listed as threatened or endangered under the ESA. Reliable data on population trends for these killer whale stocks are unavailable (Muto *et al.* 2021).

Resident and transient killer whales from the Alaska Resident Stock and the Gulf of Alaska, Aleutian Islands, and Bering Sea Transient Stock occur in Cook Inlet (Allen and Angliss 2015), though rarely in middle and upper Cook Inlet. Transient killer whales feed on beluga whales and other marine mammals, and resident populations feed on anadromous fish (Shelden *et al.* 2003). The likelihood of killer whale occurrence depends on prey availability (NOAA 2019). Threats to and vulnerabilities of killer whales include natural causes, such as predation, and anthropogenic factors such as climate change, fishing operations and vessel strikes (Muto *et al.* 2016).

Killer whales are occasionally observed in lower Cook Inlet, especially near Homer and Port Graham (Shelden *et al.* 2003; Rugh *et al.* 2005). The few whales that have been photographically identified in lower Cook Inlet belong to resident groups more commonly found in nearby Kenai Fjords and Prince William Sound (Shelden *et al.* 2003). The availability of prey species largely determines the likeliest times for killer whales to be in the area. During aerial surveys conducted between 1993 and 2004, killer whales were observed on only three flights, all in the Kachemak and English Bay area (Rugh *et al.* 2005). However, anecdotal reports of killer whales feeding on belugas in middle and upper Cook Inlet began increasing in the 1990s, possibly in response to declines in sea lion and harbor seal prey elsewhere (Shelden *et al.* 2003).

One killer whale group of two individuals was observed during the 2015 SAExploration seismic program near the North Foreland (Kendall *et al.* 2015). During NMFS aerial surveys, killer whales were observed in 1994 (Kamishak Bay), 1997 (Kachemak Bay), 2001 (Port Graham), 2005 (Iniskin Bay), 2010 (Elizabeth and Augustine Islands), and 2012 (Kachemak Bay; Shelden *et al.* 2013). Eleven killer whale strandings have been reported in Turnagain Arm, six in May 1991, and five in August 1993. There were six sightings of 21 killer whales observed in the 2019 Hilcorp lower Cook Inlet seismic survey in the fall (Fairweather Science 2020). This species is expected to be rarely seen in upper Cook Inlet but may be encountered in the middle and lower Inlet. However, no killer whales were observed during the 4-month CIPL project in middle Cook Inlet in 2018 (Sitkiewicz *et al.* 2018).

Harbor Porpoise

In Alaskan waters, three stocks of harbor porpoises are currently recognized for management purposes: Southeast Alaska, Gulf of Alaska, and Bering Sea Stocks (Muto *et al.* 2019). Porpoises found in Cook Inlet belong to the Gulf of Alaska Stock which is distributed from Cape Suckling to

Unimak Pass and most recently was estimated to number 31,046 individuals (Muto *et al.* 2019). Harbor porpoises are regularly seen throughout Cook Inlet (Nemeth *et al.* 2007), especially during spring eulachon and summer salmon runs. Harbor porpoises are not designated as depleted under the MMPA or listed as threatened or endangered under the ESA.

Harbor porpoises primarily frequent the coastal waters of the Gulf of Alaska and Southeast Alaska (Dahlheim *et al.* 2000, 2008), typically occurring in waters less than 100 m deep (Hobbs and Waite 2010). The range of the Gulf of Alaska stock includes the entire Cook Inlet, Shelikof Strait, and the Gulf of Alaska. Harbor porpoises have been reported in lower Cook Inlet from Cape Douglas to the West Foreland, Kachemak Bay, and offshore (Rugh *et al.* 2005). Although they have been frequently observed during aerial surveys in Cook Inlet (Shelden *et al.* 2014), most sightings are of single animals, and are concentrated at Chinitna and Tuxedni bays on the west side of lower Cook Inlet (Rugh *et al.* 2005) and in the upper inlet. The occurrence of larger numbers of porpoise in the lower Cook Inlet may be driven by greater availability of preferred prey and possibly less competition with beluga whales, as belugas move into upper inlet waters to forage on Pacific salmon (*Oncorhynchus spp.*) during the summer months (Shelden *et al.* 2014). Recent passive acoustic research in Cook Inlet by Alaska Department of Fish and Game (ADF&G) and MML have indicated that harbor porpoises occur more frequently than expected, particularly in the West Foreland area in the spring (Castellote *et al.* 2016).

The harbor porpoise frequently has been observed during summer aerial surveys of Cook Inlet, with most sightings of individuals concentrated at Chinitna and Tuxedni Bays on the west side of lower Cook Inlet (Rugh *et al.* 2005). Mating likely occurs from June or July to October, with peak calving in May and June (Consiglieri *et al.* 1982). Small numbers of harbor porpoises have been consistently reported in the upper Cook Inlet between April and October, except for a recent survey that recorded higher numbers than typical. NMFS aerial surveys have routinely identified many harbor porpoise sightings throughout Cook Inle. During Apache's 2012 seismic program, 137 sightings (190 individuals) were observed between May and August (Lomac-MacNair *et al.* 2013). Lomac-MacNair *et al.* 2014 identified 77 groups of harbor porpoise totaling 13 individuals during Apache's 2014 seismic survey, both from vessels and aircraft, during the month of May. During SAExploration's 2015 seismic survey, 52 sightings (65 individuals) were observed north of the Forelands (Kendall *et al.* 2015). There were 2 sightings of 3 harbor porpoises observed during the 2019 Hilcorp lower Cook Inlet seismic survey in the fall (Fairweather Science 2020). A total of 29 sightings (44 individuals) were observed north of the Forelands from May to September during the Harvest Alaska CIPL project (Sitkiewicz *et al.* 2018). During jack-up rig moves in 2021, a Protected Species Observer (PSO) observed two individual harbor porpoises in middle Cook Inlet, one in July and one in October.

Dall's Porpoise

Dall's porpoises are widely distributed across the North Pacific, but they are infrequently sighted in upper Cook Inlet (Muto *et al.* 2020). Dall's porpoises have been observed in lower Cook Inlet, around Kachemak Bay, and rarely near Anchor Point (BOEM 2015). Dall's porpoises are not designated as depleted under the MMPA or listed as threatened or endangered under the ESA (Muto *et al.* 2019). Threats to and vulnerabilities of Dall's porpoises include natural and anthropogenic factors such as habitat modifications and climate change. The nearshore areas, bays, channels, and inlets where Dall's porpoises frequent are of particular concern. These areas are subject to substantial changes with urbanization and industrialization, including waste management and nonpoint source runoff (Linnenschmidt *et al.* 2013).

Throughout most of the eastern North Pacific they are present during all months of the year, although there may be seasonal onshore-offshore movements along the west coast of the continental U.S. and winter movements of populations out of areas with ice such as Prince William Sound (Muto *et al.* 2019). No Dall's porpoises were observed during the CIPL project monitoring program in middle Cook Inlet in 2018 (Sitkiewicz *et al.* 2018). Dall's porpoises were observed (two groups of three individuals) during Apache's 2014 seismic survey which occurred in the summer months (Lomac-MacNair *et al.* 2014). Dall's porpoises were observed during the month of June in 1997 (Iniskin Bay), 199 (Barren Island), and 2000 (Elizabeth Island, Kamishak Bay and Barren Island) (Shelden *et al.* 2013). Dall's porpoises have been observed in lower Cook Inlet, including Kachemak Bay and near Anchor Point (Owl Ridge 2014). One Dall's porpoise was observed in August north of Nikiski in the middle of the Inlet during SAExploration's 2015 seismic program (Kendall *et al.* 2015). There were 10 sightings of 30 Dall's porpoises observed during the 2019 Hilcorp lower Cook Inlet seismic survey in the fall (Fairweather Science 2020).

Steller Sea Lion

The Western DPS of Steller sea lions is currently listed as endangered under the ESA (55 FR 49204; November 26, 1990) and designated as depleted under the MMPA. Critical habitat was designated on August 27, 1993 (58 FR 45269; August 27, 1993) south of the proposed action area in the Cook Inlet region. The critical habitat designation for the Western DPS of Steller sea lions includes a 37 km buffer around all major haul outs and rookeries, and associated terrestrial, atmospheric, and aquatic zones, plus three large offshore foraging areas, as well as designated no entry zones around rookeries (50 CFR 223.202). Designated critical habitat is located outside Cook Inlet at Gore Point, Elizabeth Island, Perl Island, and Chugach Island (NMFS 2008b). The Western DPS of the Steller sea lion is defined as all populations west of longitude 144° W to the western end of the Aleutian Islands.

Steller sea lions are not migratory animals but exhibit wide dispersion in the non-breeding season (Loughlin 1997). They are polygynous in nature, with one male typically breeding with large numbers of females. Steller sea lions tend to haul out in large groups.

Underwater vocalizations of Steller sea lions have been noted to include belches, barks, and clicks (Kastelein *et al.* 2005). Audiograms have revealed a maximum underwater hearing sensitivity at 77 dB RL at 1kHz for a male Steller sea lion, with a range of best hearing at 10 dB from the maximum sensitivity, of between 1 and 16 kHz. His average pre-stimulus responses occurred at low frequency signals. Similar audiograms of a female Steller sea lion revealed a maximum hearing sensitivity of 73 dB received level, occurring at 25 kHz, indicating that low frequency sounds are audible to Steller sea lions (Kastelein *et al.* 2005).

Steller sea lions feed largely on walleye pollock (*Theragra chalcogramma*), salmon (*Onchorhyncus spp.*), and arrowtooth flounder (*Atheresthes stomias*) during the summer, and walleye pollock and Pacific cod (*Gadus macrocephalus*) during the winter (Sinclair and Zeppelin 2002). Except for salmon, these species are not found in abundance in upper Cook Inlet (Nemeth *et al.* 2007). Threats to and vulnerabilities of Steller sea lions include natural and anthropogenic factors, including depletion of prey availability from fishing activities, climate change, disease, contaminants, predation by killer whales, incidental take, and illegal and legal shooting (Atkinson *et al.* 2008, NMFS 2008), harmful algal blooms (Lefebvre *et al.* 2016), disease proliferation from warming waters (VanWormer *et al.* 2019), and potentially metal and contaminant exposure (Rea *et al.* 2013; Beckmen *et al.* 2016, Keogh *et al.* 2020).

