Billing Code 4333–15

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

[Docket No. FWS-R7-ES-2023-0209; FXES111607MRG01–245–FF07CAMM00]

Marine Mammals; Incidental Take During Specified Activities; Proposed Incidental Harassment Authorization for the Southern Beaufort Sea Stock of Polar Bears on the North Slope of Alaska

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of receipt of application; proposed incidental harassment authorization; notice of availability of draft environmental assessment; request for comments.

SUMMARY: We, the U.S. Fish and Wildlife Service, in response to a request under the Marine Mammal Protection Act of 1972, as amended, from the Bureau of Land Management, propose to authorize nonlethal incidental take by harassment of small numbers of Southern Beaufort Sea (SBS) polar bears (*Ursus maritimus*) for 1 year from the date of issuance. The applicant requested this authorization for take by harassment that may result from activities associated with oil well plugging and reclamation, soil sampling, snow trail, pad, and airstrip construction, and summer cleanup activities in the North Slope Borough of Alaska between the Wainwright and Oliktok Areas. This proposed authorization, if finalized, will be for up to 18 takes of polar bears by Level B harassment and up to 3 takes of polar bears by non-serious Level A harassment. No serious Level A or lethal take is requested, expected, or proposed to be authorized.

DATES: Comments on this proposed incidental harassment authorization and the accompanying draft environmental assessment must be received by **[INSERT DATE 30 DAYS AFTER THE DATE OF PUBLICATION IN THE *FEDERAL REGISTER*].**

ADDRESSES: *Document availability:* You may view this proposed incidental harassment authorization, the application package, supporting information, draft environmental assessment,

and the list of references cited herein at *https://www.regulations.gov* under Docket No. FWS-R7-ES-2023-0209. Alternatively, you may request these documents from the person listed under **FOR FURTHER INFORMATION CONTACT**.

Comment submission: You may submit comments on the proposed authorization by one of the following methods:

- *U.S. mail:* Public Comments Processing, Attn: Docket No. FWS-R7-ES-2023-0209, U.S. Fish and Wildlife Service, MS: PRB (JAO/3W), 5275 Leesburg Pike, Falls Church, VA 22041–3803.
- *Electronic submission:*

  https://www.regulations.gov. Follow the instructions for submitting comments to Docket No. FWS-R7-ES-2023-0209.

We will post all comments at *https://www.regulations.gov*. You may request that we withhold personal identifying information from public review; however, we cannot guarantee that we will be able to do so. See **Request for Public Comments** for more information.

FOR FURTHER INFORMATION CONTACT: Charles Hamilton, by email at *r7mmmregulatory@fws.gov*, by telephone at 1–800–362–5148, or by U.S. mail at U.S. Fish and Wildlife Service, MS 341, 1011 East Tudor Road, Anchorage, Alaska 99503. Individuals in the United States who are deaf, deafblind, hard of hearing, or have a speech disability may dial 711 (TTY, TDD, or TeleBraille) to access telecommunications relay services. Individuals outside the United States should use the relay services offered within their country to make international calls to the point-of-contact in the United States.

SUPPLEMENTARY INFORMATION:

Background

Section 101(a)(5)(D) of the Marine Mammal Protection Act of 1972 (MMPA; 16 U.S.C. 1361, et seq.) authorizes the Secretary of the Interior (Secretary) to allow, upon request, the incidental, but not intentional, taking by harassment of small numbers of marine mammals in

response to requests by U.S. citizens (as defined in title 50 of the Code of Federal Regulations (CFR) in part 18, at 50 CFR 18.27(c)) engaged in a specified activity (other than commercial fishing) in a specified geographic region during a period of not more than 1 year. The Secretary has delegated authority for implementation of the MMPA to the U.S. Fish and Wildlife Service (Service or we). According to the MMPA, the Service shall allow this incidental taking by harassment if we make findings that the total of such taking for the 1-year period:

(1) is of small numbers of marine mammals of a species or stock;

(2) will have a negligible impact on such species or stocks; and

(3) will not have an unmitigable adverse impact on the availability of the species or stock for taking for subsistence use by Alaska Natives.

If the requisite findings are made, we issue an authorization that sets forth the following, where applicable:

(a) permissible methods of taking;

(b) means of effecting the least practicable adverse impact on the species or stock and its habitat and the availability of the species or stock for subsistence uses; and

(c) requirements for monitoring and reporting of such taking by harassment, including, in certain circumstances, requirements for the independent peer review of proposed monitoring plans or other research proposals.

The term “take” means to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal. “Harassment” for activities other than military readiness activities or scientific research conducted by or on behalf of the Federal Government means any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (the MMPA defines this as “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 (the MMPA defines this as “Level B harassment”).

The terms "negligible impact" and "unmitigable adverse impact" are defined in 50 CFR 18.27 (i.e., regulations governing small takes of marine mammals incidental to specified activities) as follows: "Negligible impact" is 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. "Unmitigable adverse impact" means 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.

The term "small numbers" is also defined in 50 CFR 18.27. However, we do not rely on that definition here as it conflates "small numbers" with "negligible impacts." We recognize "small numbers" and "negligible impacts" as two separate and distinct requirements when reviewing requests for incidental harassment authorizations (IHA) under the MMPA (see *Natural Res. Def. Council, Inc.* v. *Evans*, 232 F. Supp. 2d 1003, 1025 (N.D. Cal. 2003)). Instead, for our small numbers determination, we estimate the likely number of marine mammals to be taken and evaluate if that number is small relative to the size of the species or stock.

The term "least practicable adverse impact" is not defined in the MMPA or its enacting regulations. For this IHA, we ensure the least practicable adverse impact by requiring mitigation measures that are effective in reducing the impact of specified activities, but they are not so restrictive as to make specified activities unduly burdensome or impossible to undertake and complete.

If the requisite findings are made, we shall issue an IHA, which may set forth the following, where applicable: (i) permissible methods of taking; (ii) 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 subsistence uses by coastal-dwelling Alaska Natives (if applicable); and (iii) requirements for monitoring and reporting take by harassment.

Summary of Request

On May 22, 2023, the Service received a request from the Department of the Interior's Bureau of Land Management (BLM) for authorization to take by nonlethal incidental harassment small numbers of Southern Beaufort Sea (SBS) polar bears (*Ursus maritimus*) during oil well plugging and reclamation, soil sampling, snow trail, pad, and runway construction, and summer cleanup activities in the North Slope Borough of Alaska between the Wainwright and Oliktok Areas, for a period of 1 year from the date of issuance and beginning during the winter of 2023/2024. Their request also included a proposed Polar Bear Awareness and Interaction Plan. The Service requested further information on June 8, June 16, July 10, August 7, September 15, and September 19, 2023. BLM submitted clarifying information on June 26, July 18, August 10, September 20, and October 5, 2023. The Service received a revised application on October 5, 2023. The Service deemed the revised request dated September 2023 (received October 5, 2023; hereafter referred to as the "Request"), adequate and complete on October 5, 2023.

Description of Specified Activities and Specified Geographic Region

The specified activities described in the Request consist of oil well plugging and reclamation, soil sampling, snow trail, pad, and airstrip construction, and summer cleanup activities in the North Slope Borough of Alaska between the Wainwright and Oliktok Areas (figure 1; BLM 2023).

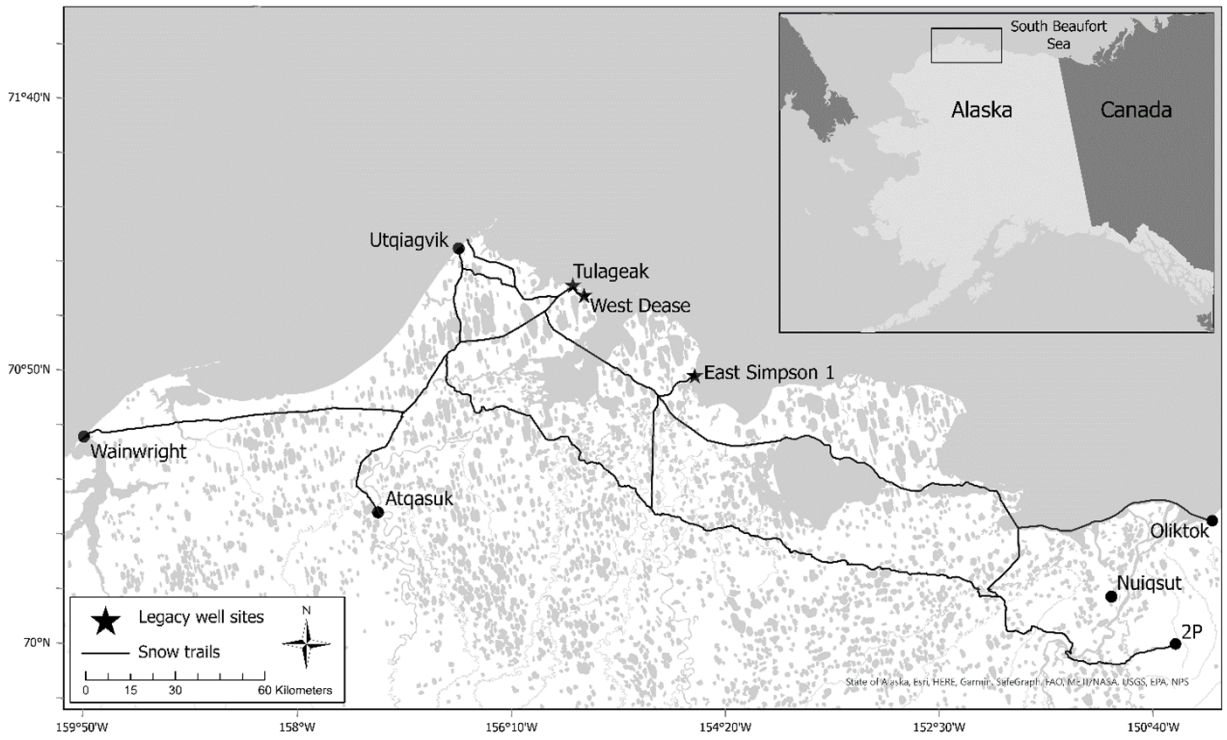

Figure 1. Specific geographic region of the proposed legacy well plugging and reclamation in the North Slope Borough of Alaska.

Maternal Den Surveys

BLM will conduct two aerial infrared (AIR) maternal den surveys to identify any active polar bear dens in the area prior to beginning operations within a 2-mile corridor along the northern route from Oliktok to the Tulageak well site. The surveyors will use AIR cameras on fixed-wing aircraft with flights flown between 245–457 meters (m) (800–1,500 feet [ft]) above ground level at a speed of <185 kilometers per hour (km/h) (<115 miles per hour [mph]). These surveys will be concentrated on areas within 1.6 kilometers (km) (1 mile [mi]) of project activities that would be suitable for polar bear denning activity such as drainages, banks, bluffs, or other areas of topographic relief. The first survey will be conducted between December 1 and 25, 2023, and the second survey will be conducted between December 15, 2023, and January 10, 2024, with a minimum of 24 hours between surveys.

Snow Trail, Pad, and Airstrip Construction

There are no permanent roads available to access any of the three legacy wells included in this project; therefore, construction of temporary snow trails is required. Snow trail

construction will occur during January or February of 2024, after "prepacking" a minimum of 15 centimeters (cm) (6 inches [in]) of base snow via all terrain smooth-tracked vehicles approved for off-road tundra travel. Prepacking promotes lower tundra soil temperatures and accelerates freezing of soils prior to use, thereby helping to protect the tundra during snow trail and pad grooming, maintenance, and use. Snow will also be packed around stream crossings to protect stream banks and vegetation. Exact locations may vary up to 1 mile on either side of the center lines depicted in figure 1 based on field conditions. This project will require the use of up to approximately 1,001 km (622 mi) of 9-m (30-ft) wide snow trails; however, some of the trails utilized will include annually constructed trail systems such as the North Slope Borough Community Winter Access Trail (CWAT; BLM 2023). Snow trail usage will cease with the spring thaw (April/May 2024), and the majority of cleanup will occur during demobilization at this time. Final stages of cleanup and trail inspection will occur by air (see *Equipment Mobilization, Demobilization, and Summer Clean-up*).

A 610-m (2,000-ft) long by 30-m (100-ft) wide snow airstrip will be constructed at the Tulageak well site. No fuel will be stored at the airstrip. A 2.4-hectare (ha) (6-acre [ac], 152-m-by-152 m, 500-ft-by-500-ft) snow pad will be constructed at the Tulageak well site to support testing, cleanup, plugging, and other associated activities. Small snow pads (approximately 0.2 ha [0.5 ac]) will also be constructed to stage materials and equipment for soil-sampling activities at the West Dease and East Simpson 1 well sites. No water will be used for snow trail, pad, or airstrip construction.

