



NOAA FISHERIES

PROPOSED ACTION: Issuance of an Incidental Harassment Authorization to the Huna Totem Corporation to Take Marine Mammals by Harassment Incidental to the Re-development of the Icy Strait Point Cruise Ship Terminal

TYPE OF STATEMENT: Environmental Assessment

LEAD AGENCY: U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

RESPONSIBLE OFFICIAL: Donna S. Wieting, Director
Office of Protected Resources,
National Marine Fisheries Service

FOR FURTHER INFORMATION: Rob Pauline
National Marine Fisheries Service
Office of Protected Resources
Permits and Conservation Division
1315 East West Highway
Silver Spring, MD 20910
301-427-8401

LOCATION: Hoonah, Alaska

ABSTRACT: This Environmental Assessment analyzes the environmental impacts of the National Marine Fisheries Service, Office of Protected Resources proposals to issue an Incidental Harassment Authorization (IHA) to the Huna Totem Corporation for the taking, by Level B harassment, of small numbers of marine mammals incidental to the re-development of the Icy Strait Point Cruise Ship Terminal Project in Hoonah, Alaska. The IHA would be valid from June 1 through October 31, 2015.

DATE: May 2015

TABLE OF CONTENTS

Chapter 1 Introduction and Purpose and Need.....	4
1.1. Description of Proposed Action.....	4
1.1.1. Background on HTC’s MMPA Application.....	4
1.1.2. Marine Mammals in the Action Area.....	5
1.2. Purpose and Need.....	5
1.3. The Environmental Review Process.....	6
1.3.1. Laws, Regulations, or Other NEPA Analyses Influencing the EA’s Scope.....	7
1.3.2. Scope of Environmental Analysis.....	8
1.3.3. NEPA Public Involvement Summary.....	9
1.3.4. Relevant Comments on Our <i>Federal Register</i> Notice.....	9
1.4. Other Permits, Licenses, or Consultation Requirements.....	10
1.4.1. Marine Mammal Protection Act.....	10
1.4.2. Magnuson-Stevens Fishery Conservation and Management Act.....	<u>1044</u>
1.4.3. Endangered Species Act.....	<u>1142</u>
Chapter 2 Alternatives.....	13
2.1. Introduction.....	13
2.2. Description of HTC’s Proposed Activities.....	13
2.2.1. Specified Time and Specified Area.....	13
2.2.2. Pile Driving Conducted for Marina Reconstruction.....	13
2.3. Description of Alternatives.....	14
2.3.1. Alternative 1 – Issuance of an Authorization with Mitigation Measures.....	14
2.3.2. Alternative 2 – No Action Alternative.....	18
2.4. Alternatives Considered but Eliminated from Further Consideration.....	19
Chapter 3 Affected Environment.....	20
3.1. Physical Environment.....	20
3.1.1. Marine Mammal Habitat.....	20
3.1.2. Ambient Sound.....	20
3.2. Biological Environment.....	21
3.2.1. Marine Mammal Habitat.....	21
3.2.2. Marine Mammals.....	21
Chapter 4 Consequences.....	29
4.1. Effects of Alternative 1 – Issuance of an Authorization with Mitigation Measures.....	29
4.1.1. Impacts to Marine Mammal Habitat.....	29
4.1.2. Impacts to Marine Mammals.....	29
4.2. Effects of Alternative 2 – No Action Alternative.....	<u>3536</u>
4.2.1. Impacts to Marine Mammal Habitat.....	<u>3536</u>
4.2.2. Impacts to Marine Mammals.....	<u>3536</u>
4.3. Unavoidable Adverse Impacts.....	<u>3637</u>
4.4. Cumulative Effects.....	<u>3637</u>
4.4.1. Climate Change.....	<u>3738</u>
4.4.2. Coastal Development.....	<u>3738</u>
4.4.3. Marine Pollution.....	38
4.4.4. Disease.....	<u>3839</u>
4.4.5. Commercial and Private Marine Mammal Watching.....	<u>3839</u>

4.4.6. Conclusion.....	3839
Chapter 5 List of Preparers and Agencies Consulted	40
Chapter 6 Literature Cited.....	41

LIST OF ACRONYMS AND ABBREVIATIONS

μPa	microPascal
Authorization	Incidental Harassment Authorization
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
dB	decibel
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
FONSI	Finding of No Significant Impact
FR	Federal Register
HTC	Huna Totem Corporation
Km	kilometer
m	meter
MMPA	Marine Mammal Protection Act
MSFCMA	Magnuson-Stevens Fishery Conservation Management Act
NAO	NOAA Administrative Order
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OPR	Office of Protected Resources
OMB	Office of Management and Budget
rms	root-mean-square
ACOE	US Army Corp of Engineers
USFWS	US Fish and Wildlife Service
WSDOT	Washington State Department of Transportation

Chapter 1 Introduction and Purpose and Need

1.1. Description of Proposed Action

The Marine Mammal Protection Act (MMPA) prohibits the incidental taking of marine mammals. The incidental take of a marine mammal falls under three categories: mortality, serious injury, or harassment, which includes injury and behavioral effects. The MMPA defines harassment as any act of pursuit, torment, or annoyance which: (1) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (2) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment). There are exceptions to the MMPA's prohibition on take such as the authority at issue here for us to authorize the incidental taking of small numbers of marine mammals by harassment upon the request of a U.S. citizen provided we follow certain statutory and regulatory procedures and make determinations. This exception is discussed in more detail in Section 1.2.

We propose to issue an Incidental Harassment Authorization (Authorization) to the Huna Totem Corporation (HTC) at Hoonah Alaska under the MMPA for the incidental taking of small numbers of marine mammals, incidental to construction activities associated with the re-development of the Icy Strait Point Cruise Ship Terminal. We do not have the authority to permit, authorize, or prohibit the Port's construction activities under the MMPA, as that authority lies with a different Federal agency.

Our proposed action is a direct outcome of HTC requesting an authorization under Section 101(a)(5)(D) of the MMPA to take marine mammals, by harassment, incidental to conducting construction of the cruise ship terminal because the associated activities have the potential to take, by harassment, marine mammals during construction activities. HTC therefore requires an Authorization for incidental take.

Our issuance of an Authorization to HTC is a major federal action under the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) regulations in 40 CFR §§ 1500-1508, and NOAA Administrative Order (NAO) 216-6. Thus, we are required to analyze the effects of our proposed action.

This Environmental Assessment (EA), titled "*Issuance of an Incidental Harassment Authorization to the Huna Totem Corporation to Take Marine Mammals by Harassment Incidental to the Re-development of the Icy Strait Point Cruise Ship Terminal*," (hereinafter, EA) addresses the potential environmental impacts of two alternatives, namely:

- Issue the Authorization to HTC for Level B harassment of marine mammals under the MMPA during their project, taking into account the prescribed means of take, mitigation measures, and monitoring requirements required in the proposed Authorization; or
- Not issue an Authorization to the HTC in which case, for the purposes of NEPA analysis only, we assume that the activities would proceed without the mitigation and monitoring measures that would otherwise be prescribed in a proposed Authorization.

1.1.1. Background on HTC's MMPA Application

HTC proposes to construct a new cruise ship berth terminal and associated upland improvements at the existing Icy Strait Point Cruise Ship Terminal. The existing facility is served by an approximately 100-foot by 25-foot excursion dock, with an approximately 140-foot walkway connecting to shoreline. There is also an existing 40-foot by 80-foot fishing pier which is connected to the shore by an approximately 120-foot walkway. The new terminal would consist of a floating pontoon, which would be connected to the shore via a new trestle and transfer span. The new terminal would also include two new mooring dolphins, two new breasting dolphins, and three or more new reaction dolphins. Each of these would be interconnected via pile-supported catwalks.

In-water work, which is work occurring below the mean higher high water, (MHHW) will be limited to pile installation and falsework pile extraction. These activities will be limited to the period between June 1 and October 31, 2015 to avoid the period (15 April to 31 May) when spawning herring are most likely to be present within the project area.

1.1.2. Marine Mammals in the Action Area

The proposed repair project could adversely affect the following marine mammal species under our jurisdiction:

- humpback whale (*Megaptera novaeangliae*)
- Steller sea lion (*Eumatopius jubatus*)
- harbor seal (*Phoca vitulina*)
- Dall's porpoise (*Phocoenoides dalli*)
- gray whale (*Eschrichtius robustus*)
- harbor porpoise (*Phocoena phocoena*)
- killer whale (*Orcinus orca*)
- minke whale (*Balaenoptera acutorostrata*)
- Pacific white-sided dolphin (*Lagenorhynchus obliquidens*)

1.2. Purpose and Need

The MMPA prohibits "takes" of marine mammals, with a number of specific exceptions. The applicable exception in this case is an authorization for incidental take of marine mammals in section 101(a)(5)(D) of the MMPA.

Section 101(a)(5)(D) of the MMPA directs the Secretary of Commerce (Secretary) to authorize, upon request, the incidental, but not intentional, taking of small numbers of marine mammals of a species or population stock, by United States citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if we make certain findings and provide a notice of a proposed authorization to the public for review. Entities seeking to obtain authorization for the incidental take of marine mammals under our jurisdiction must submit such a request (in the form of an application) to us.