Steller sea lions inhabit lower Cook Inlet, especially near Shaw Island and Elizabeth Island (Nagahut Rocks) haul out sites (Rugh *et al.* 2005) but are rarely seen in upper Cook Inlet (Nemeth *et al.* 2007). Steller sea lions occur in Cook Inlet but south of Anchor Point around the offshore islands and along the west coast of the upper inlet in the bays (Chinitna Bay, Iniskin Bay, etc.) (Rugh *et al.* 2005). Portions of the southern reaches of the lower inlet are designated as critical habitat, including a 37 km (20 nautical mile) buffer around all major haul out sites and rookeries. Rookeries and haul out sites in lower Cook Inlet include those near the mouth of the inlet, which are far south of the Action Area.

Steller sea lions have been observed during marine mammal surveys conducted in Cook Inlet. In 2012, during Apache's 3D Seismic surveys, there were three sightings of approximately four individuals in upper Cook Inlet (Lomac-MacNair *et al.* 2013). Marine mammal observers associated with Buccaneer's drilling project off Cape Starichkof observed seven Steller sea lions during the summer of 2013 (Owl Ridge 2014). During SAExploration's 3D Seismic Program in 2015, four Steller sea lions were observed in Cook Inlet. One sighting occurred between the West and East Forelands, one near Nikiski and one northeast of the North Foreland in the center of Cook Inlet (Kendall *et al.* 2015). There were five sightings of five Steller sea lions observed during the 2019 Hilcorp lower Cook Inlet seismic survey in the fall (Fairweather Science 2020). One sighting of two individuals occurred during the CIPL project in 2018 in middle Cook Inlet (Sitkiewicz *et al.* 2018). During NMFS Cook Inlet beluga whale aerial surveys from 2000 to 2016, there were 39 sightings of 769 estimated individual Steller sea lions in lower Cook Inlet (Shelden *et al.* 2017). Sightings of large congregations of Steller sea lions during NMFS aerial surveys occurred outside the Action Area, on land in the mouth of Cook Inlet (*e.g.,* Elizabeth and Shaw Islands).

California Sea Lion

California sea lions in the U.S. are not listed as endangered or threatened under the ESA or as depleted or strategic under the MMPA. The growth rate of the species is approximately seven percent annually (Carretta *et al.* 2020). There is limited information on the presence of California sea lions in Alaska. California sea lion presence in Alaska was correlated with increasing population numbers within their southern breeding range (Maniscalco *et al.* 2004). California sea lions are not commonly observed in Alaska. When they are observed, they are often alone or, less commonly, in groups of two or more. They are most often associated with Steller sea lions at their haulouts and rookeries (Maniscalco *et al.* 2004). Threats to and vulnerabilities of California sea lions include natural and anthropogenic factors including climate change, exposure to harmful algal neurotoxins (Scholin *et al.* 2000, Brodie *et al.* 2006, Ramsdell and Zabka 2008), shootings, entrainment in industrial facilities, fishing gear interactions, vessel strikes, and human disturbance (Muto *et al.* 2019).

California sea lions are not typically observed farther north than southeast Alaska, and sightings are very rare in Cook Inlet. California sea lions have not been observed during the annual NMFS aerial surveys in Cook Inlet. However, a sighting of two California sea lions was documented during the Apache 2012 seismic survey (Lomac-MacNair *et al.* 2013). Additionally, NMFS' anecdotal sighting database has four sightings in Seward and Kachemak Bay. There were no California sea lions observed during the 2019 Hilcorp lower Cook Inlet seismic survey (Fairweather Science 2020) or the CIPL project in 2018 (Sitkiewicz *et al.* 2018).

Harbor Seal

In 2010, NMFS and their co-management partners, the Alaska Native Harbor Seal Commission, defined 12 separate stocks of harbor seals based largely on genetics. The harbor seal stocks present in the action area are from the Cook Inlet/Shelikof stock. No harbor seal stocks in Alaska are designated as depleted under the MMPA or listed as threatened or endangered under the ESA (Muto *et al.* 2019).

In Cook Inlet, large harbor seal haulout areas are located in lower Cook Inlet, with occurrence in upper inlet coinciding with prey availability. Harbor seals frequent the Susitna River and other rivers feeding into upper Cook Inlet when eulachon and salmon are migrating in those areas (NMFS, 2003). Harbor seals haul out on rocks, reefs, beaches, and drifting glacial ice. Prey species include capelin, eulachon, cod, pollock, flatfish, shrimp, octopus, and squid. Threats to and vulnerabilities of harbor seals include natural and anthropogenic factors including climate change, shipping, and tour vessel traffic (Muto *et al.* 2021).

The major haul out sites for harbor seals are located in lower Cook Inlet and their presence in middle and upper Cook Inlet is seasonal. In Cook Inlet, seal use of western habitats is greater than use of the eastern coastline (Boveng *et al.* 2012). NMFS has documented a strong seasonal pattern of more coastal and restricted spatial use during the spring and summer for breeding, pupping, and molting, and more wide-ranging seal movements within and outside of Cook Inlet during the winter months (Boveng *et al.* 2012). Large-scale movement patterns indicate a portion of harbor seals captured in Cook Inlet move out of the area in the fall, and into habitats within Shelikof Strait, Northern Kodiak Island, and coastal habitats of the Alaska Peninsula, and are most concentrated in Kachemak Bay, across Cook Inlet toward Iniskin and Iliamna Bays, and south through the Kamishak Bay, Cape Douglas, and Shelikof Strait regions (Boveng *et al.* 2012).

The Cook Inlet/Shelikof Stock is distributed from Anchorage into lower Cook Inlet during summer and from lower Cook Inlet through Shelikof Strait to Unimak Pass during winter (Boveng *et al.* 2012). Large numbers concentrate at the river mouths and embayments of lower Cook Inlet, including the Fox River mouth in Kachemak Bay, and several haul outs have been identified on the southern end of Kalgin Island in lower Cook Inlet (Rugh *et al.* 2005; Boveng *et al.* 2012). Montgomery *et al.* (2007) recorded over 200 haul-out sites in lower Cook Inlet alone.

NMFS aerial surveys have routinely identified many harbor seal sightings throughout Cook Inlet over the past 20 years of survey effort. During Apache's 2012 seismic program, harbor seals were observed in the project area from early May until the end of the seismic operations in late September (Lomac-MacNair *et al.* 2013). Up to 100 harbor seals were observed hauled out at the mouths of the Theodore and Lewis rivers during monitoring activity. During Apache's 2014 seismic program, 492 groups of harbor seals (613 individuals) were observed; this highest sighting rate of any marine mammal observed during the summer of 2014 (Lomac-MacNair *et al.* 2014). During SAExploration's 2015 seismic survey, 823 sightings (1,680 individuals) were observed north and between the Forelands (Kendall *et al.* 2015). Recently, a total of 313 sightings (316 individuals) were observed near Ladd Landing for the Harvest Alaska CIPL project during the summer (Sitkiewicz *et al.* 2018). There were 10 sightings of 10 harbor seals observed during the 2019 Hilcorp lower Cook Inlet seismic survey in the fall (Fairweather Science 2020). During a Hilcorp jack-up rig move in 2021, one pinniped of an unidentified species was observed in July in middle Cook Inlet.

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Not all marine mammal species have equal hearing capabilities (*e.g.,* Richardson *et al.,* 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007, 2019) recommended that marine mammals be divided into hearing groups based on directly measured (behavioral or auditory evoked potential techniques) or estimated hearing ranges (behavioral response data, anatomical modeling, etc.). Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.,* low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 decibel (dB) threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 5.

TABLE 5—MARINE MAMMAL HEARING GROUPS

[NMFS, 2018]

Hearing group	Generalized hearing range *
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz.
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz.
High-frequency (HF) cetaceans (true porpoises, *Kogia,* river dolphins, cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*).	275 Hz to 160 kHz.
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz.
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz.

* Represents the generalized hearing range for the entire group as a composite (*i.e.,* all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall *et al.* 2007) and PW pinniped (approximation).

The pinniped functional hearing group was modified from Southall *et al.* (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al.,* 2006; Kastelein *et al.,* 2009; Reichmuth and Holt, 2013).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information.

Potential Effects of Specified Activities on Marine Mammals and Their Habitat

This section includes a summary and discussion of the ways that components of the specified activity may impact marine mammals and their habitat. The Estimated Take section later in this document includes a quantitative analysis of the number of individuals that are expected to be taken by this activity. The Negligible Impact Analysis and Determination section considers the content of this section, the Estimated Take section, and the Proposed Mitigation section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and how those impacts on individuals are likely to impact marine mammal species or stocks.

The proposed project includes the use of three tugs towing a jack-up rig, which would emit consistent, low levels of noise into a small portion of Cook Inlet for an extended period of time. Hilcorp's tugging and positioning activities would occur for approximately 16 days in Year 1 and 16 days in Year 2 to support overall production and well plug and abandonment operations that would occur across 210 days in Year 1 and 180 days in Year 2. Unlike projects that involve discrete noise sources with known potential to harass marine mammals (*e.g.,* pile driving, seismic surveys), both the noise sources and impacts from the tugs towing the jack-up rig are less well documented. In light of the aforementioned court decision we have re-examined the available information. The various scenarios that may occur during this project extend from tugs in a stationary mode, positioning the drill rig to pulling the jack-up rig at nearly full power against strong tides. Our assessments of the potential for harassment of marine mammals incidental to Hilcorp's tug activities specified here are conservative in light of the general Level B harassment exposure thresholds, the fact that NMFS is still in the process of developing analyses of the impact that non-quantitative contextual factors have on the likelihood of Level B harassment occurring, and the nature and duration of the particular tug activities analyzed here.

The proposed project has the potential to harass marine mammals from exposure to noise and the physical presence of working vessels (*e.g.,* three tug configuration) as well as associated noise with the positioning of the jack-up rig. In this case, NMFS considers potential for harassment from the collective use of these technologies working in a concentrated area (relative to the entire Cook Inlet) for an extended period of time (when making multiple positioning attempts) and noise created when moving the jack-up rig using three tugs. Essentially, the project area will become a concentrated work area in an otherwise non-industrial setting for a period of several days. Accordingly the Estimated Take section proposes to authorize take, by Level B harassment, from tug towing activities over the course of 16 days of activity each year.