Equipment Mobilization, Demobilization, and Summer Clean-up

Large equipment, including mobile camp trailers, drill rigs, along with other support equipment and supplies, will be moved to the Tulageak, West Dease, or East Simpson 1 well sites from either the 2P gravel pads or existing pads at Oliktok (figure 1) based on sea ice and other environmental conditions. Equipment will be hauled along snow trails by Steiger Tractors, Tucker Sno-Cats, and D-7 Caterpillar Tractors. Trips to or from Oliktok will take the northern

snow trail route, and trips from the 2P pad will take the southern snow trail route (figure 1; BLM 2023). A total of up to 13 round trips could be required between January and mid-May 2024, along either or a combination of these 2 routes including 3–4 round trips during both mobilization (January or February) and demobilization (April or early May), and up to 5 round trips for resupply during operations.

Additionally, there are two planned resupply routes from Utqiaġvik to the well sites. A 30-mile resupply snow trail will follow the Barrow Gas Field Road from Utqiaġvik to the Tulageak well site, while a second resupply snow road branches off the CWAT south of Utqiaġvik, heading east to the Tulageak project area (figure 1). The resupply routes would be used to bring in crews, fuel, water, ancillary equipment, and supplies throughout the operations period. As with the other routes, Steiger Tractors, Tucker Sno-cats, and D-7 Caterpillar Tractors would be used to pull sleds and sleighs on the resupply routes. During winter operations, there would be approximately one to three round trips every day along the resupply routes from Utqiaġvik to the Tulageak well site for fuel, personnel, water, and supplies. There would be approximately 36–50 total round trips on these routes during the winter season. Access routes from Wainwright and Atqasuk may also be used to transport crews, equipment, and vehicles (with the exception of the drill rigs and camp trailers) to Utqiaġvik or the well sites (figure 1). There would be up to five to eight round trips expected to occur along these trail sections during operations.

In addition to ground resupply, two to three fixed-wing support flights from Deadhorse to the Tulageak snow airstrip will occur over the course of 8 weeks (up to 24 flights) during winter project activities. The majority of snow trail and camp cleanup, such as trash removal and stick-picking, will occur during demobilization in the spring of 2024. Trash and other waste generated by camp and routine equipment maintenance will be contained appropriately and transported to Prudhoe Bay for disposal (BLM 2023).

Camp setup

Three mobile camps will be required to provide crew lodging during well site activities. A mobile camp of 20–25 trailers will be required for the Tulageak well plugging and reclamation. Smaller camps of up to 10 trailers will be necessary for soil-sampling activities at both the West Dease and East Simpson 1 well sites. Generation of potable water from snow and disposal of grey water will follow Alaska Department of Environmental Conservation guidance and regulation. Further information on camp setup is available in BLM's application (BLM 2023).

Tulageak Well Site Surface Debris Removal, Well Plugging, and Reclamation

Removal of surface debris will occur prior to well plugging. The amount of debris is expected to be minor because structures, pilings, and solid waste were removed in 1981. Any remaining debris is likely to consist of scattered scrap metal or wood near the well and may require a variety of equipment to fully remove, including excavators, loaders, cutting torches, power tools, chainsaws, hand tools, and debris containers (e.g., dumpsters for recyclable scrap metal and solid waste). Embedded debris that cannot be easily removed will be cut off below surface and buried with soil. All surface debris removed from site will be contained and transported back to Prudhoe Bay for appropriate disposal. In addition to surface debris, a total of 524 cubic meters (m^3) (685 cubic yards [yd^3]) of diesel-contaminated soil (total cubic yards based on previous sampling; see application, BLM 2023) will be removed preceding any well-plugging activities and shipped to an appropriate disposal facility.

In 1981, at the conclusion of drilling and evaluation operations, cement and mechanical plugs were set at a depth of 792 m (2,600 ft) in the casing followed by 183 m (600 ft) of mining mud and then the upper 610 m (2,000 ft) of casing filled with diesel. Well-plugging operations will begin by excavating an area of approximately 5-m-by-5-m (15-ft-by-15-ft) wide and 3 m (10 ft) deep around the well casing. The 610 m (2,000 ft) of well casing diesel will be removed using an environmentally safe brine solution, sampled, containerized, and transported offsite for appropriate hazardous materials disposal, along with the 183 m (600 ft) of drilling mud. This

plugging activity will generate up to 18,930 liters (l) (5,000 gallons [ga]) of fluids and up to 24 m^3 (30 yd^3) of drilling mud. The fluids and mud will be stored in appropriate onsite hazardous waste storage containers and transported offsite for disposal (see application for disposal details, BLM 2023). Upon removal of diesel and drilling mud, the casing will be filled with arctic blend cement in accordance with BLM regulations. Once the cement is fully set, the well casing will be cut off at a minimum of 3 m (10 ft) below sea level, marked with a welded steel marker plate, and the excavation backfilled with soil to sea level.

Soil Sampling

In addition to the plugging and cleanup activities at the Tulageak well site, soil sampling, and site characterization of the West Dease and East Simpson 1 well sites will also be conducted to determine the type, location, and volume of drilling waste and contaminated soils at each location. The sampling will assist in planning future cleanup activities at the sites (these specific future cleanup activities are not included in this proposed IHA). Samples will be collected from the reserve and flare pits, around the wellheads, and where suspected drilling wastes or piles of wastes are located. Up to 25 samples will be collected at each site using a small track mounted drill following Alaska Department of Environmental Conservation site characterization requirements. The drill borings will be approximately 10 cm (4 in) in diameter and approximately 3 m (10 ft) deep. At both well locations (West Dease and East Simpson 1), approximately 25 samples will be collected: 12 samples from the reserve pits, 4 from the flare pits, 4 from the wellheads, and 5 from piles of known or suspected drilling waste.

Summer Cleanup

The majority of snow trail and camp cleanup, such as trash removal and stick-picking, will occur during demobilization in the spring of 2024 (April–May). However, a single A-star or Jet Ranger type helicopter will fly the overland snow trail routes and visit each of the three legacy well sites for a final inspection and to remove any trash or debris potentially missed

during demobilization. Summer cleanup activities by helicopter will total up to 15 trips with 46 takeoff and landings.

Description of Marine Mammals in the Specified Geographic Region

Polar bears are the only species of marine mammal managed by the Service likely to be found within the specified geographic region. Information on range, stocks, biology, and climate change impacts on polar bears can be found in appendix A of the supplemental information (available as described above in **ADDRESSES**).

Potential Impacts of the Specified Activities on Marine Mammals

Surface-Level Impacts on Polar Bears

Disturbance impacts on polar bears will be influenced by the type, duration, intensity, timing, and location of the source of disturbance. Disturbance from the specified activities would originate primarily from aircraft overflights (helicopter and fixed wing), tundra travel, well site plugging and reclamation, well site soil sampling, mobilization and demobilization, and cleanup activities. The noises, sights, and smells produced by these activities could elicit variable responses from polar bears, ranging from avoidance to attraction. When disturbed by noise, animals may respond behaviorally by walking, running, or swimming away from a noise source, or physiologically via increased heart rates or hormonal stress responses (Harms et al. 1997, Tempel and Gutierrez 2003). However, individual response to noise disturbance can be influenced by previous interactions, sex, age, and maternal status (Anderson and Aars 2008, Dyck and Baydack 2004). Noise and odors could also attract polar bears to work areas (Proposed Deterrence Guidelines; 75 FR 21571, April 26, 2010). Attracting polar bears to these locations could result in human–polar bear interactions, unintentional harassment, intentional hazing, or possible lethal take in defense of human life. This proposed IHA, if finalized, would authorize only the nonlethal, incidental, unintentional take of polar bears that may result from the specified activities and would require mitigation measures to manage attractants in work areas and reduce the risk of human–polar bear interactions.

Human–Polar Bear Interactions

A larger percentage of polar bears are spending more time on land during the open-water season, which may increase the risk for human–polar bear interactions (Atwood et al. 2016, Rode et al. 2022). Polar bear interaction plans, personnel training, attractants management, and polar bear monitoring are mitigation measures used to reduce human–polar bear interactions and minimize the risks to humans and polar bears when interactions occur. Polar bear interaction plans detail the policies and procedures that will be implemented by BLM to avoid attracting and interacting with polar bears as well as minimizing impacts to the polar bears. Interaction plans also detail how to respond to the presence of polar bears, the chain of command and communication, and required training for personnel. Efficient management of attractants (e.g., human food, garbage) can prevent polar bears from associating humans with food, which mitigates the risk of human–polar bear interactions (Atwood and Wilder 2021). Information gained from monitoring polar bears near industrial infrastructure can be useful for better understanding polar bear distribution, behavior, and interactions with humans. Technology that may be used to facilitate detection and monitoring of polar bears includes bear monitors, closed-circuit television, video cameras, thermal cameras, radar devices, and motion-detection systems. It is possible that human–polar bear interactions may occur during the specified activities, and mitigation measures, as described in the applicant's Polar Bear Awareness and Interaction Plan, will be implemented by BLM to minimize the risk of human–polar bear interactions during the specified activities.

From mid-July to mid-November, SBS stock polar bears can be found in large numbers and high densities on barrier islands, along the coastline, and in the nearshore waters of the Beaufort Sea, particularly on and around Barter and Cross Islands (Wilson et al. 2017). This distribution leads to a significantly higher number of human–polar bear interactions on land and at offshore structures during the open-water season than other times of the year.

On land, most polar bear observations occur within 2 km (1.2 mi) of the coastline based on polar bear monitoring reports. Facilities within the offshore and coastal areas are more likely to be approached by polar bears, and they may act as physical barriers to polar bear movements. As polar bears encounter these facilities, the chances for human–polar bear interactions increase. However, polar bears have frequently been observed crossing existing roads and causeways, and they appear to traverse the human-developed areas as easily as the undeveloped areas based on monitoring reports.

Effects of Aircraft Overflights on Polar Bears

Polar bears experience increased noise and visual stimuli when fixed-wing aircraft or helicopters fly above them, which may elicit a biologically significant behavioral response. Sound frequencies produced by aircraft will likely fall within the hearing range of polar bears (Nachtigall et al. 2007) and will be audible to polar bears during flyovers or when operating in proximity to polar bears. Polar bears likely have acute hearing, with previous sensitivities demonstrated between 1.4 and 22.5 kilohertz (kHz) (tests were limited to 22.5 kHz, Nachtigall et al. 2007). When exposed to high-energy sound, this hearing range may become impaired temporarily (called temporary threshold shift, or TTS) or permanently (called permanent threshold shift, or PTS). Species-specific TTS and PTS thresholds have not been established for polar bears at this time, but TTS and PTS thresholds have been established for the general group "other marine carnivores" which includes polar bears (Southall et al. 2019). Through a series of systematic modeling procedures and extrapolations, Southall et al. (2019) generated modified noise exposure thresholds for both in air and underwater sound (table 1).

Table 1—Temporary threshold shift (TTS) and permanent threshold shift (PTS) thresholds established by Southall et al. (2019) through modeling and extrapolation for "other marine carnivores," which includes polar bears.

Values are weighted for other marine carnivores' hearing thresholds and given in cumulative sound exposure level (SEL_{CUM} dB re 20μPa in air and SEL_{CUM} dB re 1 μPa in water) for impulsive and non-impulsive sounds, and unweighted peak sound pressure level in air (dB re 20μPa) and water (dB 1μPa) (impulsive sounds only).

	TTS		PTS	
	Non impulsive	Impulsive	Non impulsive	Impulsive

	SEL_{CUM}	SEL_{CUM}	Peak SPL	SEL_{CUM}	SEL_{CUM}	Peak SPL
Air	157	146	170	177	161	176
Water	199	188	226	219	203	232

During a Federal Aviation Administration test, test aircraft produced sound at all frequencies measured (50 Hz to 10 kHz) (Healy 1974). At frequencies centered at 5 kHz, jets flying at 300 m (984 ft) produced 1/3 octave band noise levels of 84 to 124 dB, propeller-driven aircraft produced 75 to 90 dB, and helicopters produced 60 to 70 dB (Richardson et al. 1995). Thus, the frequency and level of airborne sounds typically produced by aircraft is unlikely to cause TTS or PTS unless polar bears are very close to the sound source.