We have issued regulations to implement the Incidental Take Authorization provisions of the MMPA (50 CFR Part 216) and have produced Office of Management and Budget (OMB)-approved application instructions (OMB Number 0648-0151) that prescribe the procedures necessary to apply for

authorizations. All applicants must comply with the regulations at 50 CFR § 216.104 and submit applications requesting incidental take according to the provisions of the MMPA.

Purpose: The primary purpose of our proposed action – the issuance of an Authorization to HTC – is to authorize (pursuant to the MMPA) the take of marine mammals incidental to HTC’s proposed activities. The Authorization, if issued, would exempt HTC from the take prohibitions contained in the MMPA.

To authorize the take of small numbers of marine mammals in accordance with Section 101(a)(5)(D) of the MMPA, we must evaluate the best available scientific information to determine whether the take would have a negligible impact on marine mammals or stocks and not have an unmitigable adverse impact on the availability of affected marine mammal species for certain subsistence uses. We cannot issue an Authorization if it would result in more than a negligible impact on marine mammal species or stocks or if it would result in an unmitigable adverse impact on subsistence.

In addition, we must prescribe, where applicable, the permissible methods of taking and other means of effecting the least practicable impact on the species or stocks of marine mammals and their habitat (i.e., mitigation), paying particular attention to rookeries, mating grounds, and other areas of similar significance. If appropriate, we must prescribe means of effecting the least practicable impact on the availability of the species or stocks of marine mammals for subsistence uses. Authorizations must also include requirements or conditions pertaining to the monitoring and reporting of such taking in large part to better understand the effects of such taking on the species. Also, we must publish a notice of a proposed Authorization in the *Federal Register* for public notice and comment.

The purpose of this action is therefore to determine whether the take resulting from HTC’s project would have a negligible impact on affected marine mammal species or stocks, would not have an unmitigable adverse impact on the availability of marine mammals for taking for subsistence uses, and develop mitigation and monitoring measures to reduce the potential impacts.

Need: On June 23, 2014, HTC submitted an application to NOAA requesting an IHA for the possible harassment of small numbers of nine marine mammal species incidental to construction associated with the re-development of the Icy Strait Point Cruise Ship Terminal in Hoonah, Alaska. On September 9, 2015, HTC submitted a revised IHA application with updated information. Additional proposed modifications were submitted to NMFS on February 26, 2015. We now have a corresponding duty to determine whether and how we can authorize take by Level B harassment incidental to the activities described in HTC’s application. Our responsibilities under section 101(a)(5)(D) of the MMPA and its implementing regulations establish and frame the proposed action and its alternatives.

Our described purpose and need guide us in developing reasonable alternatives for consideration, including alternative means of mitigating potential adverse effects. Thus, we are developing and analyzing alternative means of developing and issuing an Authorization, which may require the applicant to include additional mitigation and monitoring measures in order for us to make our determinations under the MMPA.

1.3. The Environmental Review Process

NEPA compliance is necessary for all “major” federal actions with the potential to significantly affect the quality of the human environment. Major federal actions include activities fully or partially funded, regulated, conducted, authorized, or approved by a federal agency. Because our issuance of an Authorization would allow for the taking of marine mammals consistent with provisions under the MMPA and incidental to the applicant’s activities, we consider this as a major federal action subject to NEPA.

Under the requirements of NAO 216-6 section 6.03(f)(2)(b) for incidental harassment authorizations, we prepared this EA to determine whether the direct, indirect and cumulative impacts related to the issuance of an Authorization for incidental take of marine mammals during the conduct of HTC’s project could be significant. If we deem the potential impacts to be not significant, this analysis, in combination with other analyses incorporated by reference, may support the issuance of a Finding of No Significant Impact (FONSI) for the proposed Authorization.

1.3.1. Laws, Regulations, or Other NEPA Analyses Influencing the EA’s Scope

We have based the scope of the proposed action and nature of the alternatives considered in this EA on the relevant requirements in section 101(a)(5)(D) of the MMPA. Thus, our authority under the MMPA bounds the scope of our alternatives. We conclude that this analysis – when combined with the analyses in the following documents – fully describes the impacts associated with the proposed project with mitigation and monitoring for marine mammals. After conducting an independent review of the information and analyses for sufficiency and adequacy, we incorporate by reference the relevant analyses on the HTC’s proposed action as well as a discussion of the affected environment and environmental consequences within the following documents per 40 CFR 1502.21 and NAO 216-6 § 5.09(d):

- our notice of the proposed Authorization in the *Federal Register* (80 FR 14945, March 20, 2015);
- *Application Amendment and Monitoring Plan* (February 26, 2015)
- *Request for an Incidental Harassment Authorization under the Marine Mammal Protection Act – Icy Strait Point Cruise Ship (Revised August, 2014)*

MMPA APPLICATION AND NOTICE OF THE PROPOSED AUTHORIZATION

The CEQ regulations (40 CFR §1502.25) encourage federal agencies to integrate NEPA’s environmental review process with other environmental reviews. We rely substantially on the public process for developing proposed Authorizations and evaluating relevant environmental information and provide a meaningful opportunity for public participation as we develop corresponding EAs. We fully consider public comments received in response to our publication of the notice of proposed Authorization during the corresponding NEPA process.

On March 20, 2015, we published a notice of proposed Authorization in the *Federal Register* (80 FR 14945), which included the following:

- a detailed description of the proposed action and an assessment of the potential impacts on marine mammals;
- plans for HTC’s mitigation and monitoring measures to avoid and minimize potential adverse impacts to marine mammals and their habitat and proposed reporting requirements; and

- our preliminary findings.

We considered HTC’s proposed mitigation and monitoring measures and preliminarily determined that they would effect the least practicable impact on marine mammals. These measures include: (1) visual monitoring for marine mammals and implementation of shutdown zones; (2) use of soft start for pile driving; and (3) time restrictions. Through the MMPA process, we preliminarily determined – provided that HTC implements the required mitigation and monitoring measures – that the impact on marine mammals of conducting the proposed project would result, at worst, in a temporary modification in behavior of small numbers of certain species of marine mammals that may be present in the vicinity of the proposed activity, resulting in a negligible impact on the affected species or stocks.

Within our notice, we requested that the public submit comments, information, and suggestions concerning the HTC request, the content of our proposed Authorization, and potential environmental effects related to the proposed issuance of the Authorization. This EA incorporates by reference and relies on HTC’s application (August 2014), HTC’s application modification and monitoring plan (February, 2015) and our notice of a proposed Authorization (80 FR 14954; March 20, 2015).

In summary, those analyses support our conclusion that the issuance of an Authorization HTC’s re-development of the Icy Strait Cruise Ship Terminal project would not result in any direct, indirect, or cumulative significant impacts. Based on our analysis, there is no possibility of injury or death to marine mammals due to the nature and duration of the proposed activity. Further, the incorporation of monitoring and mitigation measures proposed by HTC will reduce the effects of the specified activities to the level of least practicable impact. Finally, the analyses support our conclusion that no additive or cumulative effects of the project on its own or in combination with other activities would occur.

1.3.2. Scope of Environmental Analysis

Given the limited scope of the decision for which we are responsible (i.e., whether to issue an MMPA Authorization including prescribed means of take, mitigation measures, and monitoring requirements) this EA provides more focused information on the primary issues and impacts of environmental concern related specifically to our issuance of the Authorization. Therefore, this EA does not further evaluate effects to the elements of the human environment listed in Table 1.

Table 1. Components of the human environment not affected by our issuance of an Authorization.

Biological	Physical	Socioeconomic / Cultural
Amphibians	Air Quality	Commercial Fishing
Humans		Military Activities
Non-Indigenous Species	Geography	Oil and Gas Activities
Seabirds	Land Use	Recreational Fishing
	Oceanography	Shipping and Boating
	State Marine Protected Areas	National Historic Preservation Sites
	Federal Marine Protected Areas	National Trails and Nationwide Inventory of Rivers
	National Estuarine Research Reserves	Low Income Populations

	National Marine Sanctuaries	Minority Populations
	Park Land	Indigenous Cultural Resources
	Prime Farmlands	Public Health and Safety
	Wetlands	Historic and Cultural Resources
	Wild and Scenic Rivers	
	Ecologically Critical Areas	

1.3.3. NEPA Public Involvement Summary

NAO 216-6 established agency procedures for complying with NEPA and the implementing NEPA regulations issued by the CEQ. Consistent with the intent of NEPA and the clear direction in NAO 216-6 to involve the public in NEPA decision-making, we requested comments on the potential environmental impacts described in HTC’s MMPA application and in the *Federal Register* notice of the proposed Authorization. The CEQ regulations further encourage agencies to integrate the NEPA review process with review under the environmental statutes. Consistent with agency practice we integrated our NEPA review and preparation of this EA with the public process required by the MMPA for the proposed issuance of an Authorization.

The *Federal Register* notice of the proposed Authorization, combined with our preliminary determinations, supporting analyses, and corresponding public comment period are instrumental in providing the public with information on relevant environmental issues and offering the public a meaningful opportunity to provide comments to us for consideration in both the MMPA and NEPA decision-making processes.