Auditory Effects

NMFS defines a noise-induced threshold shift (TS) as ''a change, usually an increase, in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level'' (NMFS, 2018). The amount of threshold shift is customarily expressed in dB (ANSI 1995, Yost 2007). A TS can be permanent (PTS) or temporary (TTS). As described in NMFS (2016), there are numerous factors to consider when examining the consequence of TS, including, but not limited to, the signal temporal pattern (*e.g.,* impulsive or non-impulsive), likelihood an individual would be exposed for a long enough duration or to a high enough level to induce a TS, the magnitude of the TS, time to recovery (seconds to minutes or hours to days), the frequency range of the exposure (*i.e.,* spectral content), the hearing and vocalization frequency range of the exposed species relative to the signal's frequency spectrum (*i.e.,* how animal uses sound within the frequency band of the signal; *e.g.,* Kastelein *et al.,* 2014), and the overlap between the animal and the source (*e.g.,* spatial, temporal, and spectral). When analyzing the auditory effects of noise exposure, it is often helpful to broadly categorize sound as either impulsive—noise with high peak sound pressure, short duration, fast rise-time, and broad frequency content—or non-impulsive. For example, when considering auditory effects, vibratory pile driving is considered a non-impulsive source while impact pile driving is treated as an impulsive source. The sounds produced by tugs towing and positioning the jack-up rig are characterized as non-impulsive sounds.

Permanent Threshold Shift—NMFS defines PTS as a permanent, irreversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS 2018). Available data from humans and other terrestrial mammals indicate that a 40 dB threshold shift approximates PTS onset (see NMFS 2018 for review).

Temporary Threshold Shift—NMFS defines TTS as a temporary, reversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS 2018). Based on data from cetacean TTS measurements (see Finneran 2015 for a review), a TTS of 6 dB is considered the minimum threshold shift clearly larger than any day-to-day or session-to-session variation in a subject's normal hearing ability (Schlundt *et al.,* 2000; Finneran *et al.,* 2002; Finneran, 2015).

Depending on the degree (elevation of threshold in dB), duration (*i.e.,* recovery time), and frequency range of TTS, and the context in which it is experienced, TTS can have effects on marine mammals ranging from discountable to serious (similar to those discussed in auditory masking, below). For example, a marine mammal may be able to readily compensate for a brief, relatively small amount of TTS in a non-critical frequency range that takes place during a time when the animal is traveling through the open ocean, where ambient noise is lower and there are not as many competing sounds present. Alternatively, a larger amount and longer duration of TTS sustained during times when hearing is critical, such as for successful mother/calf interactions, could have more serious impacts. We note that reduced hearing sensitivity as a simple function of aging has been observed in marine mammals, as well as humans and other taxa (Southall *et al.,* 2007), so we can infer that strategies exist for coping with this condition to some degree, though likely not without cost.

Masking

Since many marine mammals rely on sound to find prey, moderate social interactions, and facilitate mating (Tyack, 2008), noise from anthropogenic sound sources can interfere with these functions, but only if the noise spectrum overlaps with the hearing sensitivity of the marine mammal (Southall *et al.,* 2007; Clark *et al.,* 2009; Hatch *et al.,* 2012). Chronic exposure to excessive, though not high-intensity, noise could cause masking at particular frequencies for marine mammals that utilize sound for vital biological functions (Clark *et al.,* 2009). Acoustic masking is when other noises such as from human sources interfere with animal detection and/or interpretation of acoustic signals such as communication calls, echolocation sounds, and environmental sounds important to marine mammals. Therefore, under certain circumstances, marine mammals whose acoustical sensors or environment are being severely masked could also be impaired from maximizing their performance fitness in survival and reproduction.

Masking occurs in the frequency band that the animals utilize. Since noises generated from tugs towing and positioning are mostly concentrated at low frequency ranges, with a small concentration in high frequencies as well, these activities likely have less effect on mid-frequency echolocation sounds by odontocetes (toothed whales) such as Cook Inlet beluga whales. However, lower frequency noises are more likely to affect detection of communication calls and other potentially important natural sounds such as surf and prey noise. Low-frequency noise may also affect communication signals when they occur near the noise band and thus reduce the communication space of animals (*e.g.,* Clark *et al.,* 2009) and cause increased stress levels (*e.g.,* Holt *et al.,* 2009). Unlike TS, masking, which can occur over large temporal and spatial scales, can potentially affect the species at population, community, or even ecosystem levels, in addition to individual levels. Masking affects both senders and receivers of the signals and at higher levels for longer durations could have long-term chronic effects on marine mammal species and populations. However, the noise generated by the tugs will not be concentrated in one location or for more than five hours per day and in the same geographic location for only two days per well site.

Behavioral Disturbance

Finally, exposure of marine mammals to certain sounds could result in behavioral disturbance (Richardson *et al.,* 1995), not all of which constitutes harassment under the MMPA. The onset of behavioral disturbance from anthropogenic noise depends on both external factors (*e.g.,* characteristics of noise sources and their paths) and the receiving animals (*e.g.,* hearing, behavioral state, experience, demography) and is difficult to predict (Southall *et al.,* 2007, 2021). Currently NMFS uses a received level of 160 dB re 1 micro Pascal (μPa) root mean square (rms) to predict the onset of behavioral harassment from impulse noises (such as impact pile driving), and 120 dB re 1 μPa (rms) for continuous noises (such as operating dynamic positioning (DP) thrusters), although in certain circumstances there may be contextual factors that alter our assessment of the onset of behavioral harassment. No impulsive noise within the hearing range of marine mammals is expected from Hilcorp's proposed activities. For the tug towing and positioning activities, only the 120 dB re 1 μPa (rms) threshold is considered because only continuous noise sources would be generated.

Disturbance may result in changing durations of surfacing and dives, number of blows per surfacing, moving direction and/or speed, reduced/increased vocal activities; changing/cessation of certain behavioral activities (such as socializing or feeding), visible startle response or aggressive behavior (such as tail/fluke slapping or jaw clapping), avoidance of areas where sound sources are located, and/or flight responses. Pinnipeds may increase their haul-out time, possibly to avoid in-water disturbance (Thorson and Reyff 2006). These potential behavioral responses to sound are highly variable and context-specific and reactions, if any, depend on species, state of maturity, experience, current activity, reproductive state, auditory sensitivity, time of day, and many other factors regarding the source eliciting the response (Richardson *et al.,* 1995; Wartzok *et al.,* 2004; Southall *et al.,* 2007). For example, animals that are resting may show greater behavioral change in response to disturbing sound levels than animals that are highly motivated to remain in an area for feeding (Richardson *et al.,* 1995; NRC 2003; Wartzok *et al.,* 2004). The biological significance of many of these behavioral disturbances is difficult to predict, especially if the detected disturbances appear minor. However, the consequences of behavioral modification could be biologically significant if the change affects growth, survival, and/or reproduction, which depends on the severity, duration, and context of the effects.

In consideration of the range of potential effects (PTS to behavioral disturbance), we consider the potential exposure scenarios and context in which species would be exposed to tug-related activity. Cook Inlet beluga whales may be present in low numbers during the work; therefore, some individuals may be reasonably expected to be exposed to elevated sound levels, including briefly those that exceed the Level B harassment threshold for continuous noise. However, beluga whales are expected to be transiting through the area, given this work is proposed primarily in middle Cook Inlet (as described in the Description of Marine Mammals in the Area of Specified Activities section), thereby limiting exposure duration, as belugas in the area are expected to be headed to or from the concentrated foraging areas farther north near the Beluga River, Susitna Delta, and Knik and Turnigan Arms. Similarly, humpback whales, fin whales, minke whales, killer whales, California sea lion, and Steller sea lions are not expected to remain in the area of the tugs. Dall's porpoise, harbor porpoise, and harbor seal have been sighted with more regularity than many other species during oil and gas activities in Cook Inlet but due to the transitory nature of porpoises, they are unlikely to remain at any particular well site for the full duration of the noise-producing activity. Because of this and the relatively low-level sources, the likelihood of PTS and TTS over the course of the tug activities is discountable. Harbor seals may linger or haul-out in the area but they are not known to do so in any large number or for extended periods of time (there are no known major haul-outs or rookeries coinciding with the well sites). Here we find there is small potential for TTS over the course of tug activities but again, PTS is not likely due to the types of sources involved in the project.

Given most marine mammals are likely transiting through the area, exposure is expected to be brief but, in combination with the actual presence of the tug and jack-up rig configuration, may result in animals shifting pathways around the work site (*e.g.,* avoidance), increasing speed or dive times, or cessation of vocalizations. The likelihood of no more than a short-term, localized disturbance response is supported by data indicating belugas regularly pass by industrialized areas such as the Port of Anchorage; therefore, we do not expect abandonment of their transiting route or other disruptions of their behavioral patterns. We also anticipate some animals may respond with such mild reactions to the project that the response would not be detectable. For example, during low levels of power output (*e.g.,* while tugs may be operating at low power because of favorable conditions), the animals may be able to hear the work but any resulting reactions, if any, are not expected to rise to the level of take.

While in some cases marine mammals have exhibited little to no obviously detectable response to certain common or routine industrialized activity (Cornick et al, 2011), it is possible some animals may at times be exposed to received levels of sound above the Level B harassment threshold. This potential exposure in combination with the nature of the tug and jack-up rig configuration (*e.g.* difficult to maneuver, potential need to operate at night) means it is possible that take could occur over the total estimated period of tug activities; therefore, NMFS in response to Hilcorp's IHA application proposes to authorize take by Level B harassment from Hilcorp's use of tugs towing a jack-up rig for both positioning and straight-line tug activities.

Estimated Take

This section provides an estimate of the number of incidental takes proposed for authorization through this IHA, which will inform both NMFS' consideration of ''small numbers'' and the negligible impact determinations.

Harassment is the only type of take reasonably expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines ''harassment'' as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes would be by Level B harassment only, in the form of disruption of behavioral patterns for individual marine mammals resulting from exposure to the tugs towing and positioning the jack-up rig. Based on the nature of the activity, Level A harassment is neither anticipated nor proposed to be authorized.

As described previously, no serious injury or mortality is anticipated or proposed to be authorized for this activity. Below we describe how the proposed take numbers are estimated.