Although neither TTS nor PTS are anticipated during the specified activities, impacts from aircraft overflights have the potential to elicit biologically significant behavioral responses from polar bears. Exposure to aircraft overflights is expected to result in short-term behavior changes, such as ceasing to rest, walking, or running, and, therefore, has the potential to be energetically costly. Polar bears observed during intentional aircraft overflights, conducted to study impacts of aircraft on polar bear responses, with an average flight altitude of 143 m (469 ft) exhibited biologically meaningful behavioral responses during 66.6 percent of aircraft overflights. These behavioral responses were significantly correlated with the aircraft's altitude, the bear's location (e.g., coastline, barrier island), and the bear's activity (Quigley et al. 2022). Polar bears associated with dens exhibited various responses when exposed to low-flying aircraft, ranging from increased head movement and observation of the disturbance to the initiation of rapid movement and/or den abandonment (Larson et al. 2020). Aircraft activities can impact polar bears across all seasons; however, aircraft have a greater potential to disturb both individuals and groups of polar bears on land during the summer and fall. These onshore polar bears are primarily fasting or seeking alternative terrestrial foods (Cherry et al. 2009, Griffen et al. 2022), and polar bear responses to aircraft overflights may result in metabolic costs to limited energy reserves. To reduce potential disturbance of polar bears during aircraft activities,

mitigation measures, such as minimum flight altitudes over polar bears and their frequently used areas and flight restrictions around known polar bear aggregations, will be required when safe to perform these operations during aircraft activities.

Effects to Denning Polar Bears

Known polar bear dens around the oilfield and other areas of the North Slope, discovered opportunistically and/or during planned surveys for tracking marked polar bears and detecting polar bear dens, are monitored by the Service. However, these sites are only a small percentage of the total active polar bear dens for the SBS stock in any given year. Each year, entities conducting operations on the North Slope coordinate with the Service to conduct surveys to determine the location of their activities relative to known polar bear dens and denning habitat. Under past IHAs and ITRs (incidental take regulations), operators have been required to avoid known polar bear dens by 1.6 km (1 mi). However, an unknown polar bear den may be encountered during BLM's activities. In instances, when a previously unknown den was discovered in proximity to human activity, the Service implemented mitigation measures such as the 1.6-km (1-mi) activity exclusion zone around the den and 24-hour monitoring of the den site.

The responses of denning polar bears to disturbance and the consequences of these responses can vary throughout the denning process. We divide the denning period into four stages when considering impacts of disturbance: den establishment, early denning, late denning, and post-emergence; definitions and descriptions are provided by Woodruff et al. (2022) and are also located in the 2021–2026 Beaufort Sea ITR (86 FR 42982, August 5, 2021).

Impacts of the Specified Activities on Polar Bear Prey Species

Information on the potential impacts of the specified activities on polar bear prey species can be found in the supplemental information to this document (available as described above in **ADDRESSES**).

Estimated Take

Definitions of Incidental Take Under the Marine Mammal Protection Act

Below we provide definitions of three potential types of take of polar bears. The Service does not anticipate and is not authorizing lethal take as a part of this IHA; however, the definitions of these take types are provided for context and background.

Lethal Take

Human activity may result in biologically significant impacts to polar bears. In the most serious interactions (e.g., vehicle collision, running over an unknown den causing its collapse), human actions can result in the mortality of polar bears. We also note that, while not considered incidental, in situations where there is an imminent threat to human life, polar bears may be killed. Additionally, though not considered incidental, polar bears have been accidentally killed during efforts to deter polar bears from a work area for safety and from direct chemical exposure (81 FR 52276, August 5, 2016). Unintentional disturbance of a female polar bear by human activity during the denning season may cause the female either to abandon her den prematurely with cubs or abandon her cubs in the den before the cubs can survive on their own. Either scenario may result in the incidental lethal take of the cubs.

Level A Harassment

Human activity may result in the injury of polar bears. Level A harassment, for nonmilitary readiness activities, is defined as any act of pursuit, torment, or annoyance that has the potential to injure a marine mammal or marine mammal stock in the wild. We have divided Level A harassment into events that are likely (>50 percent chance) to result in the animal's mortality (referred to as "serious Level A harassment") and events that are not likely (<50 percent chance) to result in the animal's mortality (referred to as "non-serious Level A harassment"). Numerous actions can cause take by Level A harassment, such as creating a disturbance that separates mothers from dependent cubs (Amstrup 2003), inducing early den emergence (Amstrup and Gardner 1994, Rode et al. 2018), or repeatedly interrupting the nursing or resting of cubs to the extent that it impacts the cubs' body condition.

Level B Harassment

Level B harassment for nonmilitary readiness activities means any act of pursuit, torment, or annoyance that 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, feeding, or sheltering. Changes in behavior that disrupt biologically significant behaviors or activities for the affected animal are indicative of take by Level B harassment under the MMPA. Such reactions include, but are not limited to, the following:

- Fleeing (running or swimming away from a human or a human activity);
- Displaying a stress-related behavior such as jaw or lip-popping, front leg stomping, vocalizations, circling, intense staring, or salivating;
- Abandoning or avoiding preferred movement corridors such as ice floes, leads, polynyas, a segment of coastline, or barrier islands;
- Using a longer or more difficult route of travel instead of the intended path;
- Interrupting breeding, sheltering, or feeding;
- Moving away at a fast pace (adult) and cubs struggling to keep up;
- Temporary, short-term cessation of nursing or resting (cubs);
- Ceasing to rest repeatedly or for a prolonged period (adults);
- Loss of hunting opportunity due to disturbance of prey; or
- Any interruption in normal denning behavior that does not cause injury, den abandonment, or early departure of the female with cubs from the den site.

This list is not meant to encompass all possible behaviors; other behavioral responses may be indicative of take by Level B harassment. Relatively minor changes in behavior such as the animal raising its head or temporarily changing its direction of travel are not likely to disrupt biologically important behavioral patterns, and the Service does not view such minor changes in behavior as indicative of a take by Level B harassment. It is also important to note that eliciting

behavioral responses that equate to take by Level B harassment repeatedly may result in Level A harassment.

Surface Interactions

We analyzed take by Level B harassment for polar bears that may potentially be encountered and impacted during BLM's oil well plugging and reclamation, soil sampling, snow trail, pad, and airstrip construction, and summer cleanup activities within the specified geographic region.

Impact Area

To assess the area of potential impact from the project activities, we calculate the area affected by project activities where harassment is possible. We refer to this area as an impact area. Behavioral response rates of polar bears to disturbances are highly variable, and data to support the relationship between distance to polar bears and disturbance is limited. Dyck and Baydack (2004) found sex-based differences in the frequencies of vigilance bouts, which involves an animal raising its head to visually scan its surroundings, by polar bears in the presence of vehicles on the tundra. However, in their summary of polar bear behavioral response to ice-breaking vessels in the Chukchi Sea, Smultea et al. (2016) found no difference between reactions of males, females with cubs, or females without cubs. During the Service's coastal aerial surveys, 99 percent of polar bears that responded in a way that indicated possible Level B harassment (polar bears that were running when detected or began to run or swim in response to the aircraft) did so within 1.6 km (1 mi), as measured from the ninetieth percentile horizontal detection distance from the flight line. Similarly, Andersen and Aars (2008) found that female polar bears with cubs (the most conservative group observed) began to walk or run away from approaching snowmobiles at a mean distance of 1,534 m (0.95 mi). Thus, while future research into the reaction of polar bears to anthropogenic disturbance may indicate a different zone of potential impact is appropriate, the current literature suggests that the 1.6-km (1.0-mi) impact area will encompass most polar bear harassment events.

Estimated Harassment

We estimated Level B harassment using the spatio-temporally specific encounter rates and temporally specific harassment rates derived in the 2021–2026 Beaufort Sea ITR (86 FR 42982, August 5, 2021) in conjunction with the specified project activity information. Some portion of SBS bears may occur within the Chukchi Sea at a given time. However, the Beaufort Sea ITR rates do not explicitly account for this possibility, and the project area for this proposed IHA occurs only within the geographical boundary of the SBS subpopulation. Therefore, our analyses account only for SBS bears located within the SBS subpopulation boundary. Distribution patterns of polar bears along the coast of the SBS were estimated in Wilson et al. (2017) by dividing the North Slope Coastline into 10 equally sized grids and applying a Bayesian hierarchical model based on 14 years of aerial surveys in late summer and early fall. Wilson et al. (2017) estimated 140 polar bears per week along the coastline (a measurement that included barrier islands), however not with uniform distributions. The study found that disproportionality high densities of bears occur in grids 6 and 9, which contain known large congregating areas such as Kaktovik and Cross Island and has required polar bear density correction factors in previously issued ITAs. The vast majority of the coastline within the project area in this proposed IHA falls within grids 1–4 (although a small portion of the project area is located outside of Wilson et al.'s (2017) study area near the City of Wainwright). The Wilson et al. 2017 values for grids 1–4 are similar to those in the North Slope area where the 2021–2026 Beaufort Sea ITR (86 FR 42982, August 5, 2021) encounter rates were developed; therefore, we believe those values are applicable to the project area in this proposed IHA and do not require any correction factor for polar bear densities in our analyses.

Table 2—Definitions of variables used in harassment estimates of polar bears on the coast of the North Slope of Alaska.

Variable	Definition
B_{es}	bears encountered in an impact area for the entire season
a_c	coastal exposure area
a_i	inland exposure area

r_o	occupancy rate
e_{co}	coastal open-water season bear-encounter rate in bears/season
e_{ci}	coastal ice season bear-encounter rate in bears/season
e_{io}	inland open-water season bear-encounter rate in bears/season
e_{ii}	inland ice season bear-encounter rate in bears/season
t_i	ice season harassment rate
t_o	open-water season harassment rate
B_t	number of estimated Level B harassment events

Table 2 provides the definition for each variable used in the formulas to calculate the number of potential harassment events. The variables defined in table 2 were used in a series of formulas to estimate the total harassment from surface-level interactions. Encounter rates were originally calculated as polar bears encountered per square km per season. As a part of their Request, BLM provided the Service with digital geospatial files that included the maximum expected human occupancy (i.e., rate of occupancy [r_o] for each individual structure (e.g., snow trails, snow pads) of their specified activities for each season of the IHA period. Using the buffer tool in ArcGIS, we created a spatial file of a 1.6-km (1-mi) buffer around all industrial structures. We binned the structures according to their seasonal occupancy rates by rounding them up into tenths (10 percent, 20 percent, etc.). We determined the impact area of each bin by first calculating the area within the buffers of 100 percent occupancy locations. We then removed the area of the 100 percent occupancy buffers from the project impact area and calculated the area within the 90 percent occupancy buffers. This iterative process continued until we calculated the area within all buffers. The areas of impact were then clipped by coastal and inland zone geospatial files to determine the coastal areas of impact (ac) and inland areas of impact (ai) for each occupancy bin. This process was repeated for each season of the project.

Impact areas were multiplied by the appropriate encounter rate to obtain the number of polar bears expected to be encountered in the impact area per season (B_{es}). The equation below (equation 1) provides an example of the calculation of polar bears encountered in the ice season for an impact area in the coastal zone.

$$B_{es} = a_c * e_{ci}$$

Equation 1

To generate the number of estimated Level B harassments for each area of interest, we multiplied the number of polar bears in the area of interest per season by the proportion of the season the area is occupied, the rate of occupancy, and the harassment rate (equation 2).

$$B_t = B_{es} * S_p * r_o * t_i$$

Equation 2

Aircraft Impacts on Polar Bears

Polar bears in the project area will likely be exposed to the visual and auditory stimulation associated with the applicant's fixed-wing and helicopter activities; however, these impacts are likely to be minimal and short-term. Aircraft activities may cause disruptions in the normal behavioral patterns of polar bears as either an auditory or visual stimulus, thereby resulting in incidental Level B harassment. Mitigation measures, such as minimum flight altitudes over polar bears and restrictions on sudden changes to aircraft movements and direction, will be required if this authorization is finalized to reduce the likelihood that polar bears are disturbed by aircraft.

Estimating Harassment Rates of Aircraft Activities

We updated the analysis used to estimate aircraft impacts on polar bears from the 2021–2026 Beaufort Sea ITR (86 FR 42982, August 5, 2021) to include altitude-specific harassment rates. These altitude-specific harassment rates were estimated using observational data from fixed-wing aircraft overflights (Quigley 2022) and helicopter activities (Quigley et al. in review).