The *Federal Register* notice of the proposed Authorization summarized our proposed action and the anticipated effects on the affected marine mammal species or stocks; stated that we would prepare an EA for the proposed action; and invited interested parties to submit written comments concerning the application and our preliminary analyses and findings including those relevant to consideration in the EA. The notice of the proposed Authorization was available for public review and comment for thirty days, concluding on April 20, 2015.

1.3.4. Relevant Comments on Our *Federal Register* Notice

A 30-day public comment period on the notice of the proposed Authorization ended on April 20, 2015. Comments were received from the Marine Mammal Commission and the National Park Service and are summarized below. All comments are addressed in the Comments and Responses section of the Final IHA *Federal Register* Notice.

- The Commission noted that NMFS did not provide estimated sound source levels and potential takings associated with the down-hole drilling system proposed by HTC.
- The Commission expressed concern that the most pertinent *in-situ* source level information was not used as part of the exposure analysis.
- The Commission and NPS noted that older data were used to estimate the numbers of marine mammals that would be taken during the proposed activities and that newer data is available.

- The Commission noted that the numbers of takes were estimated for a four-month work window with pile driving occurring on only 20 days. However, a modification of the scheduling plan now shows that pile driving may occur on up to 103 days. The Commission expressed concern that, while some of the take estimates may be reasonable for 20 days of pile driving, 103 days of driving would result in vastly underestimated take estimates.
- The Commission wrote that in situations where the estimated takes are less than the mean group size, takes should be increased to a minimum of mean group size.
- The Commission recommended NMFS review recent sightings and group size data for killer whales and Dall's porpoises and increase in the number of takes for these two species appropriately.
- The Commission recommended lengthening observation times before and after delay, power-down and shut-down procedures.
- NPS questioned why operations would not cease if sea conditions/wind/visibility restrict observers' ability to make observations in the Level B harassment zone.
- NPS noted that the Central North Pacific Stock of humpback whales is estimated at 10,103 individuals.
- NPS inquires about the large B area required for vibratory driving.
- NPS stated that there is no source, analysis, or modelling used to reach NMFS' conclusion that the potential for increased vessel interaction or collisions associated with the proposed action are expected to be insignificant.

1.4. Other Permits, Licenses, or Consultation Requirements

This section summarizes federal, state, and local permits, licenses, approvals, and consultation requirements necessary to implement the proposed action.

1.4.1. Marine Mammal Protection Act

The MMPA and its provisions that pertain to the proposed action are discussed above in section 1.2.

1.4.2. Magnuson-Stevens Fishery Conservation and Management Act

Under the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), Federal agencies are required to consult with the Secretary of Commerce with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency which may adversely affect essential fish habitat (EFH) identified under the MSFCMA.

The action area is within designated EFH for Pacific salmon, groundfish, and coastal pelagic species. The proposed action may result in temporarily impaired water quality conditions, and temporarily elevated noise levels within the action area during pile installation activities. The project will also result in a small amount of direct impacts to benthic and aquatic habitat at the site associated with pile footprints and new overwater structure. Pile installation activities could disturb sediments and temporarily increase turbidity within waterbodies that represent EFH for Pacific salmon, groundfish and coastal pelagic species

The most significant potential noise-related effects will result from pile installation activities. Temporarily elevated noise levels during impact installation of piles have the potential to temporarily exceed established disturbance and injury thresholds established for Pacific salmon. The proposed new facility will result in direct impacts to aquatic habitat at the site, as a result of pile installation and overwater coverage. Overwater shading has the potential to reduce overall aquatic habitat suitability for some fish species by impacting primary productivity, and can also potentially affect benthic biotic communities in shallow water habitats. Benthic habitat communities can also be directly affected by installation of new piling, which displaces seafloor habitat. The piles associated with the proposed project represent a total of approximately 790 square feet of benthic habitat impact.

The project will implement several conservation measures and best management practices (BMPs) to reduce, eliminate, or minimize the effects of the proposed action to listed species and/or critical habitats. The size and placement of the structures have been designed in such a way to minimize the extent of any potential effect to ESA-listed species. The structure has been designed as a floating structure, rather than being pile supported. This greatly reduces the number of piles necessary to construct the project, and reduces the impact to benthic habitats at the site. Most of the pile installation and overwater coverage is also located in and over relatively deep water (between approximately -25 feet and -60 feet MLLW). This reduces the impact on shallow water habitats, which tend to be more biologically sensitive than deep water habitats.

In accordance with the EFH requirements of the Magnuson-Stevens Fishery Conservation and Management Act, it has been determined that the project “will not adversely affect” EFH for Pacific salmon, groundfish, or coastal pelagic species. NMFS reached this conclusion as part of an EFH consultation with the US Army Corp of Engineers (USACE). Additional information regarding the finding may be found in the Biological Evaluation submitted to the USACE by HTC. In summary, the proposed action incorporates several conservation measures intended to avoid and/or minimize potential effects to habitat. Impacts that may result from the proposed action will be temporary or will be fully mitigated and will result in no significant effects to any functional component of EFH for Pacific salmon groundfish, or coastal pelagic species.

1.4.3. Endangered Species Act

Section 7 of the ESA requires consultation for actions funded, authorized or carried out by federal agencies (i.e. federal actions) that may affect a species listed as threatened or endangered or that may affect designated critical habitat under the ESA. The regulations at 50 CFR § 402 specify the requirements for these consultations with the National Marine Fisheries Service.

HTC has authorization for the incidental take of the following marine mammals that are listed as endangered under the ESA under our jurisdiction: humpback whale and Steller sea lion (Western DPS).

Under section 7 of the ESA, the US Army Corp of Engineers (ACOE) and NMFS Office of Protected Resources (OPR), have conducted a joint formal consultation with the National Marine Fisheries Service, Alaska Regional Office, on this proposed Project.

The formal consultation under section 7 of the ESA concluded with a single Biological Opinion for the ACOE and OPR, Permits and Conservation Division pertaining to the proposed project and associated Authorization. NMFS concluded in the Biological Opinion that the proposed action is not likely to jeopardize the continued existence of the endangered humpback whale or Steller sea lion or affect any designated critical habitat.

Chapter 2 Alternatives

2.1. Introduction

The NEPA and the implementing CEQ regulations (40 CFR §§ 1500-1508) require consideration of alternatives to proposed major federal actions and NAO 216-6 provides agency policy and guidance on the consideration of alternatives to our proposed action. An EA must consider reasonable alternatives, including Alternative 1 (Preferred Alternative). It must also consider the No Action Alternative, even if it that alternative does not meet the stated purpose and need. This provides a baseline analysis against which we can compare the other alternatives.

To warrant detailed evaluation as a reasonable alternative, an alternative must meet our purpose and need. In this case, as we previously explained in Chapter 1 of this EA, an alternative only meets the purpose and need if it satisfies the requirements under section 101(a)(5)(D) the MMPA. We evaluated each potential alternative against these criteria; identified one action alternative along with the No Action Alternative; and carried these forward for evaluation in this EA.

Alternative 1 includes a suite of mitigation measures intended to minimize potentially adverse interactions with marine mammals. This chapter describes the alternatives and compares them in terms of their environmental impacts and their achievement of objectives.

As described in Section 1.2, the MMPA requires that we prescribe the “means of effecting the least practicable impact on the species or stocks of marine mammals and their habitat.” In order to do so, we must consider HTC’s proposed mitigation measures, as well as other potential measures, and assess how such measures could benefit the affected species or stocks and their habitat. Our evaluation of potential measures includes consideration of the following factors in relation to one another: (1) the manner in which, and the degree to which, we expect the successful implementation of the measure to minimize adverse impacts to marine mammals; (2) the proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and (3) the practicability of the measure for applicant implementation.

2.2. Description of HTC’s Proposed Activities

We presented a general overview of HTC’s project in our *Federal Register* notice of proposed Authorization (80 FR 14954; March 20, 2015). We incorporate those descriptions and those found in HTC’s request for incidental take authorization (2014) by reference in this EA and briefly summarize them here.

2.2.1. Specified Time and Specified Area

The existing Icy Strait Point site is located in Hoonah, Alaska. The project site is located at the junction of Icy Strait and Port Frederick, in the Baranof-Chichagof Islands watershed (HUC #19010203).

In-water work, which is work occurring below the mean higher high water (MHHW), will be limited to pile installation and falsework pile extraction. These activities will be limited to the period between June 1 and October 31, 2015 to avoid the period (15 April to 31 May) when spawning herring are most likely to be present within the project area. The project will require the installation of 104 steel pipe piles of varying diameters below the MHHW.

2.2.2. Pile Driving Conducted for Marina Reconstruction

The proposed action would involve construction of a new cruise ship berth terminal and associated upland improvements at the existing facility. The existing facility is served by an approximately 100-foot by 25-foot excursion dock, with an approximately 140-foot walkway connecting to shoreline. There is also an existing 40-foot by 80-foot fishing pier which is connected to the shore by an approximately 120-foot walkway. The new terminal would consist of a floating pontoon, which would be connected to the shore via a new trestle and transfer span. The new terminal would also include two new mooring dolphins, two new breasting dolphins, and three or more new reaction dolphins. Each of these would be interconnected via pile-supported catwalks.