For acoustic impacts, generally speaking, we estimate take by considering: (1) Acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. We note that while these factors can contribute to a basic calculation to provide an initial prediction of potential takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.,* previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the proposed take estimates.

Acoustic Thresholds

NMFS recommends the use of acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level

B harassment) or to incur PTS of some degree (equated to Level A harassment).

Level B Harassment—Though significantly driven by received level, the onset of behavioral disturbance or harassment from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source or exposure context (*e.g.,* frequency, predictability, duty cycle, duration of the exposure, signal-to-noise ratio, distance to the source), the environment (*e.g.,* bathymetry, other noises in the area, predators in the area), and the receiving animals (hearing, motivation, experience, demography, life stage, depth) and can be difficult to predict (*e.g.,* Southall *et al.,* 2007, 2021, Ellison *et al.,* 2012). Accordingly, based on what the available science indicates and the practical need to use a threshold based on a metric that is both predictable and measurable for most activities, NMFS typically uses a generalized acoustic threshold based on received level to reasonably estimate the onset of behavioral harassment. NMFS generally predicts that marine mammals are likely to be behaviorally harassed in a manner considered to be Level B harassment when exposed to underwater anthropogenic noise above root-mean-squared pressure received levels (RMS SPL) of 120 dB (referenced to 1 micropascal (re 1 μPa)) for continuous (*e.g.,* vibratory pile-driving, drilling) and above RMS SPL, 160 dB re 1 μPa (rms) for non-explosive impulsive (*e.g.,* seismic airguns) or intermittent (*e.g.,* scientific sonar) sources.

Hilcorp's activity includes the use of continuous (tug towing and positioning the rig) sources, and therefore the RMS SPL 120 dB re 1 μPa is applicable.

Level A harassment for non-explosive sources—NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). Hilcorp's proposed activity includes the use of non-impulsive (tugs towing rig) sources.

These thresholds are provided in the table below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2018 Technical Guidance, which may be accessed at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance.*

TABLE 6—THRESHOLDS IDENTIFYING THE ONSET OF PERMANENT THRESHOLD SHIFT

Hearing group	PTS onset acoustic thresholds * (received level)	
	Impulsive	Non-Impulsive
Low-Frequency (LF) Cetaceans	*Cell 1:* $L_{pk,flat}$: 219 dB; $L_{E,LF,24h}$: 183 dB	*Cell 2:* $L_{E,LF,24h}$: 199 dB.
Mid-Frequency (MF) Cetaceans	*Cell 3:* $L_{pk,flat}$: 230 dB; $L_{E,MF,24h}$: 185 dB	*Cell 4:* $L_{E,MF,24h}$: 198 dB.
High-Frequency (HF) Cetaceans	*Cell 5:* $L_{pk,flat}$: 202 dB; $L_{E,HF,24h}$: 155 dB	*Cell 6:* $L_{E,HF,24h}$: 173 dB.
Phocid Pinnipeds (PW) (Underwater)	*Cell 7:* $L_{pk,flat}$: 218 dB; $L_{E,PW,24h}$: 185 dB	*Cell 8:* $L_{E,PW,24h}$: 201 dB.
Otariid Pinnipeds (OW) (Underwater)	*Cell 9:* $L_{pk,flat}$: 232 dB; $L_{E,OW,24h}$: 203 dB	*Cell 10:* $L_{E,OW,24h}$: 219 dB.

* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.

Note: Peak sound pressure (L_{pk}) has a reference value of 1 μPa, and cumulative sound exposure level (L_E) has a reference value of 1μPa²s. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript "flat" is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (*i.e.,* varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

Ensonified Area

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds, which include source levels and transmission loss coefficient.

As described above in the Detailed Description of the Specific Activity, based on in situ measurements of Hilcorp's tug and a review of the available literature of tugs under load, a source level of 185 dB re 1 μPa was used for Hilcorp's three tug configuration for towing the jack-up-rig. Hilcorp contracted SLR Consulting to model the extent of the Level B harassment isopleth as well as the extent of the PTS isopleth for their proposed activity.

Rather than applying practical spreading loss, SLR created a more detailed propagation loss model in an effort to improve the accuracy of the results by considering the influence of environmental variables (*e.g.* bathymetry) at the specific well sites, as Hilcorp's operational locations are known in advance. Modeling was conducted using dBSea software. The fluid parabolic equation modeling algorithm was used with 5 Padé terms (see pg. 57 in Hilcorp's application for more detail) to calculate the transmission loss between the source and the receiver at low frequencies (1/3-octave bands, 31.5 Hz up to 1 kHz). For higher frequencies (1 kHz up to 8 kHz) the ray tracing model was used with 1,000 reflections for each ray. Sound sources were assumed to be omnidirectional and modeled as points. The received sound levels for the project were calculated as follows: (1) One-third octave source spectral levels were obtained via reference spectral curves with subsequent corrections based on their corresponding overall source levels; (2) Transmission loss was modeled at one-third octave band central frequencies along 100 radial paths at regular increments around each source location, out to the maximum range of the bathymetry data set or until constrained by land; (3) The bathymetry variation of the vertical plane along each modeling path was obtained via interpolation of the bathymetry dataset which has 83 m grid resolution; (4) The one-third octave source levels and transmission loss were combined to obtain the received levels as a function of range, depth, and frequency; and (5) The overall received levels were calculated at a 1-m depth resolution along each propagation path by summing all frequency band spectral levels.

Model Inputs—Bathymetry data used in the model was collected from the NOAA National Centers for Environmental Information (AFSC 2019). Using NOAA's temperature and salinity data, sound speed profiles were computed for depths from 0 to 100 meters for May, July, and October to capture the range of possible sound speed depending on the time of year Hilcorp's work could be conducted. These sound speed profiles were compiled using the Mackenzie Equation (1981) and are presented in Table 8 of Hilcorp's application. Geoacoustic parameters were also incorporated into the model. The parameters were based on substrate type and their relation to depth. These parameters are presented in Table 9 of Hilcorp's application.

Detailed broadband sound transmission loss modeling in dBSea used the source level of 185 dB re 1 µPa at 1 m calculated in one-third octave band levels (31.5 Hz to 64,000 Hz) for frequency dependent solutions. The frequencies associated with tug sound sources occur within the hearing range of marine mammals in Cook Inlet. Received levels for each hearing marine mammal group based on one-third octave auditory weighting functions were also calculated and integrated into the modeling scenarios of dBSea. For modeling the distances to relevant PTS thresholds, a weighting factor adjustment was not used; instead, the data on the spectrum associated with their source was used and incorporated the full auditory weighting function for each marine mammal hearing group.

Because Hilcorp plans to use the tugs towing the jack-up-rig for essentially two functions (positioning and towing), the activity was divided into two parts (stationary and mobile) and two approaches were taken for modeling the relevant isopleths.

Stationary—For stationary activity, two locations representative of where tugs will be stationary positioning the jack-up rig were selected for the model. These locations are in middle Cook Inlet near the Tyonek platform, and in lower Trading Bay where the production platforms are located, with water depths of 40 m and 20 m respectively. The modeling at these locations assumed a stationary five-hour exposure to a broadband spectrum of 185 dB as described above. A five-hour exposure duration was chosen to account for the up to five-hour positioning attempts on individual days as well as events where the tugs need to hold the jack-up rig while waiting for a following tide. Stationary model results are presented in Table 7.

Mobile—For the mobile portion of the activity, a representative route was used from the Rig Tender's dock in Nikiski to the Tyonek platform, the northernmost platform in Cook Inlet (representing Middle Cook Inlet), as well as from the Tyonek Platform to the Dolly Varden platform in lower Trading Bay and then from the Dolly Varden platform back to the Rig Tender's Dock in Nikiski. This route is representative of a typical route the tugs may take; the specific route is not yet known because the order in which platforms will be drilled with the jack-up rig is not yet known. The lowest threshold for the onset of PTS is for high frequency cetaceans at 173 dB. Based on a source level of 185 dB, and assuming practical spreading, the high frequency cetacean PTS threshold of 173 dB would be reached at 6.3 meters away from the source. The mobile source modeling assumed a transit speed of 2.06 m/s for the tug configuration. With an assumed vessel speed of 2.06 m/s, it would take the vessel 6.11 seconds to traverse a distance of two times the radius, with two times the radius used because the source is omnidirectional and the ship is moving in a straight line. Although a source level of 185 dB incorporates the use of three tugs simultaneously, because the three tugs will likely not be perfectly aligned in space (*e.g.* one could lag slightly behind the forward two), three separate six second exposures were summed (one for each tug passing in space) to arrive at a total duration of exposure of 18 seconds. While it is possible the duration of exposure could be as short as six seconds if all tugs were perfectly aligned, separate exposures for each tug were considered as the exact formation of the tugging vessels at any given time is unknown. Mobile source model results are presented in Table 8.

Because there is no temporal component associated with NMFS' current Level B threshold, making it a potentially conservative assumption given the transitory nature of the rig towing activity, the results of the modeled distance to the 120 dB threshold for both stationary and mobile tug use are presented in Table 9 below. The average of these distances was used for calculation of estimated exposure to Level B harassment (3,850 m).

The locations used in the stationary and mobile source models are depicted in Figure 2 below.