In these studies, aerial searches along the northern coast of Alaska between Point Barrow and the western Canadian border were flown and polar bears were approached at different altitudes. Researchers recorded behavioral changes during these approaches and evaluated when and if Level B harassment occurred. Polar bears that did not exhibit behavioral changes consistent with harassment were then re-approached at progressively lower altitudes, reaching as low as 38 m (100 ft). Because polar bears were encountered at discrete-valued altitudes that differed by hundreds of feet, the actual altitude at which harassment would not occur likely exists between the altitude of observed harassment and the lowest altitude at which harassment was not observed. We estimated this theoretical harassment altitude by calculating the average of the observed harassment altitude and lowest non-harassment altitude. Polar bears that exhibited a behavioral change consistent with harassment on their first approach could potentially have shown this same response if the aircraft were at a higher altitude, thus we could not identify an altitude at which no harassment would occur due to a lack of a "non-harassment" observation of that polar bear. To avoid negatively biasing results by using these altitudes unadjusted, theoretical harassment altitudes were estimated using the average theoretical altitude of harassment for all observations of an equal or greater altitude (i.e., only including polar bears with two or more observed altitudes and excluding other polar bears harassed on initial approach). Where there were three or fewer observations to make such an average, theoretical harassment altitude was estimated as the average of 610 m (2,000 ft) and the observed harassment altitude. We chose 610 m (2,000 ft) because it was the lowest altitude at which no harassment was observed by either aircraft type.

Using the altitude-specific harassment rates, five categories of flights were created: takeoffs, landings, low-altitude flights (defined as those between 122 m [400 ft] and 305 m [1,000 ft] altitude), mid-altitude flights (defined as those between 305 m [1,000 ft] and 457 m [1,500 ft] altitude), and high-altitude flights (defined as those between 457 m [1,500 ft] and 610 m [2,000 ft] altitude). Harassment rates were assigned to each of these flight categories using the

harassment rate for the lowest altitude in the category (e.g., for low-altitude flights, the harassment rate estimated for 122 m [400 ft] was used). This binning method of using the lowest harassment rate in the bin allowed our estimates to be inclusive of possible changes in altitude due to variable flight conditions (table 3).

Table 3—Harassment rates for the five categories of flights for fixed-wing aircraft and helicopter overflights.

We used the harassment rate associated with 61 m (200 ft) for takeoffs and landings.

Flight Category	Fixed-Wing	Helicopter
Takeoffs	0.89	0.99
Landings	0.89	0.99
Low-altitude flights (122–305 m)	0.56	0.97
Mid-altitude flights (305–457 m)	0.005	0.14
High-altitude flights (457–610 m)	<0.001	0.002

Estimating Area of Impact for Aircraft Activities

For each category of the flight path (i.e., takeoff, low-altitude travel, mid-altitude travel, high-altitude travel, and landing), we calculated an impact area and duration of impact using flight hours or flight path information provided in the Request. We used flights logs available through *www.flightaware.com* (FlightAware), a website that maintains flight logs in the public domain, to estimate impact areas and flight hours for takeoffs and landings. We estimated a takeoff distance of 2.41 km (1.5 mi) that would be impacted for 10 minutes. We estimated a landing distance of 4.83 km (3 mi) per 305 m (1,000 ft) of altitude that would be impacted for 10 minutes per landing. To estimate the impact area of traveling segments, we subtracted the takeoff and landing areas from the total area of the flight path. The duration of impact for traveling flights was either provided in the Request or calculated using the length of the flight and estimated flight speeds, provided by BLM, of 193 km per hour (120 mi per hour) or 257 km per hour (160 mi per hour) for fixed-winged aircraft. Polar bear encounter rates vary both spatial and temporally (table 4). We accounted for temporal variation by determining if the flight takes place

during the open-water (July 19–November 11) or the ice season (November 12–July 18). Spatial variation was accounted for by determining total proportion of the flight over coastal or inland zones. The coastal zone is defined as the offshore and onshore areas within 2 km (1.2 mi) of the coastline, and the inland zone is defined as the onshore area greater than 2 km (1.2 mi) from the coastline. Once spatially referenced, all flight paths were buffered by 1.6 km (1 mi), which is consistent with aircraft surveys conducted by the Service and the U.S. Geological Survey (USGS) between August and October during most years from 2000 to 2014 (Schliebe et al. 2008, Atwood et al. 2015, Wilson et al. 2017). In these surveys, 99 percent of groups of polar bears that exhibited behavioral responses consistent with Level B harassment were observed within 1.6 km (1 mi) of the aircraft.

Table 4—Seasonal polar bear encounter rates by zone, table adapted from 2021–2026 Beaufort Sea ITR (86 FR 42982, August 5, 2021)

Coastal Zone Seasonal Encounter Rate
Ice Season (July 19 – November 11) ……. 0.05 bears / km^2
Open-water Season (November 12 – July 18) ……1.48 bears / km^2

Inland Zone Seasonal Encounter Rate
Ice Season (July 19 – November 11) ……..0.004 bears / km^2
Open-water Season (November 12 – July 18) ……0.005 bears / km^2

To calculate the total number of Level B harassment events estimated due to the specified activities, we calculated the number of flight hours for each flight category (i.e., takeoffs, low-altitude travel, mid-altitude travel, high-altitude travel, and landings) for each zone and season combination. These values were then used to calculate the proportion of the season that aircraft occupied their impact areas (i.e., takeoff area, landing area, or traveling segment impact areas). This proportion-of-season metric is equivalent to the occupancy rate (r_o) generated for surface-level interaction harassment estimates. The total impact area for each of the flight categories was multiplied by the zone and season-specific polar bear encounter rate to determine the number of polar bears expected in that area for the season (i.e., $B_{es,}$ as seen in equation 1). This number was

then multiplied by the proportion of the season to determine the number of polar bears expected in that area when flights are occurring, and the appropriate harassment rate based on flight altitude to estimate the number of polar bears that may be harassed as a result of the flights (as seen in equation 2). Table 5 shows a summary of aircraft operations during the specified activities and the values used to estimate Level B harassment of polar bears during aircraft operations.

Table 5—Summary of aircraft operations by season and activity during the proposed IHA period

	Ice Season (fixed-wing aircraft only)		Open-water Season (helicopter only)			
Activity	Winter support	Forward-looking infrared	Tulageak inspection and cleanup	East Simpson 1 inspection and cleanup	West Dease inspection and cleanup	Snow trail inspection and cleanup
Altitude*	High	Low	High	High	Low	Low
Total Flights	24	12	7	2	2	4
Proportion of Season	0.00444	0.01200	0.00041	0.00017	0.00002	0.00451
Proportion of Flight in Coastal Zone	0.6688	0.1454	0.096	0.5541	1	0.077
Proportion of Flight in Inland Zone	0.3312	0.8546	0.904	0.4459	0	0.923
Total Encounter Rate (bears/km^2/season) **	0.0347	0.0107	0.1466	0.8223	1.4800	0.1186
Harassment Rate	0.001	0.56	0.002	0.002	0.97	0.97
Total Takeoffs and Landings	24	0	14	4	4	24
Landing Time/Season	0.0007	0	0.0008	0.0002	0.0002	0.0014
Takeoff Time/Season	0.0007	0	0.0008	0.0002	0.0002	0.0014
Landing and Takeoff Harassment Rate	0.89	0.89	0.99	0.99	0.99	0.99
Number of Level B Harassment of Activity	0.0012	0.0006	0.0490	0.0140	0.0142	0.0883
Total number of Level B harassment across all aircraft activities			0.1673			

* High-altitude flight is defined as between 457 m (1,500 ft) and 610 m (2,000 ft) altitude. Low altitude is defined as between 122 m (400 ft) and 305 m (1,000 ft) altitude. There are no mid-altitude flights considered for this project.
**Accounts for unequal encounter rates over coastal and inland zones.

Analysis Approach for Estimating Harassment During Aerial Infrared (AIR) Surveys

Typically, entities operating on the North Slope conduct polar bear den surveys using AIR during every denning season. Although the purpose for these surveys is to detect polar bear dens to mitigate impacts, polar bears on the surface can be harassed by the overflights. These surveys are not conducted along specific flight paths and generally overlap previously surveyed areas within the same flight. Therefore, we used different methodology to estimate harassment of surface polar bears during AIR surveys.

We estimated the period of AIR surveys to last 12 days with a maximum of 6 hours of flight time per day, resulting in a maximum total of 72 flight-hours per year. To determine the number of hours AIR flights are likely to survey coastal and inland zones, we identified the area where project activities and denning habitat overlap and buffered this area by 1.6 km (1 mi). We then divided the buffered denning habitat by zone and determined the proportion of coastal and inland denning habitat. Using this proportion, we estimated the number of flight hours spent within each zone and determined the proportion of the ice season in which AIR surveys impacted each zone (see *Estimating Area of Impact for Aircraft Activities*). We then estimated the aircraft's impact area for takeoffs, survey altitude, and landings. The area impacted by AIR surveys was multiplied by the seasonal encounter rates of polar bears for the appropriate zones and the proportion of the ice season in which AIR flights were flown to determine the number of polar bears encountered. We then multiplied the number of polar bears encountered per zone by the altitude harassment rate to determine the number of polar bears harassed during AIR surveys.

Estimated Harassment from Aircraft Activities

Using the approaches described above, we estimated the total number of polar bears expected to be harassed by the aircraft activities during the proposed IHA period. Total number of expected Level B harassment events for this proposed IHA by aircraft activities, including AIR surveys, is 0.1673 bears, rounded up to one bear.

Denning Analysis

Below we provide a complete description and results of the polar bear den simulation model used to assess impacts to denning polar bears from disturbance associated with all phases of the specified activities. We updated the analysis used to estimate impacts on denning polar bears from the 2021–2026 Beaufort Sea ITR (86 FR 42982, August 5, 2021) to include information on anticipated survival rates for recently emerged polar bear cubs.

Den Simulation

We simulated dens across the entire North Slope of Alaska, ranging from the areas identified as denning habitat (Durner et al. 2006, 2013; Durner and Atwood 2018) contained within the National Petroleum Reserve–Alaska (NPRA) in the west to the Canadian border in the east. To simulate dens on the landscape, we relied on the estimated number of dens in three different regions of northern Alaska provided by Atwood et al. (2020). These included the NPRA, the area between the Colville and Canning rivers (CC), and the Arctic National Wildlife Refuge (NWR). The mean estimated number of dens in each region during a given winter were as follows: 12 dens (95 percent confidence interval [CI]: 3–26) in the NPRA, 25 dens (11–47) in the CC region, and 14 dens (5–30) in the Arctic NWR (Patil et al. 2022). For each iteration of the model (described below), we drew a random sample from a gamma distribution for each of the regions based on the above parameter estimates, which allowed uncertainty in the number of dens in each area to be perpetuated through the modeling process. Specifically, we used the method of moments (Hobbs and Hooten 2015) to develop the shape and rate parameters for the gamma distributions as follows: NPRA ($12^2/5.8^2$,$12/5.8^2$), CC ($25^2/9.5^2$,$25/9.5^2$), and Arctic NWR ($14^2/6.3^2$,$14/6.3^2$).

Because not all areas in northern Alaska are equally used for denning and some areas do not contain the requisite topographic attributes required for sufficient snow accumulation for den excavation, we did not simply randomly place dens on the landscape. Instead, we followed a similar approach to that used by Wilson and Durner (2020) with some additional modifications to account for the differences in denning ecology in the CC region related to a preference to den

on barrier islands and a general (but not complete) avoidance of actively used industrial infrastructure. Using the USGS polar bear den catalogue (Durner et al. 2020), we identified polar bear dens that occurred on land in the CC region and that were identified either by Global Positioning System (GPS)-collared polar bears or through systematic surveys for denning polar bears (Durner et al. 2020). This process resulted in a sample of 37 dens of which 22 (i.e., 60 percent) occurred on barrier islands. For each iteration of the model, we then determined how many of the estimated dens in the CC region occurred on barrier islands versus the mainland.

To make this determination, we first took a random sample from a binomial distribution to determine the expected number of dens from the den catalogue (Durner et al. 2020) that should occur on barrier islands in the CC region during that given model iteration; $n_{barrier} \sim Binomial(37, 22/37)$, where 37 represents the total number of dens in the den catalogue (Durner et al. 2020) in the CC region suitable for use (as described above) and 22/37 represents the observed proportion of dens in the CC region that occurred on barrier islands. We then divided $n_{barrier}$ by the total number of dens in the CC region suitable for use (i.e., 37) to determine the proportion of dens in the CC region that should occur on barrier islands (i.e., $p_{barrier}$). We then multiplied $p_{barrier}$ with the simulated number of dens in the CC region (rounded to the nearest whole number) to determine how many dens were simulated to occur on barrier islands in the region.