In-water work (work below the MHHW) will be limited to pile installation. Over-water work will include construction and installation of the steel trestle and transfer span, construction of the over-water portions of the mooring, breasting, and reaction dolphins, and construction of the catwalk spans. The floating pontoon will be fabricated in a dry dock and floated into position.

2.2.2.1. Pile Installation

The over-water structures, except for the floating pontoon, will likely be founded on steel pipe piling. Piling will be set using a vibratory hammer. Rock excavation will be conducted using a down the hole drilling system with an under reaming bit. Seating will be achieved with either vibratory or impact hammer depending on local geotechnical conditions. The project will require the installation of a total of approximately 104 steel pipe piles of varying diameters below the MHHW. Piles that will be used include 24-inch, 30-inch, 42-inch, and 60-inch steel pipe piles. Piles will be set by vibratory hammer that will cease operation as soon as bedrock is encountered. Vibratory hammer time should be between 10 and 30 minutes per pile. It is estimated that each pile will need to be driven approximately 50 feet to hit bedrock. Piles will then be drilled into bedrock using a down the hole drilling system with an under reaming bit for approximately 15 feet. This process will take an estimated 3 hours. This is a low energy air-powered system that releases decreased acoustic energy compared to impact driving. Proofing or seating of the pile into the drilled socket would occur with either a vibratory or impact hammer depending on the rock encountered and will be selected in the field based on actual sub surface conditions. If a vibratory hammer is used it will take 3-5 minutes of vibrating. Should an impact hammer be required it is expected to take 50 blows and 3-5 minutes of impacting.

2.3. Description of Alternatives

2.3.1. Alternative 1 – Issuance of an Authorization with Mitigation Measures

The Proposed Action constitutes Alternative 1 and is the Preferred Alternative. Under this alternative, we would issue an Authorization to HTC allowing the incidental take, by Level B harassment, of nine species of marine mammals subject to the mandatory mitigation and monitoring measures and reporting requirements set forth in the proposed Authorization, if issued.

Our *Federal Register* notice requesting comments on the proposed Authorization analyzed the potential impacts of this Alternative in detail. We incorporate those analyses by reference in this EA and briefly summarize the mitigation and monitoring measures and reporting requirements that we would incorporate in the final Authorization, if issued, in the following sections.

MITIGATION, MONITORING, AND REPORTING MEASURES

To reduce the potential for disturbance associated with the activities, HTC has proposed to implement several monitoring and mitigation measures for marine mammals. NMFS has proposed some additional measures. The proposed monitoring and mitigation measures include:

1. For all in-water pile driving activities, HTC shall operate only during daylight hours when visual monitoring of marine mammals can be conducted.
2. Before the commencement of in-water pile driving activities, HTC shall establish Level B behavioral harassment ZOI where received underwater sound pressure levels (SPLs) are higher than 160 dB (rms) and 120 dB (rms) re 1 μ Pa for impulse noise sources (impact pile driving) and non-pulse sources (vibratory hammer) respectively. The ZOIs delineate where Level B harassment would occur. For impact driving, the area within the Level B harassment threshold is between approximately 100 m and 2,150 m from pile driving activity. For vibratory driving, the level B harassment area is between 10 m and 21 km.
3. During all pile driving, HTC shall implement a minimum shutdown zone of 10 m radius around the pile for marine mammals. If a marine mammal comes within this zone, such operations shall cease.
4. The area within which the Level A harassment thresholds could be exceeded (the 100 meter radius) will be maintained as a marine mammal exclusion zone, in which impact pile driving will be shut down immediately if any marine mammal is observed with the area.
5. The waters in the harassment zones will be scanned for 30 minutes before, during and 30 minutes after any and all pile driving and removal activities.
6. HTC must implement delay, power-down, or shut-down procedures during pile removal or driving if an animal approaches the Level A harassment zone. After a delay, power down or shutdown, the operator would not resume activities until the marine mammal (1) is observed to have left the harassment zone or (2) has not been seen or otherwise detected within the harassment zone for 15 minutes for small odontocetes and pinnipeds and 30 minutes for large and medium-sized whales.
7. HTC shall use soft start techniques recommended by NMFS for both impact and vibratory pile driving. HTC will be required to initiate sound from vibratory hammers for fifteen seconds at reduced energy followed by a thirty-second waiting period, with the procedure repeated two additional times. For impact driving, we require an initial set of three strikes from the impact hammer at reduced energy, followed by a thirty-second waiting period, then two subsequent three strike sets. Soft start will be required at the beginning of each day's pile driving work and at any time following a cessation of pile driving of thirty minutes or longer (specific to either vibratory or impact driving).
8. HTC shall establish monitoring locations as described in the Marine Mammal Monitoring Plan developed in coordination with NMFS (and incorporated here by reference). The Level B harassment area will be monitored by three qualified observers. One individual will be stationed either on the pile driving rig or in the immediate vicinity, a second individual will be stationed on either Halibut Island or a location in the vicinity, and a third observer will be located on a vessel that is conducting meander transects throughout

the Level B harassment zone. The monitoring staff will record any presence of marine mammals by species, will document any behavioral responses noted, and record Level B takes when sightings overlap with pile installation activities.

9. Monitoring shall be conducted by qualified observers, as described in the Monitoring Plan. HTC shall collect sighting data and behavioral responses to pile driving for marine mammal species observed in the region of activity during the period of activity. All observers shall be trained in marine mammal identification and behaviors, and shall have no other construction-related tasks while conducting monitoring.

HTC is required to submit a draft monitoring report to NMFS Office of Protected Resources within 90 days after the conclusion of the activities. A final report shall be prepared and submitted within 30 days following resolution of any comments on the draft report from NMFS. A description of the activities conducted by HTC and the monitoring protocols would be included in the report.

In our *Federal Register* notice of proposed Authorization, which we incorporate by reference, we preliminarily determined that the measures included in the proposed Authorization were sufficient to reduce the effects of HTC's activity on marine mammals to the level of least practicable impact. In addition, we described our analysis of impacts and preliminarily determined that the taking of small numbers of marine mammals, incidental to HTC's project would have a negligible impact on the relevant species or stocks and would not have an unmitigable adverse impact on affected species or stocks for taking for subsistence uses.

NMFS has slightly altered the mitigation, monitoring and reporting requirements that are included in the final Authorization. These changes pertain to 1) expanding the length of time required for monitoring before driving begins from 20 to 30 minutes and 2) after a delay, power down, or shutdown due to marine mammal approaching the Level A harassment zone not resuming activities until the marine mammal is observed to have left the Level A harassment zone or has not been seen or otherwise detected within the Level A harassment zone for 15 minutes for small odontocetes and 30 minutes for large and medium-sized whales

However, these minor changes do not change our preliminary determinations under the MMPA. Accordingly, this Preferred Alternative would satisfy the purpose and need of our proposed action under the MMPA—issuance of an Authorization, along with required mitigation measures and monitoring that meets the standards set forth in section 101(a)(5)(D) of the MMPA and the implementing regulations.