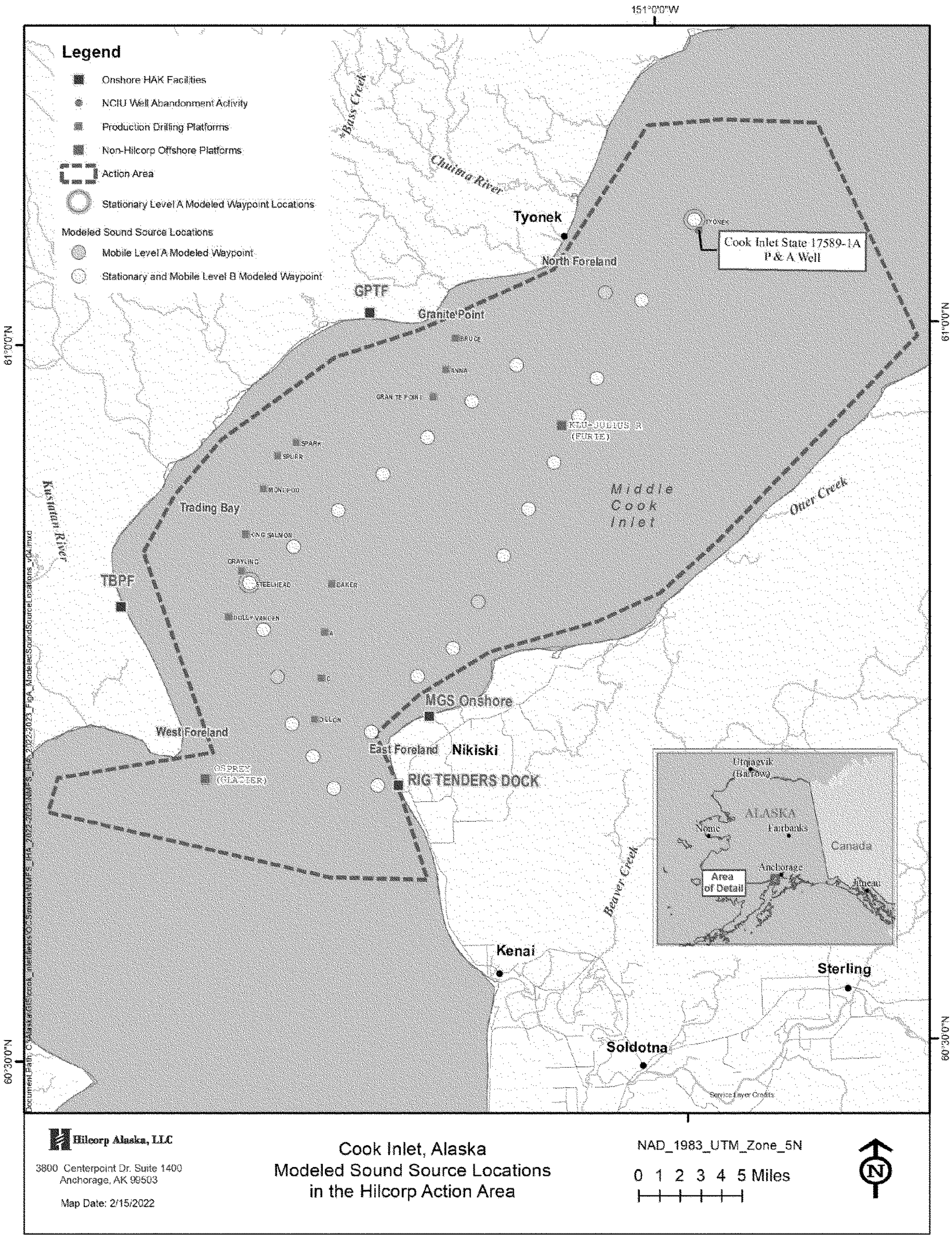

Figure 2. Locations Used for Stationary and Mobile Isopleth Models

The outputs of the mobile and stationary models as distances to the relevant threshold (in meters) are presented below in Tables 7–9.

TABLE 7—AVERAGE DISTANCES TO PTS THRESHOLDS FOR STATIONARY ACTIVITY

Location	Season	Average distances (m) to PTS threshold by functional hearing group				
		LF	MF	HF	PW	OW
Trading Bay	May	100	72	716	59	
Trading Bay	July	122	73	697	63	
Trading Bay	October	98	72	694	59	
Middle Cook Inlet	May	83	83	643	77	
Middle Cook Inlet	July	89	85	664	78	
Middle Cook Inlet	October	80	84	661	78	
Average		95	78	679	69	0

TABLE 8—AVERAGE DISTANCES TO PTS THRESHOLDS FOR MOBILE ACTIVITY

Location	Season	Average distances (m) to PTS threshold by functional hearing group				
		LF	MF	HF	PW	OW
M2	May			10		
M2	July			5		
M2	October			10		
M11	May			10		
M11	July			5		
M11	October			10		
M22	May			10		
M22	July			5		
M22	October			10		
Average		0	0	8	0	0

TABLE 9—AVERAGE DISTANCES TO LEVEL B THRESHOLD (STATIONARY AND MOBILE)

[120 dB]

Waypoint	Average distance to 120 dB threshold (m)			Season average distance to threshold (m)
	May	July	October	
M1	4,215	3,911	4,352	4,159
M2	3,946	3,841	4,350	4,046
M3	4,156	3,971	4,458	4,195
M4	4,040	3,844	4,364	4,083
M5	4,053	3,676	4,304	4,011
M6	3,716	3,445	3,554	3,572
M7	2,947	2,753	2,898	2,866
M8	3,270	3,008	3,247	3,175
M9	3,567	3,359	3,727	3,551
M10	3,600	3,487	3,691	3,593
M11	3,746	3,579	4,214	3,846
M12	3,815	3,600	3,995	3,803
M13	4,010	3,831	4,338	4,060
M14	3,837	3,647	4,217	3,900
M15	3,966	3,798	4,455	4,073
M16	3,873	3,676	4,504	4,018
M18	5,562	3,893	4,626	4,694
M20	5,044	3,692	4,320	4,352
M22	4,717	3,553	4,067	4,112
M24	4,456	3,384	4,182	4,007
M25	3,842	3,686	4,218	3,915
M26	3,690	3,400	3,801	3,630
M27	3,707	3,497	3,711	3,638
M28	3,546	3,271	3,480	3,432
M29	3,618	3,279	3,646	3,514
Average	3,958	3,563	4,029	3,850

Marine Mammal Occurrence

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations.

Densities for marine mammals in Cook Inlet were derived from MML aerial surveys, typically flown in June, from 2000 to 2018 (Rugh *et al.* 2005; Shelden *et al.* 2013, 2015, 2017, 2019). A survey was also conducted in 2021 but density information is not yet available. While the surveys are concentrated for a few days in June annually, which may skew densities for seasonally present species, they are still the best available long-term dataset of marine mammal sightings available in Cook Inlet. Density was calculated by summing the total number of animals observed and dividing the number sighted by the area surveyed. The total number of animals observed accounts for both lower and upper Cook Inlet. There are no density estimates available for California sea lions in Cook Inlet, as they are so infrequently sighted. Densities are presented in Table 10 below.

TABLE 10—DENSITIES OF MARINE MAMMALS IN COOK INLET

Species	Density (indiv/km^2)
Humpback whale	0.001770
Minke whale	0.000009
Gray whale	0.000075
Fin whale	0.000311
Killer whale	0.000601
Beluga whale (MML lower CI)	0.000023
Beluga whale (MML middle CI)	0.001110
Goetz beluga—LCI	0.011106
Goetz beluga—NCI	0.001664
Goetz beluga—TB	0.015053
Dall's porpoise	0.000154
Harbor porpoise	0.004386
Harbor seal	0.241401
Steller sea lion	0.007609
California sea lion	0.000000

For beluga whales, two densities were considered as a comparison of available data. The first source considered was directly from the MML aerial surveys, as described above. Sighting data collected during aerial surveys is collected and then several correction factors are applied to address perception, availability, and proximity bias. These corrected sightings totals are then divided by the total area covered during the survey to arrive at a density value. Densities were derived for the entirety of Cook Inlet as well as for middle and lower Cook Inlet. Densities across all three regions are low and there is a known effect of seasonality on the distribution of the whales. Thus, densities derived directly from surveys flown in June might underestimate the density of beluga whales in lower Cook Inlet at other ice-free times of the year.

The other mechanism for arriving at beluga whale density considered here is the Goetz *et al.* (2012) habitat-based model. This model is derived from sightings and incorporates depth soundings, coastal substrate type, environmental sensitivity index, anthropogenic disturbance, and anadromous fish streams to predict densities throughout Cook Inlet. The output of this model is a beluga density map of Cook Inlet, which predicts spatially explicit density estimates for Cook Inlet belugas. Using the resulting grid densities, average densities were calculated for two regions applicable to Hilcorp's operations. The densities applicable to the area of activity (*i.e.,* the North Cook Inlet Unit density for middle Cook Inlet activities and the Trading Bay density for activities in Trading Bay) are provided in Table 11 below and were carried forward to the exposure estimates. Likewise, when a range is given, the higher end of the range was used out of caution to calculate exposure estimates (*i.e.,* Trading Bay in the Goetz model has a range of 0.004453 to 0.015053; 0.015053 was used for the exposure estimates).

TABLE 11—COOK INLET BELUGA WHALE DENSITIES BASED ON GOETZ *et al.* (2012) HABITAT MODEL

Project location	Beluga whale density (ind/km^2)
North Cook Inlet Unit (middle Cook Inlet)	0.001664
Trading Bay Area	0.004453–0.015053

Take Calculation and Estimation

Here we describe how the information provided above is brought together to produce a quantitative take estimate for each of the two IHAs.

Year 1 IHA—As described above, Hilcorp's tug towing rig activity was divided into two portions for the purpose of take estimation: Stationary and mobile activity. For stationary activity, five hours of sound production per day was assumed for up to 16 days (eight moves or segments consisting of two days each). For the mobile portion of the activity, two days of nine hours of mobile activity (assuming a source velocity of 2.06 m/s) and six days of six hours of mobile activity were assumed, for a total of eight rig moves.

Year 2 IHA—For stationary activity, 5 hours of sound production per day was assumed for up to 16 days. For mobile activity, 9 hours of sound production was assumed for 2 days, as well as 6 hours of sound production for 6 days, for a total of eight rig moves.

The ensonified areas calculated per activity type (stationary and mobile) for a single day were multiplied by marine mammal densities to get an estimate of exposures per day. This was then multiplied by the number of days of that type of activity (stationary or mobile) to arrive at the number of estimated exposures per year per activity type. These exposures by activity type were then summed to result in a number of exposures per year for all tug towing rig activity. The estimated exposures are provided below in Tables 12 and 13 for Year 1 and Year 2 of activity, respectively. The calculated exposures for Years 1 and 2 are identical, as the number of days and hours of expected tug noise is ultimately the same despite the different divisions of the activity (*e.g.* Year 1 has tug noise from P&A, Year 2 does not have P&A but has more overall tugging trips). There are two estimates for beluga whales provided in the tables below to demonstrate the difference in the calculations based on the chosen density value. As exposure estimates were calculated based on specific potential rig moves or well locations, the density value for beluga whales that was carried through the estimate was the higher density value for that particular location. There are no estimated exposures based on this method of calculation for California sea lions because the assumed density is 0.00 animals/km^2.