In NPRA, the den catalogue (Durner et al. 2020) data indicated that two dens occurred outside of defined denning habitat (Durner et al. 2013), so we took a similar approach as with the barrier islands to estimate how many dens occur in areas of NPRA with the den habitat layer during each iteration of the model; $n_{habitat} \sim Binomial(15, 13/15)$, where 15 represents the total number of dens in NPRA from the den catalogue (Durner et al. 2020) suitable for use (as described above), and 13/15 represents the observed proportion of dens in NPRA that occurred in the region with den habitat coverage (Durner et al. 2013). We then divided $n_{habitat}$ by the total number of dens in NPRA from the den catalogue (i.e., 15) to determine the proportion of dens in

the NPRA region that occurred in the region of the den habitat layer ($p_{habitat}$). We then multiplied $p_{habitat}$ with the simulated number of dens in NPRA (rounded to the nearest whole number) to determine the number of dens in NPRA that occurred in the region with the den habitat layer. Because no infrastructure exists and no activities are proposed to occur in the area of NPRA without the den habitat layer, we considered the potential impacts of activity only to those dens simulated to occur in the region with denning habitat identified (Durner et al. 2013).

To account for the potential influence of BLM's activities on the distribution of polar bear selection of den sites, we again relied on the subset of dens from the den catalogue (Durner et al. 2020) discussed above. We further restricted the dens to only those occurring on the mainland because no permanent infrastructure occurred on barrier islands with identified denning habitat. We then determined the minimum distance to permanent infrastructure that was present during the year when the den was identified. The proportion of empirical dens ≤5 km (3.1 mi) from infrastructure was 0.25. Thus, for the mainland portion of simulated dens in the CC region, we determined how many should be simulated to occur ≤5 km from infrastructure, and how many should be simulated to occur >5 km from infrastructure at each iteration of the model. The number of mainland dens ≤5 km from infrastructure was modeled as $n_{\leq 5km} \sim$ Binomial($n_{CC\_mainland}$,0.25) where $n_{CC\_mainland}$ is the number of dens simulated to occur on the mainland portion of the CC region during one iteration of the model. The number of dens >5 km from infrastructure in the mainland portion of the CC region was calculated as: $n_{>5km} = n_{CC\_mainland} - n_{\leq 5km}$

To determine the distribution of dens, we used a scaled adaptive kernel density estimator applied to observed den locations, which took the form $f(\mathbf{s}) \propto \frac{\theta}{n}\sum_i^n k\left(\frac{\mathbf{s}-\boldsymbol{s_i}}{h(\mathbf{s})}\right)$, where the adaptive bandwidth $h(\boldsymbol{s}) = (\beta_0 + \beta_1 I(\boldsymbol{s}_i \in \mathcal{M}) I(\boldsymbol{s} \in \mathcal{M}))\beta_2$ for the location of the i^{th} den and each location in the study area. The indicator functions allowed the bandwidth to vary abruptly between the mainland and barrier islands. The parameters $\theta, \beta_0, \beta_1, \beta_2$ were chosen so that the density estimate

approximated the observed density of dens and our understanding of likely den locations in areas with low sampling effort.

To simulate dens on the landscape, we first assigned each section of potential den habitat with a relative probability of use by polar bears based on the utilization distribution described above. We then randomly assigned dens to a section of potential denning habitat with a multinomial distribution based on the assigned relative probabilities for each section of potential denning habitat. For dens being simulated on the mainland in the CC region, an additional step was required. We first assigned a simulated den whether it should occur near infrastructure (i.e., ≤5 km) or away (i.e., >5 km) from infrastructure. We subset the kernel density grid cells that occurred ≤5 km from infrastructure and those that occurred >5 km. We then selected a section of potential denning habitat to simulate the den from the appropriate kernel density subset (i.e., near/far from infrastructure) based on their underlying probabilities using a multinomial distribution.

For each simulated den, we assigned dates of key denning events; den entrance, birth of cubs, when cubs reached 60 days of age, den emergence, and departure from the den site after emergence. These represent the chronology of each den under undisturbed conditions.

We selected the entrance date for each den from a normal distribution parameterized by entrance dates of radio-collared polar bears in the SBS stock that denned on land included in Rode et al. (2018) and published in USGS (2018; n=52, mean=November 11, standard deviation [SD]=18 days); we truncated this distribution to ensure that all simulated dates occurred within the range of observed values (i.e., September 12 to December 22).

We selected a date of birth for each litter from a normal distribution with a mean birth date of December 15 and an SD of 10 days. We then restricted random samples of birth dates to occur between December 1 and January 15, which is believed to be when most cubs are born (Messier et al. 1994, Van de Velde et al. 2003).

We selected the emergence date as a random draw from an asymmetric Laplace distribution with parameters μ=81.0, σ=4.79, and p=0.79 estimated from the empirical emergence dates in Rode et al. (2018) and published in USGS (2018, n=52) of radio-collared polar bears in the SBS subpopulation that denned on land using the mleALD function from package 'ald' (Galarzar and Lachos 2018) in program R (R Core Development Team). We constrained simulated emergence dates to occur within the range of observed emergence dates (January 9 to April 9) and not to occur prior to cubs reaching an age of 60 days.

Finally, we assigned the number of days each family group spent at the den site post-emergence based on values reported in three behavioral studies, Smith et al. (2007, 2010, 2013), and Robinson (2014), which monitored dens near the target area immediately after emergence (n=25 dens). Specifically, we used the mean (8.0) and SD (5.5) of the dens monitored in these studies to parameterize a gamma distribution using the method of moments (Hobbs and Hooten 2015) with a shape parameter equal to $8.0^2/5.5^2$ and a rate parameter equal to $8.0/5.5^2$; we selected a post-emergence, pre-departure time for each den from this distribution.

Additionally, we assigned each den a litter size by drawing the number of cubs from a multinomial distribution with probabilities derived from litter sizes (n=25 litters) reported in Smith et al. (2007, 2010, 2013) and Robinson (2014). Because there is some probability that a female naturally emerges with 0 cubs, we also wanted to ensure this scenario was captured. However, it is difficult to parameterize the probability of litter size equal to 0 because it is rarely observed.

Therefore, we assumed that dens with denning durations less than 79 days, which is the shortest den duration in which a female was later observed with cubs, had a litter size equal to 0. Only 3 polar bears in the USGS (2018) data met these criteria, leading to an assumed probability of a litter size of 0 at emergence being 0.07. We therefore assigned the probability of 0, 1, 2, or 3 cubs as 0.07, 0.15, 0.71, and 0.07, respectively.

Impact Area of Specified Activities

The model developed by Wilson and Durner (2020) provides a template for estimating the level of potential impact on denning polar bears during the specified activities while also considering the natural denning ecology of polar bears in the region. The approach developed by Wilson and Durner (2020) also allows for the incorporation of uncertainty in both the metric associated with denning polar bears and in the timing and spatial patterns of the specified activities when precise information on those activities is unavailable. We assumed any dens within 1.6 km (1 mi) from project activities were exposed to disturbance.

AIR Surveys

We assumed that all exploration and transit areas would have two AIR surveys flown each winter. The first survey would occur between December 1 and December 25, 2023, and the second survey between December 15, 2023, and January 10, 2024, with a minimum of 24 hours between surveys. During each iteration of the model, each AIR survey was randomly assigned a probability of detecting dens. Whereas previous analyses have used the results of Wilson and Durner (2020) to inform this detection probability, two additional studies (Smith et al. 2020, Woodruff et al. 2022b) have been conducted since Wilson and Durner (2020) was published. Woodruff et al. (2022b) considered the probability of detecting heat signatures from artificial polar bear dens. They did not find a relationship between den snow depth and detection and estimated a mean detection rate of 0.24. A recent study by Smith et al. (2020) estimated that the detection rate for actual polar bear dens in northern Alaska was 0.45 and also did not report any relationship between detection and den snow depth. Because the study by Wilson and Durner (2020) reported detection probability only for dens with less than 100 cm (39.4 in) snow depth, we needed to correct it to also include those dens with greater than 100 cm (39.4 in) snow depth. Based on the distribution of snow depths used by Wilson and Durner (2020) derived from data in Durner et al. (2003), we determined that 24 percent of dens have snow depths greater than 100 cm. After taking these into account, the overall detection probability from Wilson and Durner

(2020) including dens with snow depths greater than 100 cm was estimated to be 0.54. This led to a mean detection of 0.41 and a SD of 0.15 across the three studies. We used these values, and the method of moments (Hobbs and Hooten 2015), to inform a Beta distribution:

$$p \sim Beta\left(\frac{0.41^2 - 0.41^3 - 0.41 \times 0.154^2}{0.154^2}, \frac{0.41 - 2 \times 0.41^2 + 0.41^3 - 0.154^2 + 0.41 \times 0.154^2}{0.154^2}\right)$$

from which we drew a detection probability (p) for each of the simulated AIR surveys during each iteration of the model.

Model Implementation

For each iteration of the model, we first determined which dens were exposed to the specified activities. We assumed that any den within 1.6 km (1 mi) of human activities was exposed (MacGillivray et al. 2003, Larson et al. 2020), excluding those detected during an AIR survey (but only if activity did not occur prior to AIR surveys). We then identified the stage in the denning period when the exposure occurred based on the date range of the activities the den was exposed to: den establishment (i.e., initial entrance into den until cubs are born), early denning (i.e., birth of cubs until they are 60 days old), late denning (i.e., date cubs are 60 days old until den emergence) and post-emergence (i.e., the date of den emergence until permanent departure from the den site). We then determined whether the exposure elicited a response by the denning polar bear based on probabilities derived from the reviewed case studies (Woodruff et al. 2022a).

Specifically, we divided the number of cases that documented responses associated with either a Level B harassment (i.e., potential to cause a disruption of behavioral patterns), Level A harassment (i.e., potential to injure an animal), or lethal take (i.e., cub abandonment) of polar bears by the total number of cases with that combination of period and exposure type (table 6).

Level B harassment was applicable to both adults and cubs, if present, whereas Level A harassment and lethal take were applicable to only cubs. AIR surveys were considered to be a source of potential impact because these surveys are conducted with fixed-wing aircraft that fly at altitudes below 457 m (1,500 ft). Level B harassment as a result of AIR surveys was applicable to only adults and only during the den establishment period because this period is the only denning period when AIR surveys have been observed to cause disturbance to denning polar bears (Amstrup 1993, Woodruff et al. 2022*b*). In thousands of hours of AIR surveys conducted in northern Alaska over the last decade, we are not aware of a single instance of a polar bear abandoning its den during the early denning period due to an AIR survey overflight. These responses would be readily observable on the thermal cameras, and the fact that none have been observed indicates that den abandonment very likely does not occur given the brief duration of the aircraft overflight and the distance and altitude of the aircraft from the den site.

For dens exposed to activity, we used a multinomial distribution with the probabilities of different levels of take for that period (table 6) to determine whether a den was disturbed or not. If a lethal take was simulated to occur, a den was not allowed to be disturbed again during the subsequent denning periods because the outcome of that denning event was already determined.

The level of impact associated with a disturbance varied according to the severity and timing of the exposure (table 6). Exposures that resulted in emergence from dens prior to cubs reaching 60 days of age were considered lethal takes of cubs. If an exposure resulted in a Level A harassment during the late denning period, we first assigned that den a new random emergence date from a uniform distribution that ranged between the first date of exposure during the late denning period and the original den emergence date. We then determined whether that den was disturbed during the post-emergence period, but the probability of disturbance was dependent on whether a den was disturbed (i.e., Level A harassment) during the late denning period or not (table 6). If an exposure resulted in a Level A harassment during the post-emergence period, we assigned the den a new time spent at the den site post-emergence from a uniform distribution that

ranged from 0 to the original simulated time at the den post-emergence.

Recent research suggests that litter survival is related to the date of den emergence and time spent at the den post-emergence (Andersen et al. in review), with litters having higher survival the later they emerge in the spring and the longer they spend at the den site after emergence. To determine if dens disturbed during the late denning and/or post-emergence period(s) experienced serious Level A harassment, we relied on estimates of litter survival until approximately 100 days post emergence derived from the analysis of empirical data on the dates of emergence from the den and departure from the den site (Anderson et al. in review). These estimates are dependent on the date of emergence and time spent at the den site post-emergence. For each den disturbed during the late denning and/or post-emergence periods, we obtained a random sample of regression coefficients from the posterior distribution and calculated the probability of a litter surviving approximately 100 days post-emergence with the following equation:

$$logit(\boldsymbol{s}) = \beta_0 + \beta_1 emerge + \beta_2 depart$$

where $\boldsymbol{s}$ is the probability of at least one cub being alive approximately 100 days post-emergence, β_0 is the intercept coefficient, β_1 is the coefficient associated with the Julian date of emergence (*emerge*), and β_2 is the coefficient associated with the number of days the family group stayed at the den site post-emergence before departing (*depart*). If $\boldsymbol{s}$ was calculated to be <0.50, then the cubs in that simulated litter were assigned a take by serious Level A harassment, otherwise they were assigned a take by non-serious Level A harassment. These probabilities are based on estimates of litter survival derived from the analysis of empirical data on the dates of emergence from the den and departure from the den site (Anderson et al. in review).