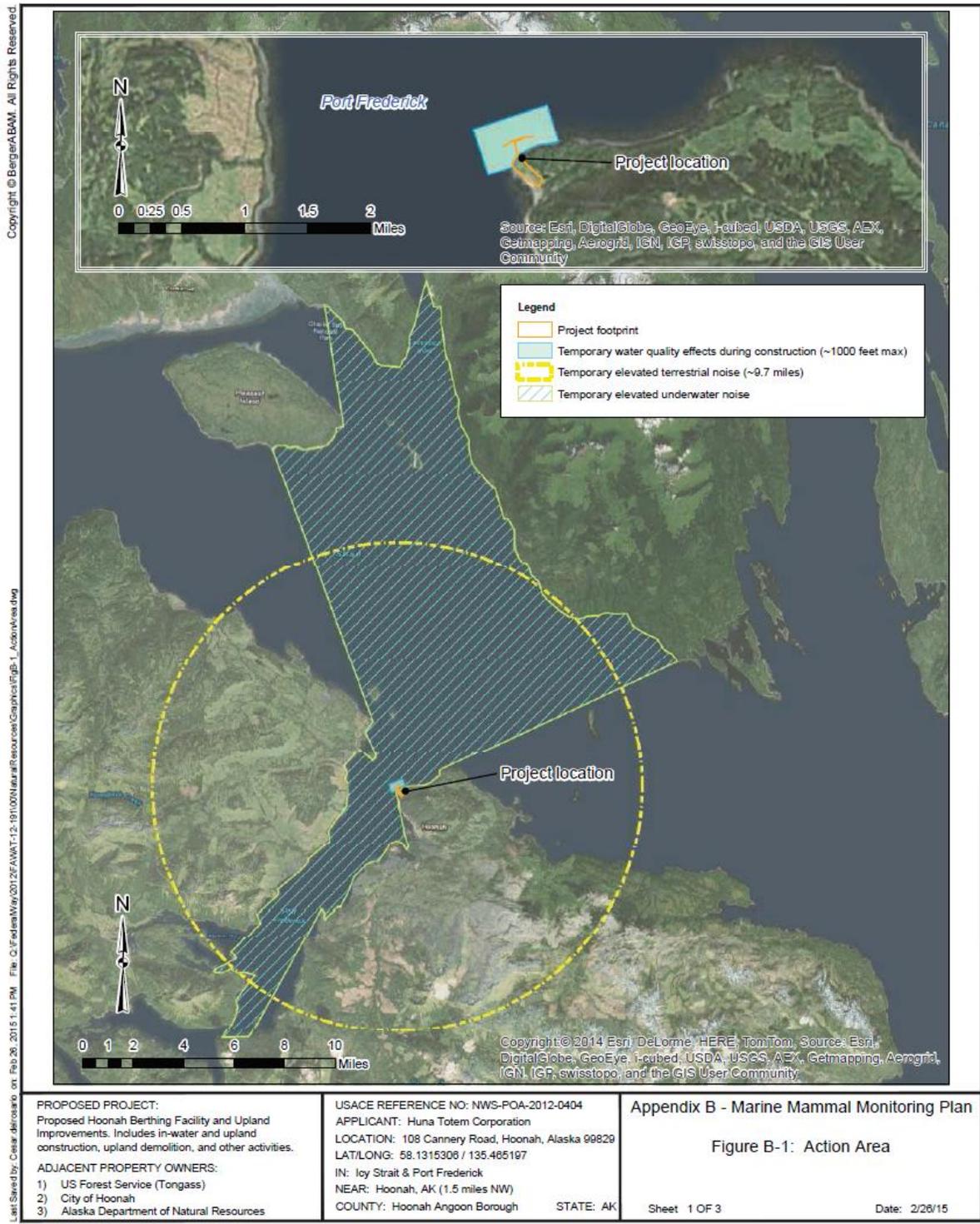


Figure 1. Icy Strait Point monitoring zone (blue hashed area within yellow line)

2.3.2. Alternative 2 – No Action Alternative

We are required to evaluate the No Action Alternative per CEQ NEPA regulations. The No Action Alternative serves as a baseline to compare the impacts of the Preferred and other Alternatives. Under the No Action alternative, we would not issue an Authorization to HTC for the proposed project.

Under the No Action Alternative, HTC could choose not to proceed with their proposed activities or to proceed without an Authorization. If they choose the latter, HTC would not be exempt from the MMPA prohibitions against the take of marine mammals and would be in violation of the MMPA if take of marine mammals occurs.

For purposes of this EA, we characterize the No Action Alternative as HTC not receiving an Authorization and HTC conducting the project without the protective measures and reporting requirements required by an Authorization under the MMPA. We take this approach to meaningfully evaluate the primary environmental issues – the impact on marine mammal species or stocks from these activities in the absence of protective measures.

2.4. Alternatives Considered but Eliminated from Further Consideration

NMFS considered whether other alternatives could meet the purpose and need and support HTC's proposed project. An alternative that would allow for the issuance of an Authorization with no required mitigation or monitoring was considered but eliminated from consideration, as it would not be in compliance with the MMPA and therefore would not meet the purpose and need. For that reason, this alternative is not analyzed further in this document.

Chapter 3 Affected Environment

This chapter describes existing conditions in the proposed action areas. Complete descriptions of the physical, biological, and social environment of the action area are contained in the documents listed in Section 1.3.1 of this EA. We incorporate those descriptions by reference and briefly summarize or supplement the relevant sections for marine mammals in the following subchapters.

3.1. Physical Environment

We are required to consider impacts to the physical environment under NAO 216-6. As discussed in Chapter 1, our proposed action and alternatives relate only to the authorization of incidental take of marine mammals and not to the physical environment. Certain aspects of the physical environment are not relevant to our proposed action (see subchapter 1.3.2 - Scope of Environmental Analysis). Because of the requirements of NAO 216-6, we briefly summarize the physical components of the environment here.

3.1.1. Marine Mammal Habitat

We presented information on marine mammal habitat and the potential impacts to marine mammal habitat in the *Federal Register* notice of the proposed Authorization. In summary, there are no rookeries or major haul-out sites nearby or ocean bottom structure of significant biological importance to marine mammals that may be present in the marine waters in the vicinity of the project area. No critical habitat exists in the area of the proposed activities.

3.1.2. Ambient Sound

The need to understand the marine acoustic environment is critical when assessing the effects of anthropogenic noise on marine wildlife. Sounds generated by coastal construction such as pile driving and dredging within the marine environment can affect its inhabitants' behavior (e.g., deflection from loud sounds) or ability to effectively live in the marine environment (e.g., masking of sounds that could otherwise be heard).

Ambient sound levels are the result of numerous natural and anthropogenic sounds that can propagate over large distances and vary greatly on a seasonal and spatial scale. These ambient sounds occupy all frequencies and contributions in ocean soundscape from a few hundred Hz to 200 kHz (NRC, 2003). In typical urban coastal waters such as the one at the proposed action area, the main sources of underwater ambient sound would be associated with:

- Wind and wave action
- Precipitation
- Vessel activities
- Biological sounds (fish, snapping shrimp)

The contribution of these sources to the background sound levels differs with their spectral components and local propagation characteristics (e.g., water depth, temperature, salinity, and ocean bottom conditions). In deep water, low-frequency ambient sound from 1-10 Hz mainly comprises turbulent pressure fluctuations from surface waves and the motion of water at the air-water interfaces. At these infrasonic frequencies, sound levels depend only slightly on wind speed. Between 20-300 Hz, distant anthropogenic sound (ship transiting, etc.) dominates wind-related sounds. Above 300 Hz, the ambient

sound level depends on weather conditions, with wind- and wave-related effects mostly dominating sounds. Biological sounds arise from a variety of sources (e.g., marine mammals, fish, and shellfish) and range from approximately 12 Hz to over 100 kHz. The relative strength of biological sounds varies greatly; depending on the situation, biological sound can be nearly absent to dominant over narrow or even broad frequency ranges (Richardson et al. 1995).

3.2. Biological Environment

3.2.1. Marine Mammal Habitat

The action area is within designated EFH for Pacific salmon, groundfish, and coastal pelagic species. The proposed action may result in temporarily impaired water quality conditions, and temporarily elevated noise levels within the action area during pile installation activities. The project will also result in a small amount of direct impacts to benthic and aquatic habitat at the site associated with pile footprints and new overwater structure. Pile installation activities could disturb sediments and temporarily increase turbidity within waterbodies that represent EFH for Pacific salmon, groundfish and coastal pelagic species. Section 1.4.2 describes how the proposed action incorporates several conservation measures intended to avoid and/or minimize potential effects to habitat. That section also concludes that impacts from the proposed action will be temporary or will be fully mitigated and will result in no significant effects to any functional component of EFH for Pacific salmon groundfish, or coastal pelagic species.

We presented information on marine mammal habitat and the potential impacts to marine mammal habitat in the *Federal Register* notice of the proposed Authorization. In summary, marine mammal prey (i.e., fish) may be present in the project area but not in high densities, except during the April 15 to May 31 period when spawning herring are likely to be present.

3.2.2. Marine Mammals

We provide information on the occurrence of marine mammals most likely present in the proposed activity areas in section 1.1.2 of this EA. The marine mammals most likely to be harassed incidental to conducting the pile driving activities associated with the project are humpback whale, Steller sea lion, harbor seal, Dall's porpoise, gray whale, harbor porpoise, killer whale, minke whale and Pacific white-sided dolphin. Humpback whale and the Western Distinct Population Segment (DPS) of Steller sea lion are listed as endangered under the Endangered Species Act. We provided information on the distribution, population size, and conservation status for each species in the proposed Authorization *Federal Register* notice, and we incorporate those descriptions by reference here. We briefly summarize this information here. NMFS' 2013 Stock Assessment Reports (Carretta *et al.*, 2014; Allen and Angliss 2014) provide the latest abundance and life history information about each species/stock in Washington.

3.2.2.1.1. Humpback Whale

Humpback whales range from California to the Chukchi Sea, Hawaii, and the Mariana Islands (NMFS 1991). During summer and fall, humpback whales in the North Pacific forage over the continental shelf and along the coasts of the Pacific Rim, from Point Conception, California, north to the Gulf of Alaska,

Prince William Sound, and Kodiak Island. Within this feeding area there are three relatively separate populations that migrate from these colder, highly productive higher-latitude waters to winter/spring calving and mating areas in warmer, lower-latitude coastal waters. Humpback whales in the waters of Southeast Alaska belong to the Central North Pacific stock. This stock forages seasonally in the waters of British Columbia and Alaska and then, during winter, migrates to the Hawaiian Islands for mating and calving; however, a portion of the population remains in Southeast Alaska waters year-round. Humpback whales are primarily observed foraging in Southeast Alaska from May through December with numbers peaking in late August and September.

While the estimated population of the North Pacific stock remains much lower than the population size before whaling, humpback whales are increasing in abundance throughout much of their range. While the species currently remains listed as endangered throughout its range, the State of Alaska, in 2014, filed a petition with NMFS to designate the Central North Pacific Stock of humpback whale as a DPS and to delist this DPS under the ESA (ADF&G 2014).