TABLE 12—TOTAL CALCULATED EXPOSURES FOR YEAR 1

Group	Species	Level A	Level B
LF Cetaceans	Humpback whale	0.000	4.058
	Minke whale	0.000	0.021
	Gray whale	0.000	0.171
	Fin whale	0.000	0.712
MF Cetaceans	Killer whale	0.000	1.379
	Beluga whale NMFS	0.000	2.545
	Beluga whale Goetz	0.000	10.345

TABLE 12—TOTAL CALCULATED EXPOSURES FOR YEAR 1—Continued

Group	Species	Level A	Level B
HF Cetaceans	Dall's porpoise	0.001	0.353
	Harbor porpoise	0.038	10.057
Phocids	Harbor seal	0.012	553.565
Otariids	Steller sea lion	0.000	17.448
	California sea lion	0.000	0.000

TABLE 13—TOTAL CALCULATED EXPOSURES FOR YEAR 2

Group	Species	Level A	Level B
LF Cetaceans	Humpback whale	0.000	4.058
	Minke whale	0.000	0.021
	Gray whale	0.000	0.171
	Fin whale	0.000	0.712
MF Cetaceans	Killer whale	0.000	1.379
	Beluga whale NMFS	0.000	2.545
	Beluga whale Goetz	0.000	11.651
HF Cetaceans	Dall's porpoise	0.001	0.353
	Harbor porpoise	0.038	10.057
Phocids	Harbor seal	0.012	553.565
Otariids	Steller sea lion	0.000	17.448
	California sea lion	0.000	0.000

Based on the analysis described above, NMFS does not propose to authorize take via Level A harassment related to Hilcorp's tug towing drill rig activity. For mobile tugging, the distances to the PTS thresholds for high frequency cetaceans (the only functional hearing group of concern based on the model results) are smaller than the overall size of the tug and rig configuration, making it unlikely a cetacean would remain close enough to the tug engines to incur PTS. For stationary positioning of the jack up rig, the PTS isopleths are up to 679 m for high frequency cetaceans, but calculated on the assumption that an animal would remain within several hundred meters of the jack-up rig for the full five hours of noise-producing activity. Given the location of the activity is not in an area known to be essential habitat for any marine mammal species with extreme site fidelity over the course of two days, the occurrence of PTS is unlikely. A table indicating the number of takes, by Level B harassment, proposed to be authorized is provided below.

TABLE 14—TAKES (BY LEVEL B HARASSMENT) CALCULATED AND PROPOSED TO BE AUTHORIZED FOR YEAR 1 IHA AND YEAR 2 IHA

	Year 1 calculated	Year 1 authorized	Year 2 calculated	Year 2 authorized
Humpback whale	4.058	6	4.058	6
Minke whale	0.021	6	0.021	6
Gray whale	0.171	2	0.171	2
Fin whale	0.712	4	0.712	4
Killer whale	1.379	10	1.379	10
Beluga whale	2.545 (MML) 10.345 (Goetz)	22	2.545 (MML) 11.651 (Goetz)	22
Dall's porpoise	0.353	6	0.353	6
Harbor porpoise	10.057	44	10.057	44
Harbor seal	553.565	554	553.565	554
Steller sea lion	17.448	17	17.448	17
California sea lion	0	2	0	2

As illustrated by the table above, the estimated exposures for several species are less than one. While uncommon, these species have been previously sighted in Cook Inlet and some are unlikely to appear as solitary individuals when sighted. For humpback whales, the number of takes proposed to be authorized is increased from the calculated estimate of four to six individuals. There were two sightings of three humpback whales observed near Ladd Landing north of the Forelands during the Harvest Alaska CIPL project (Sitkiewicz *et al.* 2018). Based on documented observations during the CIPL survey (the survey nearest the Action Area), Hilcorp is requesting six takes of humpback whales to allow for up to two sightings of three individuals, consistent with what was observed during the CIPL project. Minke whale takes proposed to be authorized are increased from the calculated less than one individual to five. Minke whales are commonly sighted in groups of two or three, as well as sightings of individuals. There were eight sightings of eight minke whales observed during the 2019 Hilcorp lower Cook Inlet seismic survey (Fairweather Science 2020). As the occurrence of minke whales is expected to be less in middle Cook Inlet than lower Cook Inlet and considering the observed group sizes, Hilcorp is requesting six takes of minke whale to allow for the possibility of two sightings of a group of three individuals. During Apache's 2012 seismic program, nine gray whales were observed in June and July (Lomac-MacNair *et al.* 2013). During Apache's seismic program in 2014, one gray whale was observed (Lomac-MacNair *et al.* 2014). During SAExploration's seismic survey in 2015, the 2018 CIPL project, and Hilcorp's 2019 seismic survey, no gray whales were observed (Kendall *et al.* 2015; Sitkiewicz *et al.* 2018; Fairweather Science 2020). Considering the Action Area is in middle Cook Inlet where sightings of gray whales are less common, Hilcorp is requesting two takes of gray whales to allow for the potential occurrence of two individual gray whales. The number of fin whale takes proposed to be authorized is increased from one to four individuals, as they may be seen in groups of two to seven individuals. During seismic surveys conducted in 2019 by Hilcorp in the lower Cook Inlet, fin whales were recorded in groups ranging in size from one to 15 individuals (Fairweather 2020). During the NMFS aerial surveys in Cook Inlet from 2000 to 2018, 10 sightings of 26 estimated individual fin whales in lower Cook Inlet were observed (Shelden *et al.* 2013, 2015, 2016, 2019). A total authorized take of four fin whales would account for two sightings of two animals, which is the lower end of the range of common group size.

The number of proposed killer whale takes is increased to ten from the calculated exposure of one. Killer whales are typically sighted in pods of a few animals to 20 or more (NOAA 2022b). During seismic surveys conducted in 2019 by Hilcorp in the lower Cook Inlet, 21 killer whales were observed, either as single individuals or in groups ranging in size from two to five individuals (Fairweather 2020). Based on documented sightings, Hilcorp requests ten takes of killer whales to allow for two sightings with a group size of five individuals. Depending on the density data used for each activity, the estimated annual exposures for beluga whales is three to 10 animals. The proposed number of takes to be authorized for beluga whales is 22 animals to allow for the possibility that more than one observation of typical Cook Inlet beluga groups occurs. The 2018 MML aerial survey (Shelden and Wade, 2019) estimated a median group size of approximately 11 beluga whales, although group sizes were highly variable (two to 147 whales) as was the case in previous survey years (Boyd *et al.* 2019). Additionally, vessel-based surveys in 2019 observed beluga whale groups in the Susitna River Delta (roughly 24 km [15 miles] north of the Tyonek Platform) that ranged from 5 to 200 animals (McGuire *et al.* 2021). The very large groups seen in the Susitna River Delta are not expected near Hilcorp's platforms, however, smaller groups (*i.e.,* around the median group size) could be traveling through to access the Susitna River Delta and other nearby coastal locations, particularly in the shoulder seasons when belugas are more likely to occur in middle Cook Inlet. The number of Dall's porpoise takes proposed to be authorized is increased from less than one estimated individual to six. Dall's porpoises are usually found in groups averaging between two and 12 individuals (NOAA 2022c). During seismic surveys conducted in 2019 by Hilcorp in the lower Cook Inlet, Dall's porpoises were recorded in groups ranging in size from two to seven individuals (Fairweather 2020). The 2012 Apache survey recorded two groups of three individual Dall's porpoises (Lomac-MacNair 2014). Because occurrence of Dall's porpoise is anticipated to be less in middle Cook Inlet than lower Cook Inlet, the smaller end of documented group sizes (three individuals) is used, and Hilcorp requests six takes of Dall's porpoise to allow for two sightings of three individuals similar to the numbers observed during the 2012 Apache survey. Harbor porpoise takes are proposed to be increased from an estimated 10 takes to 44 takes. Shelden *et al.* (2014) compiled historical sightings of harbor porpoises from lower to upper Cook Inlet that spanned from a few animals to 92 individuals. The 2018 CIPL project that occurred just north of the Action Area in Cook Inlet reported 29 sightings of 44 individuals (Sitkiewicz *et al.* 2018). While the duration of days that the tugs are towing a jack-up rig will be less than the CIPL project, given the increase in sightings of harbor porpoise in recent years and the inability to shut down the tugs, Hilcorp request 44 takes of harbor porpoise, commensurate with the number observed in the nearby CIPL project.

Calculated take of California sea lions was zero because the assumed density in Cook Inlet is zero. Any potential sightings would likely be of lone out of habitat individuals. Two solitary individuals were seen during the 2012 Apache seismic survey in Cook Inlet (Lomac-MacNair *et al.* 2013). Two takes are requested based on the potential that two lone animals could be sighted over a year of work, as was seen during Apache's year of work.

Proposed Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses. NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat, as well as subsistence uses. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned), and;

(2) The practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

Mitigation for Marine Mammals and Their Habitat

NMFS anticipates the project, in both of the two IHAs, will create an acoustic footprint above ambient sound levels of approximately 45 km^2 around the tugs positioning the jack-up rig or for approximately 7 km in all directions along a towing trajectory of approximately 37km. There is a discountable potential for marine mammals to incur PTS from the project, as source levels are relatively low, non-impulsive, and animals would have to remain at very close distances for multiple hours to accumulate acoustic energy at levels that could damage hearing. Therefore, we do not believe there is potential for Level A harassment and there is no designated shut-down/exclusion zone proposed for this project. However, Hilcorp will implement a number of mitigation measures designed to reduce the potential for and severity of Level B harassment and minimize the acoustic footprint of the project.