We developed the code to run this model in program R (R Core Development Team 2020) and ran 10,000 iterations of the model (i.e., Monte Carlo simulation) to derive the estimated number of dens disturbed and associated levels of harassment. We then determined the number of cubs that would have lethal take, serious Level A harassment, non-serious Level A

harassment, and Level B harassment, and the number of females that would experience Level B harassment. Table 6 shows the probability of an exposure resulting in the types of harassment of denning polar bears.

Table 6—Probability that an exposure elicited a response by denning polar bears that would result in Level B harassment, Level A harassment, lethal take, and no take.

Level B harassment was applicable to both adults and cubs, if present; Level A harassment and lethal take were applicable to cubs only and were not possible during the den establishment period, which ended with the birth of the cubs. Probabilities were calculated from the analysis of 56 case studies of polar bear responses to human activity. During the early denning period, there was no Level A harassment for cubs, only lethal take. Level A harassment is considered "serious" when the disturbed emergence and/or time at den site post emergence led to an estimate of litter survival <0.50. We provide two sets of take probabilities for the post-emergence period. The first (Post-emergence–Undisturbed) is the set of probabilities when a den has not been disturbed during the late denning period. The second (Post-emergence–Disturbed) is the set of probabilities for a den that was disturbed during the late denning period (Rode et al. 2018, Andersen et al. in review).

Period	Level B	Level A	Lethal	No Take
Den Establishment	0.380	NA	NA	0.620
Early Denning	NA	NA	0.180	0.820
Late Denning	0.000	0.490*	0.000	0.510
Post-emergence–Undisturbed	0.220	0.780*	0.000	0.000
Post-emergence–Disturbed	0.429	0.571*	0.000	0.000

*The assignment of serious and non-serious Level A harassment is a function of when a simulated disturbance occurred in comparison to the anticipated emergence date and/or den departure date.

Model Results

On average, we estimated 3.18 (median=3; 95 percent CI: 0–8) land-based dens in the area that were potentially exposed to disturbance from the specified activities during the proposed IHA period. Estimates for different levels of take are presented in table 7. We also estimated that take by Level B harassment from AIR surveys was never greater than a mean of 0.43 (median=0; 95 percent CI: 0–2). The distributions of both non-serious Level A harassment, serious Level A harassment, and lethal take were non-normal and heavily skewed, as indicated by markedly different mean and median values. The heavily skewed nature of these distributions has led to a mean value that is not representative of the most common model result.

The median number, which is the midpoint value of a frequency distribution of all model results, for serious Level A harassment is 0 and the median number for lethal take is 0, indicating the most common model result is 0 for both serious Level A harassment and lethal take over the

1-year IHA period. The probability of greater than or equal to 1 serious Level A harassment is 0.15, and the probability of greater than or equal to 1 lethal take is 0.33.

In considering whether a polar bear's mortality may result from the specified activities, we use the combined probability that a greater than or equal to 1 serious Level A harassment or lethal take will occur because both types of take are likely to result in a polar bear's mortality. The combined probability that a greater than or equal to 1 serious Level A harassment or lethal take occur within a simulation iteration will be less than or equal to the sum of probabilities for each of those types of takes considered separately. This is because iterations where both types of take occur will be counted only once when considering the combined probability, not once for each type of take. Due to the low probability (0.42) of greater than or equal to 1 serious Level A harassment/lethal take that could occur within the proposed IHA period, combined with the median of 0, we do not anticipate the specified activities will result in either serious Level A harassment or lethal take of polar bears during the proposed IHA period. The median number of non-serious Level A harassment was 2. The probability of greater than or equal to 1 take by non-serious Level A harassment is over a 50 percent chance (0.67), indicating that less than half of the models resulted in 0 takes by non-serious Level A harassment.

Table 7—Results of the den disturbance model for the specified activities.

Estimates are provided for the probability, mean, median, and 95 percent confidence interval (CI) for Level B harassment, non-serious Level A harassment, serious Level A harassment, and lethal take. The probabilities represent the probability of ≥1 take of a polar bear during each denning season.

Type of Take	Probability	Mean	Median	95 Percent CI
Level B Harassment	0.90	3.60	3	0–11
Non-Serious Level-A Harassment	0.67	2.26	2	0–8
Serious Level-A Harassment	0.15	0.34	0	0–3
Lethal	0.33	0.79	0	0–4

Critical Assumptions

To conduct this analysis and estimate the potential amount of Level B and non-serious Level A harassment, several critical assumptions were made.

Level B harassment is equated herein with behavioral responses that indicate harassment or disturbance but not to the extent that cause the animal to experience significant biological consequences. Our estimates do not account for variable responses by polar bear age and sex; however, sensitivity of denning polar bears was incorporated into the analysis. The available information suggests that polar bears are generally resilient to low levels of disturbance. Females with dependent young and juvenile polar bears are physiologically the most sensitive (Andersen and Aars 2008) and most likely to experience harassment from disturbance. Not enough information on composition of the SBS polar bear stock in the specified project area is available to incorporate individual variability based on age and sex or to predict its influence on harassment estimates. Our estimates are derived from a variety of sample populations with various age and sex structures, and we assume the exposed population will have a similar composition and, therefore, the response rates are applicable.

The estimates of behavioral response presented here do not account for the individual movements of animals in response to the specified activities. Our assessment assumes animals remain stationary (i.e., density does not change). Not enough information is available about the movement of polar bears in response to specific disturbances to refine this assumption.

SBS polar bears create maternal dens on the sea ice as well as on land. The den simulation used in our analysis does not simulate dens on the sea ice. However, the specified activities will be conducted entirely on land and only a small percentage of the activities will occur within 1.6 km (1 mi) of the coastline. Therefore, the impact of the activities will be primarily limited to land-based dens within 1.6 km (1 mi) of the project infrastructure, and this impact area will be surveyed during AIR surveys to mitigate impacts on denning polar bears.

The specific segments of the snow roads depicted in figure 1 that will be used for mobilization, resupply, and demobilization are not currently known. For the purposes of the above analyses and estimates of take by non-serious Level A and Level B harassment, and the risks of lethal take or take by serious Level A harassment, we assumed that all routes might

potentially be used at some point during the specified activities. This assumption results in an overestimate of the take that is likely to occur over the 1-year IHA period but accounts for all possible operational scenarios.

Sum of Harassment from All Sources

A summary of total estimated take via Level B and non-serious Level A harassment during the projects by source is provided in table 8. The potential for serious Level A and lethal take was also explored. Lethal take or serious Level A harassment would not occur outside of denning polar bears because the level of sound and visual stimuli experienced by polar bears on the surface would not be significant enough to result in injury or death. Denning polar bears, however, may be subject to repeated exposures, significant energy expenditure from den abandonment or departure, and/or potential impacts to a cub if the den is abandoned or departed prematurely. The Service estimated a low probability (0.35) for greater than or equal to 1 serious Level A harassment/lethal take of a denning polar bear and a median of 0 takes of denning polar bears by serious Level A harassment and lethal take for the 1-year duration of the IHA period.

Table 8—Total estimated takes by harassment of polar bears and source

SOURCE AND TYPE OF HARASSMENT	NUMBER OF ESTIMATED HARASSMENT EVENTS
Bears on the surface–summer—Level B harassment	7
Bears on the surface–winter—Level B harassment	6
Aircraft activities–summer and winter—Level B harassment	1
Denning bears—Level B harassment	4
Denning bears—non-serious Level A harassment	3
Total	21

Determinations and Findings

In making these draft findings, we considered the best available scientific information, including: the biological and behavioral characteristics of the species, the most recent information on species distribution and abundance within the area of the specified activities, the current and expected future status of the stocks (including existing and foreseeable human and natural stressors), the potential sources of disturbance caused by the project, and the potential

responses of marine mammals to this disturbance. In addition, we reviewed applicant-provided materials, information in our files and datasets, published reference materials, and consulted with species experts.

Small Numbers

For our small numbers determination, we consider whether the estimated number of polar bears to be subjected to incidental take is respectively small relative to the population size of the species or stock.

1. We estimate that BLM's proposed specified activities in the specified geographic region will cause the take of no more than 18 polar bears by Level B harassment and no more than 3 polar bears by non-serious Level A harassment during the 1-year period of this proposed IHA (see table 8). Take of 21 animals is 2.32 percent of the best available estimate of the current SBS stock size of 907 animals (Bromaghin et al. 2015, Atwood et al. 2020) ((21÷907)×100≈2.32 percent) and represents a "small number" of polar bears of that stock.

2. The footprint of the specified activities within the specified geographic region is small relative to the range of the SBS stock of polar bears. Polar bears from the SBS range well beyond the boundaries of the proposed IHA region. As such, the IHA region itself represents only a subset of the potential area in which the polar bear may occur. Thus, the Service concludes that a small portion of the SBS polar bear populations may be present in the specified geographic region during the time of the specified activities.

Small Numbers Conclusion

We propose a finding that take of up to 21 SBS polar bears represents a small number of the SBS stock of polar bears.

Negligible Impact

For our negligible impacts determination, we consider the following:

1. The distribution and habitat use patterns of polar bears indicate that relatively few polar bears will occur in the specified areas of activity at any particular time and, therefore, few polar bears are likely to be affected.

2. The documented impacts of previous activities similar to the specified activities on polar bears, taking into consideration the baseline of existing impacts from factors such as oil and gas activities in the area and other ongoing or proposed ITAs, suggests that the types of activities analyzed for this proposed IHA will have minimal effects limited to short-term, temporary behavioral changes. This is true not only for Level B harassment but also for the non-serious Level A harassment. While non-serious Level A harassment has the potential to result in the injury of one or more cubs during the denning period, this type of harassment is not anticipated to result in long-term impacts that are likely to result in mortality. Therefore, we anticipate the specified activities will not have lasting impacts that could significantly affect an individual polar bear's health, reproduction, or survival. The limited extent of anticipated impacts on polar bears is unlikely to adversely affect annual rates of polar bear survival or recruitment.

3. The IHA, if finalized, would require implementation of monitoring requirements and mitigation measures designed to reduce the potential impacts of their operations on polar bears. Den detection surveys for polar bears and adaptive mitigation and management responses based on real-time monitoring information (described in this proposed authorization) will be used to avoid or minimize interactions with polar bears and, therefore, limit potential disturbance of these animals.

4. The Service does not anticipate any lethal take or serious Level A harassment that would remove individual polar bears from the population or prevent their successful reproduction. This proposed IHA does not authorize serious injury take that will likely result in the death of a polar bear.

We also consider the conjectural or speculative impacts associated with these specified

activities. The specific congressional direction described below justifies balancing the probability of such impacts with their severity: If potential effects of a specified activity are conjectural or speculative, a finding of negligible impact may be appropriate. A finding of negligible impact may also be appropriate if the probability of occurrence is low, but the potential effects may be significant. In this case, the probability of occurrence of impacts must be balanced with the potential severity of harm to the species or stock when determining negligible impact. In applying this balancing test, the Service will thoroughly evaluate the risks involved and the potential impacts on marine mammal populations. Such determination will be made based on the best available scientific information (54 FR 40338, September 29, 1989, quoting 53 FR 8474, March 15, 1988 and 132 Cong. Rec. S 16305 (October 15, 1986)).

The potential effects of most concern here are the serious injury or mortality of cubs that could result from disturbances during certain periods of the denning season. The Service estimated that the probability of greater than or equal to one lethal take or take by serious Level A harassment that is likely to result in the mortality of a denning polar bear is 0.32, combined with a median of 0 takes, within the 1-year period of this proposed IHA. Therefore, the Service does not anticipate any lethal take or serious Level A harassment will occur during the IHA period. If a den is disturbed and lethal take or take by serious Level A harassment were to occur, this take would be limited to only cubs during the denning period. Denning females are limited to take by Level B harassment. Therefore, the number of potentially available reproductive females that would contribute to recruitment for the SBS stock would remain unaffected if a den disturbance were to result in the mortality of the cubs. The loss of a cub or litter would reduce the annual recruitment rate for the SBS stock of polar bears.