In the North Pacific, humpback abundance was estimated at fewer than 1,400 whales in 1966, after heavy commercial exploitation. The current abundance estimate for the Central North Pacific stock is approximately 5,833 whales (Allen and Angliss 2014). The population across Southeast Alaska experienced a 10.6% annual population increase over the 1991-2007 study period (Dahlheim *et al.*, 2008). Humpback whales have been observed within the waters of the action area during all months of the year, with annual concentrations of humpback whales occurring consistently in the waters in and adjacent to Icy Strait in the spring (April/May) (Dahlheim *et al.*, 2008). This is probably when whales are preying on heavily schooled fishes (NMFS 1991). Overall numbers of humpback whales tend to increase during the summer (June/July) and fall (August/September) but are more evenly distributed with fewer identifiable population concentrations (Dahlheim *et al.* 2008). However, Port Frederick has been identified as being of relatively higher importance during the later summer months, when whales are preying more heavily on swarming euphasiids (NMFS 1991).

3.2.2.1.2. Dall's Porpoise

Dall's porpoise are only found in the North Pacific and adjacent seas. Based primarily on the population response data and preliminary genetics analyses (Winans and Jones 1988), a delineation between Bering Sea and western North Pacific stocks has been recognized. However, similar data are not available for the eastern North Pacific, thus one stock of Dall's porpoise is recognized in Alaskan waters. Dall's porpoise along the west coast of the continental U. S. from California to Washington comprise a separate stock (Allen and Angliss 2013).

Dall's porpoise occur throughout Alaska, and in general, are considered to be common throughout their range (Buckland *et al.* 1993). Dall's porpoise also have strong seasonal patterns in Southeast Alaska, with the highest numbers observed in the spring and numbers lowest in the fall (Dahlheim *et al.*, 2008).

The current best population estimate for the Alaskan stock of Dall's porpoise is 83,400 (Allen and Angliss 2013). However, surveys for this stock are greater than 12 years old and, consequently, NMFS considers the minimum population estimate to be "unknown," and has also not calculated a Potential Biological Removal (PBR) level for Dall's porpoise (Allen and Angliss 2013). In the Southeast Alaska region, Dall's porpoise populations increased annually by 2.5% between 1991 and 2007 (Dahlheim *et al.*, 2008). Dall's

porpoise are not designated as “depleted” under the MMPA or listed as “threatened” or “endangered” under the Endangered Species Act. The level of human-caused mortality and serious injury is not known to exceed the PBR, which is undetermined as the most recent abundance estimate is more than 8 years old. The Alaska stock of Dall’s porpoise is not classified as a strategic stock (Allen and Angliss 2013).

3.2.2.1.3. Gray Whale

Gray whales are common along the Gulf of Alaska coast, but rare in the inside waters of Southeastern Alaska (Braham 1984).

Gray whales are found primarily in shallow water and usually remain closer to shore than any other large cetacean. Two stocks of gray whales are recognized in the Pacific: the Eastern North Pacific stock and the Western North Pacific stock (Carretta *et al.* 2013). The eastern gray whale population ranges from the Chukchi and Beaufort seas to the Gulf of California (Rice 1998). Most of the eastern Pacific population makes a round-trip annual migration of more than 18,000 km. From late May to early October, the majority of the population concentrates in the northern and western Bering Sea and in the Chukchi Sea. However, some individuals spend the summer months scattered along the coasts of Southeast Alaska, B.C., Washington, Oregon, and northern California.

The current best population estimate for the Eastern North Pacific stock is 19,126 (Carretta *et al.* 2013). In 1994, the Eastern North Pacific stock of gray whales was removed from the Endangered Species List as it was no longer considered endangered or threatened under the ESA. NMFS has not designated gray whales as “depleted” under the MMPA. Based on currently available data, the level of human-caused mortality and serious injury is not known to exceed the potential biological removal (PBR) level for Eastern North Pacific gray whales, which is calculated at 558 whales per year (Carretta *et al.* 2013). Therefore, Eastern North Pacific gray whales are not classified as a strategic stock.

3.2.2.1.4. Harbor Porpoise

The harbor porpoise inhabits temperal, subarctic, and arctic waters. In the eastern North Pacific, harbor porpoises range from Point Barrow, Alaska, to Point Conception, California. Harbor porpoise primarily frequent coastal waters and in the Gulf of Alaska and Southeast Alaska, they occur most frequently in waters less than 100 m deep (Hobbs and Waite 2010).

Within the inland waters of Southeast Alaska harbor porpoise distribution is clumped in several areas with high densities observed in the Glacier Bay/Icy Strait region (Dahlheim *et al.* 2008, Allen and Angliss, 2013). Data collected between 2010 and 2012 indicated that there are an estimated 332 harbor porpoise that reside in the Icy Strait area, including Excursion Inlet and Port Frederick (Dahlheim 2015). Another study found no evidence of seasonality for harbor porpoise across spring, summer or fall (Dahlheim *et al.*, 2008).

In Alaska, there are three separate stocks of harbor porpoise: Southeast Alaska, Gulf of Alaska, and Bering Sea. The Southeast Alaska Stock occurs from northern B.C. to Cape Suckling, and the Gulf of Alaska Stock ranges from Cape Suckling to Unimak Pass. The population estimates for the Southeast Alaska stock is 11,146 (Allen and Angliss 2013). However, this abundance estimate is based on surveys conducted between 1993 and 1997 (Dahlheim *et al.* 2008). NMFS has not established a PBR for Southeast Alaska stock harbor porpoise, due to the fact that the available abundance estimates are greater than 8

years old. Similarly, due to the age of the abundance estimates, and due to the fact that the frequency of incidental mortality in commercial fisheries is not known, the Southeast Alaska stock of harbor porpoise is classified as a strategic stock. Preliminary analysis of harbor porpoise trend in Southeast Alaska, as reported in NMFS 2012 marine mammal stock reports, indicated the population declined between 1991 and 2010. However, a new estimate shows that abundance in 2011 was comparable to those from the early 1990s, suggesting the decline was not as steep as previously thought (Allen and Angliss, 2014). Dahlheim et al. (2008) noted a slight annual increase (0.2%) was found for harbor porpoise populations between 1991 and 2007.

3.2.2.1.5. Killer Whale

Although resident in some parts of its range, the killer whale can also be transient. Killer whale movements generally appear to follow the distribution of their prey, which includes marine mammals, fish, and squid. Of eight killer whale stocks currently recognized in the Pacific U.S., four occur in Southeast Alaskan waters: (1) Alaska Residents, from Southeast Alaska to the Aleutians and Bering Sea, (2) Northern Residents, from B.C. through parts of Southeast Alaska, (3) Gulf of Alaska, Aleutians, and Bering Sea Transients, from Prince William Sound through to the Aleutians and Bering Sea, and (4) West Coast Transients, from California through Southeast Alaska (Allen and Angliss 2013). However, Northern resident killer whales have not been observed in the Icy Strait area over the course of two decades of research and have been eliminated from any additional consideration (Dahlheim, 2015).

Resident killer whales have been found in all major waterways of Southeast Alaska as well as in protected bays and inlets and observed in all seasons. Two specific resident pods were frequently encountered throughout Icy Strait: the AG pod numbering a minimum of 42 whales and the AF pod with a minimum count of 79 whales. Whales have been seen in Icy Strait there every month of the year and the Icy Strait corridor is a major route for them both entering and exiting inland waters. The AG pod has been observed inside Port Frederick, passing directly off the shore of Hoonah (Dahlheim, 2015).

The current best abundance estimate for the North Pacific Alaska Resident stock of killer whales is 2,347 (Allen and Angliss 2013). This stock of killer whales is not designated as “depleted” under the MMPA, nor is it listed as “threatened” or “endangered” under the ESA. Based on currently available data, the level of human-caused mortality and serious injury is not known to exceed the potential biological removal (PBR) level for this stock, which is calculated at 23.4 individuals (Allen and Angliss 2013). Therefore, the North Pacific Alaska Resident stock of killer whales is not classified as a strategic stock.

The current best abundance estimate for the Gulf of Alaska, Aleutian Islands, and Bering Sea transient stock of killer whales is 587 individuals. These whales occur mainly from Prince William Sound through the Aleutian Islands and Bering Sea though their range includes all of the U.S. EEZ in Alaska (Allen and Angliss, 2013). In recent years, a small number of the ‘Gulf of Alaska’ transients (identified by genetics and association) have been seen in Southeastern Alaska where previously only West coast transients had been seen. The Gulf of Alaska, Aleutian Islands, and Bering Sea transient stock of killer whales is not designated as “depleted” under the MMPA nor are they listed as “threatened” or “endangered” under the ESA. Based on currently available data, the level of human-caused mortality and serious injury is not known to exceed the potential biological removal (PBR) level for this stock, which is calculated at 5.9

individuals (Allen and Angliss 2013). Therefore, the Gulf of Alaska, Aleutian Islands, and Bering Sea transient stock of killer whales is not classified as a strategic stock.

The West Coast transient stock ranges from Southeast Alaska to California. Allen and Angliss (2013) provide an abundance estimate of 354 for the West Coast transient stock. Although this estimate is more than eight years old, NMFS is not aware of a more recent estimate for the entire stock. A more recent estimate of 243 whales is available, but it excludes whales of this stock from California. Therefore, 354 describes the number of whales believed to occur throughout the entire stock's range, including whales from California. Only 155 West Coast transient killer whales have been identified as occurring in Southeast Alaska according to Dahlheim and White (2010). The same study identified three pods of transients, equivalent to 19 animals, that remained almost exclusively in the southern part of Southeast Alaska (*i.e.* Clarence Strait and Sumner Strait).