The tugs towing a jack-up rig are not able to shutdown while transiting or positioning the rig. Hilcorp will maneuver the tugs towing the jack-up rig such that they maintain a consistent speed (approximately 4 knots) and avoid multiple changes of speed and direction to make the course of the vessels as predictable as possible to marine mammals in the surrounding environment, characteristics that are expected to be associated with a lower likelihood of disturbance. Hilcorp proposes to implement a clearance zone of 1,500 meters around the centerpoint of the three tug configuration and will employ two NMFS-approved protected species observers (PSOs) to conduct marine mammal monitoring for all mobile and stationary activity involving tugs towing attached to the jack-up rig. Prior to commencing activities during daylight hours or if there is a 30-minute lapse in operational activities, the PSOs will monitor the clearance zone for marine mammals for 30 minutes. If no marine mammals are observed, operations may commence. If a marine mammal(s) is observed within the clearance zone during the clearing, the PSOs will continue to watch until either: (1) The animal(s) is outside of and on a path away from the clearance zone; or (2) 15 minutes have elapsed if the species was a pinniped or small cetacean, or 30 minutes for large cetaceans whales. Once the PSOs have determined one of those conditions are met, operations may commence.

Should a marine mammal be observed during towing or positioning, the PSOs will monitor and carefully record any reactions observed until the jack-up rig has reached its intended position. No new operational activities would be started until the animal leaves the area. PSOs will also collect behavioral information on marine mammals sighted during monitoring efforts.

Hilcorp will make every effort to operate with the tide, resulting in a low power output from the tugs towing the jack-up rig. If human safety or equipment integrity is at risk, Hilcorp may necessarily operate in an unfavorable tidal state. Due to the nature of tidal cycles in Cook Inlet, it is possible the most favorable tide for the towing operation will occur during nighttime hours. Hilcorp will operate the tugs towing the jack-up rigs at night if the nighttime operations result in a lower power output from the tugs by operating with a favorable tide.

In low-light conditions, night-vision devices shown to be effective at detecting marine mammals in low-light conditions (*e.g.,* Armasight by FLIR Command Pro®, or similar) will be provided to PSOs to aid in low-light visibility. Every effort will be made to observe that the clearance zone is free of marine mammals by using night-vision devices, however it may not always be possible to see and clear the entire clearance zone prior to nighttime transport. PSOs will monitor the greatest extent feasible for 30 minutes immediately prior to the start of load bearing activities. If no marine mammals are observed, operations may commence. If a marine mammal is observed within the during the clearing, the PSOs will continue to watch until either: (1) The animal(s) is outside of and on a path away from the clearance zone; or (2) 15 minutes have elapsed if the species was a pinniped or small cetacean, or 30 minutes for large cetaceans whales. Once the PSOs have determined one of those conditions are met, operations may commence.

Out of concern for potential disturbance to Cook Inlet beluga whales in sensitive and essential habitat, Hilcorp will not conduct noise-producing activity within 16 km (10 miles) of the mean high-high water line of the Susitna River Delta (Beluga River to the Little Susitna River) between April 15 and October 15.

Based on our evaluation of the applicant's proposed measures, for both IHAs, NMFS has preliminarily determined that the proposed mitigation measures provide the means of effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance and on the availability of such species or stock for subsistence uses.

Proposed Monitoring and Reporting

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104(a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the proposed action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.,* presence, abundance, distribution, density).
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) Action or environment (*e.g.,* source characterization, propagation, ambient noise); (2) affected species (*e.g.,* life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.,* age, calving or feeding areas).
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors.
- How anticipated responses to stressors impact either: (1) Long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks.
- Effects on marine mammal habitat (*e.g.,* marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat).
- Mitigation and monitoring effectiveness.

Hilcorp will abide by all monitoring and reporting measures contained within their Marine Mammal Monitoring and Mitigation Plan, dated February 25, 2022. A summary of those measures and additional requirements proposed by NMFS is provided below.

A minimum of two NMFS-approved PSOs will be on-watch during all activities wherein the jack-up rig is attached to the tugs for the duration of the project. Minimum requirements for a PSO include:

(a) Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;

(b) Advanced education in biological science or related field (undergraduate degree or higher required);

(c) Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience);

(d) Experience or training in the field identification of marine mammals, including the identification of behaviors;

(e) Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;

(f) Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates and times when in-water construction activities were suspended to avoid potential incidental injury from construction sound of marine mammals observed within a defined shutdown zone; and marine mammal behavior; and

(g) Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

PSOs will be stationed aboard a tug or the jack-up rig, work in shifts lasting no more than four hours without a minimum of a one hour break, and will not be on-watch for more than 12 hours within a 24-hour period.

Hilcorp will submit monthly reports for all months in which tugs towing or positioning the jack-up rig occurs. A draft marine mammal monitoring report would be submitted to NMFS within 90 days after the completion of the tug towing jack-up rig activities for the year. It will include an overall description of work completed, a narrative regarding marine mammal sightings, and associated marine mammal observation data sheets. Specifically, the report must include:

- Date and time that monitored activity begins or ends;
- Construction activities occurring during each observation period;
- Weather parameters (*e.g.,* percent cover, visibility);
- Water conditions (*e.g.,* sea state, tide state);
- Species, numbers, and, if possible, sex and age class of marine mammals;
- Description of any observable marine mammal behavior patterns, including bearing and direction of travel and distance from pile driving activity;
- Distance from pile driving activities to marine mammals and distance from the marine mammals to the observation point;
- Locations of all marine mammal observations; and
- Other human activity in the area.

If no comments are received from NMFS within 30 days, the draft final report will constitute the final report. If NMFS submits comments, Hilcorp will submit a final report addressing NMFS comments within 30 days after receipt of comments.

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the IHAs (if issued), such as an injury, serious injury or mortality, Hilcorp would immediately cease the specified activities and report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the Alaska Regional Stranding Coordinator. The report would include the following information:

- Description of the incident;
- Environmental conditions (*e.g.,* Beaufort sea state, visibility);
- Description of all marine mammal observations in the 24 hours preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and
- Photographs or video footage of the animal(s) (if equipment is available).

Activities would not resume until NMFS is able to review the circumstances of the prohibited take. NMFS would work with Hilcorp to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. Hilcorp would not be able to resume their activities until notified by NMFS via letter, email, or telephone.

In the event that Hilcorp discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (*e.g.,* in less than a moderate state of decomposition as described in the next paragraph), Hilcorp would immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the NMFS Alaska Stranding Hotline and/or by email to the Alaska Regional Stranding Coordinator. The report would include the same information identified in the paragraph above. Activities would be able to continue while NMFS reviews the circumstances of the incident. NMFS would work with Hilcorp to determine whether modifications in the activities are appropriate.

In the event that Hilcorp discovers an injured or dead marine mammal and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in the IHAs (*e.g.,* previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), Hilcorp would report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the NMFS Alaska Stranding Hotline and/or by email to the Alaska Regional Stranding Coordinator, within 24 hours of the discovery. Hilcorp would provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network.

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.,* population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be ''taken'' through harassment, NMFS considers other factors, such as the likely nature of any impacts or responses (*e.g.,* intensity, duration), the context of any impacts or responses (*e.g.,* critical reproductive time or location, foraging impacts affecting energetics), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS' implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the baseline (*e.g.,* as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, the discussion of our analysis applies to all the species listed in Table 15, given that the anticipated effects of this activity on these different marine mammal stocks are expected to be similar. There is little information about the nature or severity of the impacts, or the size, status, or structure of any of these species or stocks that would lead to a different analysis for this activity.

To avoid repetition, this introductory section of our analysis applies to all the species listed in Table 15, given that many of the anticipated effects of this project on different marine mammal stocks are expected to be relatively similar in nature. Where there are meaningful differences between species or stocks, or groups of species, in anticipated individual responses to activities, impact of expected take on the population due to differences in population status, or impacts on habitat, they are described independently in the analysis below.

Potential impacts to marine mammal habitat were discussed previously in this document (see Potential Effects of Specified Activities on Marine Mammals and their Habitat). Marine mammal habitat may be impacted by elevated sound levels, but these impacts would be temporary. In addition to being temporary and short in overall duration, the acoustic footprint of both years of the proposed activity is small relative to the overall distribution of the animals in the area and their use of the area. Feeding behavior is not likely to be significantly impacted, as no areas of biological significance for marine mammal feeding are known to exist in the project area and individual marine mammals are not expected to be exposed to the noise from the activities repeatedly or in long durations.

The proposed project would create an acoustic footprint around the project area for a total of sixteen days per year from approximately April through October. Noise levels within the footprint would reach or exceed 120 dB rms. We anticipate the 120 dB footprint to be limited to no more than 45km^2 around the tugs positioning the jackup rig or approximately 7 km in all directions along a towing trajectory of approximately 37 km. The habitat within the footprint is not heavily used by marine mammals during the project time frame (*e.g.,* Cook Inlet beluga whale Critical Habitat Area 2, within which the activity resulting in the take of marine mammals is anticipated to potentially occur, is designated for beluga fall and winter use) and marine mammals are not known to engage in critical behaviors associated with this portion of Cook Inlet (*e.g.,* no known breeding grounds, foraging habitat, etc.). Most animals will likely be transiting through the area; therefore, exposure would be brief. Animals may swim around the project area but we do not expect them to abandon any intended path. We also expect the number of animals exposed to be small relative to population sizes. Finally, Hilcorp will minimize potential exposure of marine mammals to elevated noise levels by not commencing operational activities if marine mammals are observed within the immediate starting area. Hilcorp is also able to reduce the impact of their activity by conducting tugging operations with favorable tides whenever feasible. In summary and as described above, the following factors primarily support our preliminary determinations that the impacts resulting from the activities described for these two IHAs are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No mortality is anticipated or authorized.
- The mobile portion of the project does not involve noise sources capable of inducing PTS in any species other than high frequency cetaceans;
- Exposure would likely be brief given transiting behavior of marine mammals in the action area;
- Marine mammal densities are low in the project area; therefore, there will not be substantial numbers of marine mammals exposed to the noise from the project compared to the affected population sizes; and
- Hilcorp would monitor for marine mammals daily and minimize exposure to operational activities.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, NMFS preliminarily finds that the total marine mammal take from the proposed activity described in the Year 1 IHA will have a negligible impact on all affected marine mammal species or stocks. Also, separately, NMFS preliminarily finds that the total marine mammal take from the proposed activity described in the Year 2 IHA will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one third of the species or stock abundance (as it is for all stocks in both the Year 1 and Year 2 IHAs), the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

Table 15 provides the quantitative analysis informing our small numbers determinations for the Year 1 and Year 2 IHAs. For most species, the amount of take proposed represents less than approximately two percent of the population for each IHA. For beluga whales, the amount of take proposed represents slightly under eight percent of the population for each IHA.