The SBS stock of polar bears is currently estimated as 907 polar bears (Bromaghin et al. 2015, 2021; Atwood 2020). The loss of one litter ranges from 0 percent (0 cubs) to approximately 0.33 percent (3 cubs) of the annual SBS stock size of polar bears (((0 cubs to 3 cubs)÷907)×100≈0 to 0.33). Cub litter survival was estimated at 50 percent (90 percent CI: 33–

67 percent) for the SBS stock during 2001–2006 (Regehr et al. 2010). A female may lose her litter for several reasons separate from den disturbance. The determining factor for polar bear stock growth is adult female survival (Eberhardt 1990). Consequently, the loss of female cubs has a greater impact on annual recruitment rates for the SBS stock of polar bears compared to male cubs. If a den disturbance were to result in the mortality of the entire litter, the female would be available to breed during the next mating season and could produce another litter during the next denning season.

Based on the relatively low potential for cub mortality associated with these specified activities, and the recognition that even if a den is disturbed, the number of potentially affected cubs would be minimal and the number of reproductive females in the stock would remain the same, the Service does not anticipate that the conjectural or speculative impacts associated with these specified activities warrant a finding of non-negligible impact or otherwise preclude issuance of this proposed IHA. We reviewed the effects of the specified well-plugging and reclamation activities on polar bears, including impacts from surface interactions, aircraft overflights, and den disturbance. Based on our review of these potential impacts, past monitoring reports, and the biology and natural history of polar bears, we anticipate that such effects will be limited to short-term behavioral disturbances.

We have evaluated climate change regarding polar bears as part of the environmental baseline. Climate change is a global phenomenon and was considered as the overall driver of effects that could alter polar bear habitat and behavior. The Service is currently involved in research to understand how climate change may affect polar bears. As we gain a better understanding of climate change effects, we will incorporate the information in future authorizations.

We find that the impacts of these specified activities cannot be reasonably expected to, and are not reasonably likely to, adversely affect SBS polar bears through effects on annual rates of recruitment or survival. We therefore find that the total take estimated above and proposed for

authorization will have a negligible impact on SBS polar bears. We do not propose to authorize lethal take or take by serious Level A harassment, and we do not anticipate that any lethal take or take by serious Level A harassment will occur.

Impact on Subsistence Use

Based on past community consultations, locations of hunting areas, no anticipated overlap of hunting areas and project activities, and the best scientific information available, including monitoring data from similar activities, we propose a finding that take caused by the oil well plugging and reclamation, soil sampling, snow trail, pad, and airstrip construction, and summer cleanup activities in the project area will not have an unmitigable adverse impact on the availability of polar bears for taking for subsistence uses during the proposed timeframe.

While polar bears represent a small portion, in terms of the number of animals, of the total subsistence harvest for the Utqiagvik, Nuiqsut, Wainwright and Atqasuk communities, their harvest is important to Alaska Natives. BLM will be required to notify the cities of Wainwright and Utqiagvik and the Native Villages of Atqasuk and Nuiqsut of the planned activities and document any discussions of potential conflict. BLM must make reasonable efforts to ensure that activities do not interfere with subsistence hunting and that adverse effects on the availability of polar bears are minimized. Should such a concern be voiced, development of plans of cooperation (POC), which must identify measures to minimize any adverse effects, will be required. The POC will ensure that project activities will not have an unmitigable adverse impact on the availability of the species or stock for subsistence uses. This POC must provide the procedures addressing how BLM will work with the affected Alaska Native communities and what actions will be taken to avoid interference with subsistence hunting of polar bears, as warranted.

The Service has not received any reports and is not aware of information that indicates that polar bears are being or will be deterred from hunting areas or impacted in any way that diminishes their availability for subsistence use by oil well plugging and reclamation, soil

sampling, snow trail, pad, and airstrip construction, and summer cleanup. If there is evidence that these activities are affecting the availability of polar bears for take for subsistence uses, we will reevaluate our findings regarding permissible limits of take and the measures required to ensure continued subsistence hunting opportunities.

Least Practicable Adverse Impact

We evaluated the practicability and effectiveness of mitigation measures based on the nature, scope, and timing of the specified activities, the best available scientific information, and monitoring data during BLM's activities in the specified geographic region. We propose a finding that the mitigation measures included within BLM's Request will ensure least practicable adverse impacts on polar bears (BLM 2023)

Polar bear den surveys at the beginning of the winter season, the resulting 1.6-km (1-mi) operational exclusion zone around any known polar bear dens, and restrictions on the timing and types of activities in the vicinity of dens will ensure that impacts to denning female polar bears and their cubs are minimized during this critical period. Minimum flight elevations over polar bear areas and flight restrictions around observed polar bears and known polar bear dens will reduce the potential for aircraft disturbing polar bears. Finally, BLM will implement mitigation measures to prevent the presence and impact of attractants in camps such as the use of wildlife-resistant waste receptacles, daily food waste incineration, and storing hazardous materials in drums or other secure containers. These measures are outlined in a polar bear interaction plan that was developed in coordination with the Service and is part of BLM's application for this IHA. Based on the information we currently have regarding den and aircraft disturbance and polar bear attractants, we concluded that the mitigation measures outlined in BLM's Request (BLM 2023) and incorporated into this authorization will minimize impacts from the specified oil well plugging and reclamation, soil sampling, snow trail, pad, and airstrip construction, and summer cleanup activities to the extent practicable.

Several mitigation measures were considered but determined to be not practicable. These measures are listed below:

- *Grounding all flights if they must fly below 457 m (1,500 ft)*—Requiring all aircraft to maintain an altitude of 457 m (1,500 ft) at all times is not practicable as some operations may require flying below 457 m (1,500 ft) to perform necessary inspections or maintain safety of flight crew. Aircraft are required to fly above 457 m (1,500 ft) at all times within 805 m (0.5 mi) of an observed polar bear unless there is an emergency.
- *One-mile buffer around all known polar bear denning habitat*—One-mile (1.6-km) buffer around all known polar bear denning habitat is not practicable as much of BLM's proposed project area occurs within 1.6 km (1 mi) of denning habitat; thus, to exclude all areas within 1.6 km of denning habitat would preclude the planned activities from occurring.
- *Prohibition of driving over high relief areas, embankments, or stream and river crossings*—While the denning habitat, such as high relief areas, embankments, and streams or river banks, must be considered during tundra travel, complete prohibition is not practicable. High relief areas, embankments, streams, and rivers occur throughout the project area. To completely avoid these types of areas would likely cause personnel to drive further away from established operational areas and unnecessarily create additional safety concerns. Furthermore, other mitigation measures to minimize impact to denning habitats are included and will minimize the risk imposed by driving over high relief areas, embankments, or stream and river crossings
- *Use of a broader definition of "denning habitat" for operational offsets*—There is no available data to support broadening the defining features of denning habitat beyond that established by USGS. Such a redefinition would cause an increase in the area surveyed for maternal dens, and the associated increase in potential harassment of polar bears on the surface would outweigh the mitigative benefits.
- *Establishment of corridors for sow and cub transit to the sea ice*—As there is no data to support the existence of natural transit corridors to the sea ice, establishment of corridors in the

IHA area would be highly speculative. Therefore, there would be no mitigative benefit realized by their establishment.

- *Require all activities to cease if a polar bear is injured or killed until an investigation is completed*—The Service has incorporated reporting requirements into this proposed authorization for all polar bear interactions. While it may aid in any subsequent investigation, ceasing all activities may not be practicable or safe and, thus, will not be mandated.

- *Require use of den detection dogs*—It is not practicable or safe to require scent-trained dogs to detect dens due to the large spatial extent that would need to be surveyed within activity areas.

- *Require the use of handheld or vehicle-mounted Forward Looking Infrared (FLIR)*—The efficacy rates for AIR have been found to be four times more likely to detect dens versus ground-based FLIR (handheld or vehicle-mounted FLIR) due to impacts of blowing snow on detection. BLM has incorporated into their mitigation measures the use of handheld or vehicle-mounted FLIR when transiting rivers occurring in suitable denning habitat, but it is not practicable to use the equipment during all transit.

- *Construct safety gates, fences, and enclosures to prevent polar bears from accessing facilities*—This project will require no permanent facility/structures and encompasses a large area. Construction and deconstruction of barriers for a moving camp would increase potential human– polar bear interactions and impacts to polar bear habitat.

- *Employ protected species observers (PSOs) for monitoring, recording, reporting, and implementing mitigation measures*—All personnel will be trained in wildlife observation, employment of PSOs would not be anticipated to reduce impacts to polar bears. Monitoring, recording, reporting are described in the IHA application.

- *Avoid areas of high-density polar bear use (e.g., barrier islands and coastline) including the establishment of camps and pads*—This measure is not practicable because the legacy wells

that this project is focused on are all located along the coastline, and snow trail must also cross through these areas to reach the well sites.

- *Avoid predominantly coastal routes for flight pathways*—This measure is not practicable because the remediation sites are located along the coast, and aviation access routes to project sites must occur over the coast.

- *Restrict activity and travel over polar bear denning habitat to eliminate or lessen risk of den collapse*—This project has activities that will travel over potential polar bear denning habitat. BLM has committed to multiple effective mitigation measures to minimize their potential impacts to polar bear denning habitat and reduce to chance of den collapse. Therefore, we believe that the probability of this project's activities causing a den collapse is near zero and additional mitigation measures would not further reduce the probability.

Required Determinations

National Environmental Policy Act (NEPA)

We have prepared a draft environmental assessment in accordance with the NEPA (42 U.S.C. 4321 et seq.). We have preliminarily concluded that authorizing the nonlethal, incidental, unintentional take of 18 SBS polar bears by Level B harassment and 3 SBS polar bears by non-serious Level A harassment during the proposed harassment authorization period would not significantly affect the quality of the human environment and, thus, preparation of an environmental impact statement for this incidental harassment authorization is not required by section 102(2) of NEPA or its implementing regulations. We are accepting comments on the draft environmental assessment as specified above in **DATES** and **ADDRESSES**.

Endangered Species Act

Under the Endangered Species Act (ESA) (16 U.S.C. 1536(a)(2)), all Federal agencies are required to ensure the actions they authorize are not likely to jeopardize the continued existence of any threatened or endangered species or result in destruction or adverse modification of critical habitat. Prior to issuance of a final IHA, the Service will complete intra-

Service consultation under section 7 of the ESA on our proposed issuance of an IHA. These evaluations and findings will be made available on the Service's website at *https://ecos.fws.gov/ecp/report/biological-opinion.*

Government-to-Government Consultation

It is our responsibility to communicate and work directly on a Government-to-Government basis with federally recognized Alaska Native Tribes in developing programs for healthy ecosystems. We seek their full and meaningful participation in evaluating and addressing conservation concerns for protected species. It is our goal to remain sensitive to Alaska Native culture, and to make information available to Alaska Tribal organizations and communities. Our efforts are guided by the following policies and directives:

(1) The Native American Policy of the Service (January 20, 2016);

(2) The Alaska Native Relations Policy (currently in draft form; see 87 FR 66255, November 3, 2022);

(3) Executive Order 13175 (January 9, 2000);

(4) Department of the Interior Secretarial Orders 3206 (June 5, 1997), 3225 (January 19, 2001), 3317 (December 1, 2011), 3342 (October 21, 2016), and 3403 (November 15, 2021) as well as Director's Order 227 (September 8, 2022);

(5) The Alaska Government-to-Government Policy (a departmental memorandum issued January 18, 2001); and

(6) the Department of the Interior's policies on consultation with Alaska Native Tribes and organizations.

We have evaluated possible effects of the proposed IHA on federally recognized Alaska Native Tribes and ANCSA (Alaska Native Claims Settlement Act) Corporations. The Service has determined that authorizing the Level B harassment of up to 18 polar bears and non-serious Level A harassment of up to 3 polar bears from BLM's specified activities would not have any Tribal implications or ANCSA Corporation implications and, therefore, Government-to-

Government consultation or Government-to-ANCSA Corporation consultation is not necessary. However, we invite continued discussion, either about the project and its impacts or about our coordination and information exchange throughout the IHA/POC public comment process.

Paperwork Reduction Act

This rule does not contain any new collection of information that requires approval by the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). OMB has previously approved the information collection requirements associated with IHAs and assigned OMB Control Number 1018–0194 (expires 08/31/2026). An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

Proposed Authorization

We propose to authorize the nonlethal, incidental take by Level B harassment of up to 18 polar bears and nonlethal, incidental take by non-serious Level A harassment of up to 3 polar bears from the SBS stock of polar bears. Authorized take will be limited to disruption of behavioral patterns that may be caused by the oil well plugging and reclamation, soil sampling, snow trail, pad, and airstrip construction, and summer cleanup activities by BLM in the North Slope Borough of Alaska between the Wainwright and Oliktok Areas for 1 year from date of issuance. We do not anticipate or authorize any take by Level A serious, injury, or death to polar bears resulting from these activities.