The West Coast transient stock of killer whales is not designated as “depleted” under the MMPA nor are they listed as “threatened” or “endangered” under the ESA. Based on currently available data, the level of human-caused mortality and serious injury is not known to exceed the potential biological removal (PBR) level for this stock, which is calculated at 2.4 individuals (Allen and Angliss 2013). Therefore, the West Coast transient stock of killer whales is not classified as a strategic stock.

3.2.2.1.6. Minke Whale

In the Northern Hemisphere, minke whales are usually seen in coastal areas, but can also be seen in pelagic waters during northward migrations in spring and summer, and southward migration in autumn. In the North Pacific, the summer range of the minke whale extends to the Chukchi Sea; in the winter, the whales move farther south close within 2° of the equator (Perrin and Brownell 2002).

The International Whaling Commission (IWC) recognizes three stocks of minke whales in the North Pacific: the Sea of Japan/East China Sea, the rest of the western Pacific west of 180°N, and the remainder of the Pacific (Donovan 1991). For management purposes in Pacific U.S. waters, three stocks of minke whales are recognized by NMFS—the Alaska, Hawaii, and California/Oregon/Washington stocks (Allen and Angliss 2013). Minke whales that could potentially occur within the action area are members of the Alaska stock.

Minke whales are relatively common in the Bering and Chukchi seas and in the inshore waters of the Gulf of Alaska. They are not considered abundant in any other part of the eastern Pacific, but they are seen occasionally around Glacier Bay in Southeast Alaska and in central Icy Strait. Gabriele and Lewis (2000) documented a total of 29 minke whales during a four-year period conducting opportunistic marine mammal surveys in Glacier Bay and Icy Strait. Another study found Minke whales scattered throughout inland waters from Glacier Bay and Icy Strait to Clarence Strait with concentrations near the entrance of Glacier Bay. Although sightings of minke whales were infrequent over the 17-year study period, minke whales were encountered during all seasons, with a few animals recorded each year. (Dahlheim et al. 2008)

The current best abundance estimate for the Alaska stock of minke whales is unknown. (Allen and Angliss 2013). This stock of minke whales is not designated as “depleted” under the MMPA nor are they listed as “threatened” or “endangered” under the ESA. The greatest uncertainty regarding the status of the Alaska minke whale stock has to do with the uncertainty pertaining to the stock structure of this species in the eastern North Pacific (Allen and Angliss 2013). Because minke whales are considered common in the waters off Alaska and because the number of human-related removals is currently thought to be minimal, this stock is currently presumed to not be a strategic stock (Allen and Angliss 2013). Reliable estimates of the minimum population size, population trends, PBR, and status of the stock relative to optimum sustainable population size are currently not available.

3.2.2.1.7. Pacific White-Sided Dolphin

The Pacific white-sided dolphin is found throughout the temperate North Pacific Ocean, north of the coasts of Japan and Baja California, Mexico. In the eastern North Pacific the species occurs from the southern Gulf of California, north to the Gulf of Alaska, west to Amchitka in the Aleutian Islands, and is rarely encountered in the southern Bering Sea. The species is common both on the high seas and along the continental margins, and animals are known to enter the inshore passes of Alaska, British Columbia, and Washington (Ferrero and Walker 1996). Two management stocks of Pacific white-sided dolphin are currently recognized: (1) The California/Oregon/Washington stock, and (2) the North Pacific stock. Pacific white-sided dolphins that could potentially be present within the action area would be members of the North Pacific stock.

The current best abundance estimate for the North Pacific stock of Pacific white-sided dolphin is 26,880 individuals (Allen and Angliss 2013). However, this estimate is based on survey data that is greater than 8 years old. As a result, NMFS reports the minimum population estimate as currently unknown (Allen and Angliss 2013). This stock of Pacific white-sided dolphin is not designated as “depleted” under the MMPA nor are they listed as “threatened” or “endangered” under the ESA. The level of human-caused mortality and serious injury is not known to exceed the PBR, which is undetermined as the most recent abundance estimate is more than 8 years old. Because the PBR is undetermined, the level of annual U.S. commercial fishery-related mortality that can be considered insignificant and approaching zero mortality and serious injury rate is unknown. The Alaska stock of Pacific white-sided dolphins is not classified as a strategic stock, but reliable estimates of the minimum population size, population trends, PBR, and status of the stock relative to optimum sustainable population size are currently not available (Allen and Angliss 2013).

3.2.2.1.8. Harbor Seal

Harbor seals range from Baja California, north along the western coasts of the U.S., B.C., and Southeast Alaska, west through the Gulf of Alaska, Prince William Sound, and the Aleutian Islands, and north in the Bering Sea to Cape Newenham and the Pribilof Islands.

In 2010, the National Marine Fisheries Service and their co-management partners, the Alaska Native Harbor Seal Commission, defined 12 separate stocks of harbor seals based largely on the genetic structure. This represents a significant increase in the number of harbor seal stocks from the three stocks (Bering Sea, Gulf of Alaska, Southeast Alaska) previously recognized. Harbor seals that occur within the proposed project area are part of the Glacier Bay/Icy Strait Stock (Allen and Angliss 2013).

Harbor seals are commonly present throughout the waters of Icy Strait and Port Frederick and are found in all water depths, but tend to congregate in the near-shore waters of both Glacier Bay and Icy Strait. Little is known about breeding behavior in harbor seals. When molting, which occurs primarily in late August, seals spend the majority of the time hauled out on shore, glacial ice, or other substrates. The current best population estimate for the Glacier Bay/Icy Strait stock is 5,042 individuals (Allen and Angliss 2013).

Harbor seals have not been observed hauling out, molting, or pupping at Icy Strait Point. However, they likely do haulout at least occasionally within the action area.

According to the most recent stock assessment NMFS (Allen and Angliss 2013), harbor seals are not designated as “depleted” under the MMPA nor are they listed as “threatened” or “endangered” under the ESA. Based on currently available data, the level of human-caused mortality and serious injury is not known to exceed the potential biological removal (PBR) level for harbor seals comprise the Glacier Bay/Icy Strait stock, which is calculated at 142 harbor seals per year (Allen and Angliss 2013). Therefore, the Glacier Bay/Icy Strait stock of harbor seals is not classified as a strategic stock. However, a noticeable decline in harbor seal population has been documented in Glacier Bay National Park (Womble et al., 2010).

3.2.2.1.9. Stellar Sea Lion

The Steller sea lion is a pinniped and the largest of the eared seals. Steller sea lion populations that primarily occur east of 144° W (Cape Suckling, Alaska) comprise the Eastern Distinct Population Segment (DPS), which was de-listed and removed from the list of Endangered Species List on November 4, 2013 (78 FR 66140). The population west of 144° W longitude comprise the Western DPS, which is listed as endangered, based largely on over-fishing of the seal's food supply.

In Southeast Alaska, designated critical habitat for Steller sea lions includes major rookery and haulout sites (*i.e.*, used by more than 200 animals) and associated terrestrial, air, and aquatic zones within 3,000 feet, as well as three large offshore foraging areas (one in the Gulf of Alaska and two in the Bering Sea/Aleutian Islands area). There is no designated critical habitat in the proposed project area. The nearest designated critical habitat is located over 40 miles west of the action area, at Graves Rocks, near the mouth of Cross Sound.

The western stock of Steller sea lions in Alaska was listed as endangered in 1997. Declines in Steller sea lion populations are probably attributable to declines in fish populations due to increasing commercial fisheries in the Gulf of Alaska. Drowning, entanglement in nets, and shooting by fishermen are listed as possible reasons for the Steller sea lion decline.

The action area is known to be an area that is used by both Western and Eastern DPS Steller sea lions. In fact, regular movement of Western DPS across the 144° W longitude, historically used to differentiate Western from Eastern DPSs, has been documented and they are described as commonly occurring north of Sumner Strait (NMFS, 2013). For this reason, Western DPS Steller sea lions could potentially be present within the action area. Since no known breeding rookeries are present within the action area, Steller sea lions are considered less likely to be present during the summer months when they return to rookeries to give birth. The current best population estimate for the Eastern DPS is 57,966, while the

population estimate for the Western DPS is 52,200 (Allen and Angliss 2013). It was recently documented that the population of Stellar sea lions in the Glacier Bay/Icy Strait/Cross Sound region has increased by 8.2% per year from 1970 to 2009, though the proportional increase associated with each DPS is not clear (Matthews *et al.*, 2011).

Chapter 4 Environmental Consequences

This chapter of the EA analyzes the impacts of the two alternatives and addresses the potential direct, indirect, and cumulative impacts of our issuance of an Authorization. HTC's application, our notice of a proposed Authorization, and other related environmental analyses identified previously, facilitate an analysis of the direct, indirect, and cumulative effects of our proposed issuance of an Authorization.

Under the MMPA, we have evaluated the potential impacts of HTC's activities on the affected marine mammal species or stocks in order to determine whether to authorize incidental take of marine mammals. Under NEPA, our EA is appropriate to evaluate the potential significance of environmental impacts resulting from the issuance of our Authorization.