TABLE 15—PERCENT OF STOCK PROPOSED TO BE TAKEN BY LEVEL B HARASSMENT UNDER EACH IHA

Species	Stock	Abundance (Nbest)	Proposed take (Level B)	Percent of stock
Year 1:				
Humpback whale	Western North Pacific	11,571	6	0.05
Minke whale	Alaska	1,233	6	0.49
Gray whale	Eastern Pacific	26,960	2	0.01
Fin whale	Northeastern Pacific	2,554	4	0.16
Killer whale	Alaska Resident Gulf of Alaska, Aleutian Islands, and Bering Sea Transient.	587 2,347	10	1.7 0.43
Beluga whale	Cook Inlet	279	22	7.89

TABLE 15—PERCENT OF STOCK PROPOSED TO BE TAKEN BY LEVEL B HARASSMENT UNDER EACH IHA—Continued

Species	Stock	Abundance (Nbest)	Proposed take (Level B)	Percent of stock
Dall's porpoise	Alaska	83,400	6	0.01
Harbor porpoise	Gulf of Alaska	31,046	44	0.14
Harbor seal	Cook Inlet/Shelikof	26,907	554	2.06
Steller sea lion	Western	53,624	17	0.03
California sea lion	U.S.	233,515	5	0.00
Year 2:				
Humpback whale	Western North Pacific	11,571	6	0.05
Minke whale	Alaska	1,233	6	0.49
Gray whale	Eastern Pacific	26,960	2	0.01
Fin whale	Northeastern Pacific	2,554	4	0.16
Killer whale	Alaska Resident Gulf of Alaska, Aleutian Islands, and Bering Sea Transient.	587	10	1.7 0.43
Beluga whale	Cook Inlet	279	22	7.89
Dall's porpoise	Alaska	83,400	6	0.01
Harbor porpoise	Gulf of Alaska	31,046	44	0.14
Harbor seal	Cook Inlet/Shelikof	26,907	554	2.06
Steller sea lion	Western	53,624	17	0.03
California sea lion	U.S.	233,515	2	0.00

Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS preliminarily finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks for the Year 1 IHA. Separately, NMFS also preliminarily finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks for the Year 2 IHA.

Unmitigable Adverse Impact Analysis and Determination

In order to issue an IHA, NMFS must find that the specified activity will not have an unmitigable adverse impact on the availability of such species or stock for taking for subsistence uses by Alaska Natives. NMFS has defined ''unmitigable adverse impact'' in 50 CFR 216.103 as an impact resulting from the specified activity: (1) That is likely to reduce the availability of the species to a level insufficient for a harvest to meet subsistence needs by: (i) Causing the marine mammals to abandon or avoid hunting areas; (ii) Directly displacing subsistence users; or (iii) Placing physical barriers between the marine mammals and the subsistence hunters; and (2) That cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met.

To further minimize any potential effects of their action on subsistence activities, Hilcorp has outlined their communication plan for engaging with subsistence users in their Stakeholder Engagement Plan (Appendix B of Hilcorp's application). Hilcorp will be required to abide by this plan and update the plan accordingly.

Subsistence communities identified as project stakeholders near Hilcorp's middle Cook Inlet and Trading Bay activities include the Village of Salamatof and the Native Village of Tyonek. The ADF&G Community Subsistence Information System does not contain data for Salamatof. For the purposes of our analyses for the Year 1 and Year 2 IHAs, we can assume the subsistence uses are similar to those of nearby communities such as Kenai. At 3.5 km away from the closest point of approach, Tyonek is the closest subsistence community to Hilcorp's proposed tug route. Tyonek, on the western side of lower Cook Inlet, has a subsistence harvest area that extends from the Susitna River south to Tuxedni Bay (BOEM 2016). In Tyonek, harbor seals were harvested between June and September by 6 percent of the households (Jones *et al.* 2015). Seals were harvested in several areas, encompassing an area stretching 32.2 km (20 miles) along the Cook Inlet coastline from the McArthur Flats north to the Beluga River. Seals were searched for or harvested in the Trading Bay areas as well as from the beach adjacent to Tyonek (Jones *et al.* 2015).

Subsistence hunting of whales is not known to currently occur in Cook Inlet. Hilcorp's tug towing jack-up rig activities may overlap with subsistence hunting of seals. However, these activities typically occur along the shoreline or very close to shore near river mouths, whereas most of Hilcorp's tugging is in the middle of the Inlet and rarely near the shoreline or river mouths. Any harassment to harbor seals is anticipated to be short-term, mild, and not result in any abandonment or behaviors that would make the animals unavailable to Alaska Natives.

Based on the description of the specified activity, the measures described to minimize adverse effects on the availability of marine mammals for subsistence purposes, and the proposed mitigation and monitoring measures, NMFS has preliminarily determined that there will not be an unmitigable adverse impact on subsistence uses from Hilcorp's's proposed activities under the Year 1 IHA. Separately, NMFS has also preliminarily determined that there will not be an unmitigable adverse impact on subsistence uses from Hilcorp's proposed activities under the Year 2 IHA.

Endangered Species Act

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally whenever we propose to authorize take for endangered or threatened species, in this case with the Alaska Regional Protected Resources Division Office.

NMFS is proposing to authorize take of humpback whales (Mexico DPS, Western North Pacific DPS), fin whales (Northeastern Pacific stock), beluga whales (Cook Inlet stock), and Steller sea lion (Western DPS), which are listed under the ESA.

The Permit and Conservation Division has requested initiation of Section 7 consultation with the NMFS Alaska Region for the issuance of these two IHAs. NMFS will conclude the ESA consultation prior to reaching a determination regarding the proposed issuance of the authorization.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue two consecutive IHAs to Hilcorp for its tugs towing a jack-up rig in Cook Inlet in 2022–2023 and 2023–2024 open water seasons, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. Drafts of the proposed IHAs can be found at *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act.*

Request for Public Comments

We request comment on our analyses, the proposed authorizations, and any other aspect of this notice of proposed IHAs for the proposed tug towing jack-up rig activity. We also request at this time comment on the potential renewal of this proposed IHA as described in the paragraph below. Please include with your comments any supporting data or literature citations to help inform decisions on the request for this IHA or a subsequent Renewal IHA.

On a case-by-case basis, NMFS may issue a one-time, one-year Renewal IHA following notice to the public providing an additional 15 days for public comments when (1) up to another year of identical or nearly identical activities as described in the Description of Proposed Activities section of this notice is planned or (2) the activities as described in the Description of Proposed Activities section of this notice would not be completed by the time the IHA expires and a renewal would allow for completion of the activities beyond that described in the *Dates and Duration* section of this notice, provided all of the following conditions are met:

- A request for renewal is received no later than 60 days prior to the needed Renewal IHA effective date (recognizing that the Renewal IHA expiration date cannot extend beyond one year from expiration of the initial IHA).
- The request for renewal must include the following:

(1) An explanation that the activities to be conducted under the requested Renewal IHA are identical to the activities analyzed under the initial IHA, are a subset of the activities, or include changes so minor (*e.g.,* reduction in pile size) that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of reducing the type or amount of take).

(2) A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.

Upon review of the request for renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings in the initial IHA remain valid.

Dated: May 4, 2022.

Kimberly Damon-Randall,

Acting Director, Office of Protected Resources, National Marine Fisheries Service.

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648–XB989]

Atlantic Coastal Fisheries Cooperative Management Act Provisions; General Provisions for Domestic Fisheries; Application for Exempted Fishing Permits

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; request for comments.

SUMMARY: The Assistant Regional Administrator for Sustainable Fisheries, Greater Atlantic Region, NMFS, has made a preliminary determination that an Exempted Fishing Permit renewal application from the Massachusetts Division of Marine Fisheries contains all of the required information and warrants further consideration. Regulations under the Magnuson-Stevens Fishery Conservation and Management Act and the Atlantic Coastal Fisheries Cooperative Management Act require publication of this notice to provide interested parties the opportunity to comment on applications for proposed Exempted Fishing Permits.

DATES: Comments must be received on or before May 24, 2022.

ADDRESSES: You may submit written comments by any of the following methods:

- *Email: NMFS.GAR.EFP@noaa.gov.* Include in the subject line ''Comments on MA DMF Ventless Trap EFP.'' If you cannot submit a comment through this method, please contact Allison Murphy at (978) 281–9122, or email at *allison.murphy@noaa.gov.*

FOR FURTHER INFORMATION CONTACT: Allison Murphy, Fishery Policy Analyst, 978–281–9122, *allison.murphy@noaa.gov.*

SUPPLEMENTARY INFORMATION: The Massachusetts Division of Marine Fisheries (MA DMF) submitted a complete application on April 8, 2022, for an Exempted Fishing Permit (EFP) to conduct a lobster abundance survey that Federal regulations would otherwise restrict. The purpose of this study is to provide fishery-independent data on lobster growth and abundance in Massachusetts state waters of statistical areas 514 and 538. This EFP would authorize up to seven vessels to conduct larval sampling in Lobster Conservation Management Area 1 and 2. A map of this area is available at: *https://www.fisheries.noaa.gov/resource/map/lobster-management-areas.*

For this project, MA DMF is requesting exemptions from the following Federal lobster regulations:

1. Gear specification requirements to allow for the use of traps without escape vents (50 CFR 697.21(c)(1) for Lobster Management Area 1 and § 697.21(c)(2) for Area 2);
2. Trap limit requirements to allow for trap limits to be exceeded (§ 697.19(a) for Area 1 and § 697.19(b) for Lobster Management Area 2);
3. Trap tag requirements to allow for alternatively-tagged traps (§ 697.19(i));
4. Minimum and maximum carapace length requirements to allow sub-legal and over-sized lobsters to be landed for research purposes (§ 697.20(a)(2) and 697.20(b)(2) for Area 1, and § 697.20(a)(3) and 697.20(b)(3) for Area 2);
5. V-notch possession requirement to allow landing of female lobsters for research purposes (§ 697.20(g)(1) for Area 1 and § 697.20(g)(3) for Area 2);
6. Berried female possession requirement to allow landing of egg-bearing female lobsters for research purposes (§ 697.20(d)(1)and(3));
7. Minimum carapace width requirements to allow sub-legal Jonah crabs to be landed for research purposes (§ 697.20(h)(1)); and