A. General Conditions for the IHA for BLM

1. Activities must be conducted in the manner described in the revised Request dated September 2023 (received October 5, 2023) for an IHA and in accordance with all applicable conditions and mitigation measures. The taking of polar bears whenever the required conditions, mitigation, monitoring, and reporting measures are not fully implemented as required by the IHA is prohibited. Failure to follow the measures specified both in the revised Request and within this proposed authorization may result in the modification, suspension, or revocation of

the IHA.

2. For the purposes of this authorization, non-serious forms of Level A harassment accrue to one or more cubs where project-related activities cause a sow to emerge from a den on or later than February 14, and either:

i. The operator's observations establish that the cub departed the denning location with the sow on or later than March 5 and that the cub was approximately average or greater size and/or weight, able to nurse uninterrupted, and able to maintain close proximity to the sow when traveling; or

ii. The date of the sow and cub's departure from the denning location is unknown but the operator's first observation of tracks indicating that the sow and cub departed from the denning location occurs on or later than March 20.

3. If project activities cause unauthorized take (i.e., take of more than 18 polar bears from the SBS stock by Level B harassment or more than 3 polar bears from the SBS stock by non-serious Level A harassment, a form of take other than Level B or non-serious Level A harassment, or take of 1 or more polar bears through methods not described in the IHA), then BLM must take the following actions:

i. Cease its activities immediately (or reduce activities to the minimum level necessary to maintain safety);

ii. Report the details of the incident to the Service within 48 hours; and

iii. Suspend further activities until the Service has reviewed the circumstances and determined whether additional mitigation measures are necessary to avoid further unauthorized taking.

4. All operations managers, aircraft pilots, and vehicle operators must receive a copy of this IHA and maintain access to it for reference at all times during project work. These personnel must understand, be fully aware of, and be capable of implementing the conditions of the IHA at all times during project work.

5. This IHA will apply to activities associated with the proposed project as described in this document and in BLM's revised Request. Changes to the proposed project without prior authorization may invalidate the IHA.

6. BLM's revised Request is approved and fully incorporated into this IHA unless exceptions are specifically noted herein. The revised Request includes:

i. BLM's original *Request for an IHA*, dated May 22, 2023, which includes BLM's *Polar Bear Safety, Awareness, and Interaction Plan* and geospatial files;

ii. BLM's revised *Request for an IHA*, dated September 2023 (received by the Service October 5, 2023).

7. Operators will allow Service personnel or the Service's designated representative to visit project work sites to monitor for impacts to polar bears and subsistence uses of polar bears at any time throughout project activities so long as it is safe to do so. "Operators" are all personnel operating under BLM's authority, including all contractors and subcontractors.

BLM must implement the following policies and procedures to avoid interactions and minimize to the greatest extent practicable any adverse impacts on polar bears, their habitat, and the availability of these marine mammals for subsistence uses.

B. General Avoidance Measures

1. BLM must cooperate with the Service and other designated Federal, State, and local agencies to monitor and mitigate the impacts of activities on polar bears.

2. Trained and qualified personnel must be designated to monitor for the presence of polar bears, initiate mitigation measures, and monitor, record, and report the effects of the activities on polar bears. BLM must provide all operators with polar bear awareness training prior to their participation in project activities.

3. A Service-approved polar bear safety, awareness, and interaction plan must be on file with the Service Marine Mammal Management office and available onsite. The interaction plan must include:

i. A description of the proposed activity (i.e., a summary of the plan of operations during the proposed activity);

ii. A food, waste, and other attractants management plan;

iii. Personnel training policies, procedures, and materials;

iv. Site-specific polar bear interaction risk evaluation and mitigation measures;

v. Polar bear avoidance and encounter procedures; and

vi. Polar bear observation and reporting procedures.

4. BLM must contact potentially affected subsistence communities and hunter organizations to discuss potential conflicts caused by the activities and provide the Service documentation of communications as described in *D. Measures to Reduce Impacts to Subsistence Users*.

5. *Mitigation measures for aircraft.* BLM must undertake the following activities to limit disturbance from aircraft activities:

i. Operators of support aircraft shall, at all times, conduct their activities at the maximum distance practicable from concentrations of polar bears.

ii. Fixed-wing aircraft and helicopter operations within the IHA area must maintain a minimum altitude of 457 m (1,500 ft) above ground level when safe and operationally possible.

iii. Under no circumstances, other than an emergency, will aircraft operate at an altitude lower than 457 m (1,500 ft) within 805 m (0.5 mi) of a polar bear observed on ice or land measured in a straight line between the polar bear and the ground directly underneath the aircraft. Helicopters may not hover or circle above such areas or within 805 m (0.5 mi) of such areas. If weather conditions or operational constraints necessitate operation of aircraft at altitudes below 457 m (1,500 ft), the operator must avoid areas of known polar bear concentrations and should take precautions to avoid flying directly over or within 805 m (0.5 mi) of these areas.

iv. Aircraft may not be operated in such a way as to separate individual polar bears from a group (i.e., two or more polar bears).

6. *Mitigation measures for winter activities*. BLM must undertake the following activities to limit disturbance around known polar bear dens:

i. BLM must obtain record of two aerial infrared (AIR) surveys of all denning habitat located within 1.6 km (1 mi) of specified activities in an attempt to identify maternal polar bear dens. The first survey obtained must occur between December 1 and December 25, 2023, and the second survey obtained must occur between December 15, 2023, and January 10, 2024, with at least 24 hours occurring between the completion of the first survey and the beginning of the second survey.

ii. All observed or suspected polar bear dens must be reported to the Service prior to the initiation of activities.

iii. If a suspected den site is located, BLM will immediately consult with the Service to analyze the data and determine if additional surveys or mitigation measures are required. The Service will determine whether the suspected den is to be treated as a putative den for the purposes of this IHA.

iv. Operators must observe a 1.6-km (1-mi) operational exclusion zone around all putative polar bear dens during the denning season (November–April, or until the female and cubs leave the areas). Should a suspected den be discovered within 1 mile of activities, work must cease, and the Service contacted for guidance. The Service will evaluate these instances on a case-by-case basis to determine the appropriate action. Potential actions may range from cessation or modification of work to conducting additional monitoring, and BLM must comply with any additional measures specified.

v. In determining the denning habitat that requires surveys, use the den habitat map developed by the USGS. A map of potential coastal polar bear denning habitat can be found at: *https://www.usgs.gov/centers/asc/science/polar-bear-maternal-denning?qt-science_center_objects=4#qt-science_center_objects*.

C. Monitoring

1. Operators must provide onsite observers and implement the Service-approved polar bear safety, awareness, and interaction plan to apply mitigation measures, monitor the project's effects on polar bears and subsistence uses, and evaluate the effectiveness of mitigation measures.

2. Onsite observers must be present during all operations and must record all polar bear observations, identify and document potential harassment, and work with personnel to implement appropriate mitigation measures.

3. Operators shall cooperate with the Service and other designated Federal, State, and local agencies to monitor the impacts of project activities on polar bears. Where information is insufficient to evaluate the potential effects of activities on polar bears and the subsistence use of this species, BLM may be required to participate in joint monitoring efforts to address these information needs and ensure the least practicable impact to this resource.

5. Operators must allow Service personnel or the Service's designated representative to visit project work sites to monitor impacts to polar bears and subsistence use at any time throughout project activities so long as it is safe to do so.

D. Measures to Reduce Impacts to Subsistence Users

BLM must conduct its activities in a manner that, to the greatest extent practicable, minimizes adverse impacts on the availability of polar bears for subsistence uses.

1. BLM will be required to develop a Service-approved POC if, through community consultation, concerns are raised regarding impacts to subsistence harvest or Alaska Native Tribes and organizations.

2. If required, BLM will implement the Service-approved POC.

3. Prior to conducting the work, BLM will take the following steps to reduce potential effects on subsistence harvest of polar bears:

i. Avoid work in areas of known polar bear subsistence harvest;

ii. Notify the cities Wainwright and Utqiagvik and the Native Villages of Atqasuk and Nuiqsit of the proposed project activities;

iii. Work to resolve any concerns of potentially affected Alaska Native Tribal organizations and corporations regarding the project's effects on subsistence hunting of polar bears;

iv. If any unresolved or ongoing concerns of potentially affected Alaska Native Tribal organizations and corporations remain, modify the POC in consultation with the Service and subsistence stakeholders to address these concerns; and

v. Implement Service-required mitigation measures that will reduce impacts to subsistence users and their resources.

E. Reporting Requirements

BLM must report the results of monitoring to the Service Marine Mammals Management office via email at: *fw7_mmm_reports@fws.gov*.

1. *In-season monitoring reports.*

2. *Activity progress reports.* BLM must:

(i) Notify the Service at least 48 hours prior to the onset of activities;

(ii) Provide the Service weekly progress reports of any significant changes in activities and/or locations; and

(iii) Notify the Service within 48 hours after ending of activities.

3. *Polar bear observation reports.* BLM must report, within 48 hours, all observations of polar bears and potential polar bear dens during any project activities. Upon request, monitoring report data must be provided in a common electronic format (to be specified by the Service). Information in the observation report must include, but need not be limited to:

i. Date and time of each observation;

ii. Locations of the observer and polar bears (GPS coordinates if possible);

iii. Number of polar bears;

iv. Sex and age class—adult, subadult, cub (if known);

v. Observer name and contact information;

vi. Weather, visibility, and if at sea, sea state, and sea-ice conditions at the time of observation;

vii. Estimated closest distance of polar bears from personnel and facilities;

viii. Type of work being conducted at time of sighting;

ix. Possible attractants present;

x. Polar bear behavior—initial behavior when first observed (e.g., walking, swimming, resting, etc.);

xi. Potential reaction—behavior of polar bear potentially in response to presence or activity of personnel and equipment;

xii. Description of the encounter;

xiii. Duration of the encounter; and

xiv. Mitigation actions taken.

4. *Human–polar bear interaction reports.* BLM must report all human–polar bear interaction incidents immediately, and not later than 48 hours after the incident. Human–polar bear interactions include:

i. Any situation in which there is a possibility for unauthorized take. For instance, when project activities exceed those included in an IHA, when a mitigation measure was required but not enacted, or when the injury or death of a polar bear occurs. Reports must include all information specified for an observation report in paragraphs (3)(i)–(xiv) of this section E, a complete detailed description of the incident, and any other actions taken.

ii. Injured, dead, or distressed polar bears that are clearly not associated with project activities (e.g., animals found outside the project area, previously wounded animals, or carcasses with moderate to advanced decomposition or scavenger damage) must also be reported to the

Service immediately, and not later than 48 hours after discovery. Photographs, video, location information, or any other available documentation must be included.

6. *Final report.* The results of monitoring and mitigation efforts identified in the marine mammal avoidance and interaction plan must be submitted to the Service for review within 90 days of the expiration of this IHA. Upon request, final report data must be provided in a common electronic format (to be specified by the Service). Information in the final report must include, but need not be limited to:

i. Copies of all observation reports submitted under the IHA;

ii. A summary of the observation reports;

iii. A summary of monitoring and mitigation efforts including areas, total hours, total distances, and distribution;

iv. Analysis of factors affecting the visibility and detectability of polar bears during monitoring;

v. Analysis of the effectiveness of mitigation measures;

vi. A summary and analysis of the distribution, abundance, and behavior of all polar bears observed; and

vii. Estimates of take in relation to the specified activities.

Request for Public Comments

If you wish to comment on this proposed authorization, the associated draft environmental assessment, or both documents, you may submit your comments by either of the methods described in **ADDRESSES**. Please identify whether you are commenting on the proposed authorization, draft environmental assessment, or both, make your comments as specific as possible, confine them to issues pertinent to the proposed authorization, and explain the reason for any changes you recommend. Where possible, your comments should reference the specific section or paragraph that you are addressing. The Service will consider all comments that are received before the close of the comment period (see **DATES**). The Service does not

anticipate extending the public comment period beyond the 30 days required under section 101(a)(5)(D)(iii) of the MMPA.

Comments, including names and street addresses of respondents, will become part of the administrative record for this proposal. Before including your address, telephone number, email address, or other personal identifying information in your comment, be advised that your entire comment, including your personal identifying information, may be made publicly available at any time. While you can ask us in your comments to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

Peter Fasbender,

Assistant Regional Director Fisheries and Ecological Services, Alaska Region.

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