4.1. Effects of Alternative 1 – Issuance of an Authorization with Mitigation Measures

Alternative 1 is the Preferred Alternative where we would issue an Authorization to HTC allowing the incidental take, by Level B harassment, of nine species of marine mammals, subject to the mandatory mitigation and monitoring measures and reporting requirements set forth in the proposed Authorization, and described earlier in this EA.

4.1.1. Impacts to Marine Mammal Habitat

The proposed action (i.e., the issuance of an Authorization for the take of marine mammals) would have no additive or incremental effect on the physical environment, or on components of the biological environment that function as marine mammal habitat, beyond those resulting from HTC's proposed project. HTC's proposed activity area is not located within a marine sanctuary or a National Park. The proposed activities would not result in substantial damage to ocean and coastal habitats that might constitute marine mammal habitat. The main impact associated with the proposed activity would be temporarily elevated sound levels and the associated direct effects on marine mammals. Contact with the seafloor, through pile driving, would temporarily increase turbidity, but no long-term adverse effects would result. Turbidity events would be limited to the duration of pile driving.

The proposed activities could potentially result in, at most, temporary avoidance by potential prey (i.e., fish) of the immediate area. We do not anticipate that the project would physically alter the marine environment or negatively impact the physical environment or components of the biological environment that function as marine mammal habitat in the proposed action area. The MMPA Authorization would not impact physical or biological habitat features, such as substrates and/or water quality or availability of marine mammal prey, as the Authorization only allows for the take of marine mammals by Level B harassment and includes mitigation measures to reduce impacts to marine mammals. Those mitigation measures will not have any effect on the physical environment. More information on potential impacts to marine mammal habitat is contained in HTC's application and our proposed Authorization notice, which are incorporated herein by reference.

4.1.2. Impacts to Marine Mammals

We expect that behavioral disturbance resulting from exposure to underwater sound resulting from the activities associated with the project has the potential to impact marine mammals and comprises the only likely source of effects to marine mammals. These activities are not anticipated to result in injury, serious injury, or mortality of any marine mammal species and none is proposed to be authorized. Our notice of proposed Authorization and HTC's application (2014) provide detailed descriptions of these potential

effects of the proposed project activities on marine mammals. That information is incorporated herein by reference and summarized next.

Based on this information, we expect that the proposed activities would result, at worst, in a temporary modification in behavior and/or temporary changes in animal distribution (Level B harassment) of certain species or stocks of marine mammals. At most, we interpret these effects on marine mammals as falling within the MMPA definition of Level B (behavioral) harassment. We expect these impacts to be minor because we do not anticipate measurable changes to the population or impacts to rookeries, mating grounds, and other areas of similar significance.

We expect no long-term or substantial adverse effects on marine mammals, their habitats, or their role in the environment. We base our conclusion on the results of previous monitoring for the same activities and anecdotal observations for the same activities in the proposed area.

4.1.3. Estimated Take of Marine Mammals by Level B Incidental Harassment

HTC has requested take by Level B harassment as a result of underwater sound produced through pile driving associated with the project. We expect that the proposed project would cause short-term behavioral disturbance and/or displacement for marine mammals in the proposed areas.

Table 2 outlines the number of Level B harassment takes that we propose to authorize in this Authorization, the regional population estimates for marine mammals in the action area, the percentage of each population or stock that may be taken as a result of HTC's activities, and the trend of each marine mammal population. Our proposed Authorization notice and HTC's application contain complete descriptions of how these take estimates were derived. However, due to public comments received from the Marine Mammal Commission and National Park Service, take estimates have been revised for several species including humpback whale, Steller sea lion, Dall's porpoise, Gray whale, harbor porpoise, killer whale, and Pacific white sided dolphin.

Incidental take is estimated for each species by estimating the likelihood of a marine mammal being present within a Zone of Influence (ZOI) during active pile driving. Expected marine mammal presence is determined by past observations and general abundance near the project area during the construction window. Typically, potential take is estimated by multiplying the area of the ZOI by the local animal density. This provides an estimate of the number of animals that might occupy the ZOI at any given moment, or a daily density, which can then be multiplied by the anticipated number of pile driving days to give a total exposure estimate. However, this type of calculation is not applicable in this case, because there are no specific local animal densities for the marine mammal species under examination. As a result, the take requests were estimated using local marine mammal data sets, (*e.g.* Federal agencies), opinions from Federal agencies, and opportunistic marine mammal surveys.

Humpback whale - There are no density estimates of humpback whales available in the action area. The best available information on the distribution of these marine mammals in the study area is data obtained from a National Park Service humpback whale study. Neilson et al. (2014) documented a total of 237 individual humpback whales (including 10 mother-calf pairs) in Glacier Bay and adjacent waters of Icy Strait in the 2013 peak survey period between June and August. This is the highest yearly count of individual humpback whales since the survey began in 1985. Of these 237 whales, 148 were documented

as remaining in the vicinity for a period greater than 20 days. One year later in the Icy Strait sub-area of the 2014 NPS survey, 202 humpback whales were counted. Because whales move freely back and forth between Glacier Bay and Icy Strait, NMFS used the higher total survey count of 237 whales from 2013, or an average of almost 79 whales per month, to estimate exposure. Given that the period of active pile driving will be up to four months (June through September), a worst-case estimate would predict that up to 316 (79×4) Level B takes of humpback whale could occur as a result of the proposed action.

Steller sea lion - Womble *et al.* (2009) conducted mean monthly counted of Steller sea lions at multiple haulout sites in Southeast Alaska between 2001 and 2004. The haulout site nearest to Hoonah was Rocky Island which featured monthly averages of 2 sea lions or less for June, July and August while 174 were sighted in September. Barlow *et al.* (in press) reported number of sightings, numbers of individuals, and sightings per unit effort data from opportunistic marine mammal surveys conducted in Glacier Bay and Icy Strait between 2005 and 2014. Steller sea lions were observed at relatively high densities around Point Adolphus and other locations in Icy Strait and in various places inside Glacier Bay. The highest count of observed individuals was 395 sea lions between June and August of 2008, which equates to 132 sightings per month. Since the authorization period is four months, this estimate would mean that up to 528 (132×4) individual Level B takes of Steller sea lions could occur as a result of pile driving activities. This figure is within the range of findings published in the 2009 study by Womble *et al.*

Harbor seal – A recent study by Barlow *et al.* (in press) of Glacier Bay and Icy Strait determined that an average of 26 sightings occurred each month between June and August of 2014. This would result in an estimated 104 takes during the July through August authorization period. While the harbor seal population has notably declined in the Glacier Bay area between 1992 and 2009 (Womble *et al.* 2013, 2010) these seals are not uncommon in the Icy Strait and Port Frederick area. As such, there exists the possibility of numerous repeated takes of the same animal. Therefore, NMFS believes that the original conservative estimate of 480 harbor seal takes is more realistic for this species, and the original take estimate provided in the Federal Register notice (80 FR 14945) requesting public comments on the proposal to issue an IHA remains unchanged

Dall's porpoise – The Barlow *et al.* (in press) study documented 9 individual Dall's porpoises in Glacier Bay across three months in 2007, for an average of 3 sightings per month. Based on this data, a worst-case estimate would mean that up to 12 (3×4) individual Level B takes of Dall's porpoise could occur as a result of pile driving activities. However, Dahlheim *et al.* (2008) recorded 346 sightings of Dall's porpoise in Southeast Alaska during the summer (June/July) of 2007, resulting in an average of 173 observations per month. Over a four-month activity period (4×173) this would result in an estimated 692 takes during the authorization period. Dahlheim *et al.* (2008) also reported that high concentrations of this porpoise were encountered in Icy Strait. Given the broader geographic focus of Barlow *et al.* (in press) and the high concentrations of Dall's porpoise reported in the Icy Strait area by Dahlheim *et al.* (2008), NMFS believes that an estimate of 692 takes of Dall's porpoise is based on the best available information and is appropriate for this authorization.

Gray whale – Gray whales are not common in Icy Strait during the summer months. The Barlow *et al.* (in press) study documented only 3 whales, each occurring in a different year, over the course of the ten year study period. The Commission suggested NMFS increase allowed take to reflect the mean group size. Gray whales usually occur in groups of 1 to 3. NMFS will conservatively assume that during every

month of the activity period a single group of 3 whales may occur in the Level B harassment zone (3*4), which would result in a conservative estimate of 12 gray whale takes during the authorization period

Harbor porpoise - Harbor porpoises are known to occur regularly in the Icy Strait area. Dahlheim (2015) indicated that 332 resident harbor porpoises occur in the Icy Strait area, and are known to use the Port Frederick area as part of their core range. The population has been declining across Southeast Alaska since the early 1990's (Dahlheim et al. 2012). During a 2014 survey Barlow et al. (in press) observed 462 harbor porpoises in the Glacier Bay and Icy Strait area during a three-month summer survey period. This was the highest number observed during the 10 year study, with an average of 154 porpoise per month. Given that harbor porpoise are known to frequent this area, NMFS has revised its take estimates. NMFS will assume that all 322 resident harbor porpoises will occur in the Level B harassment area each month (322*4) resulting in 1,288 takes.

Killer whale- Killer whales occur commonly in the waters of the action area, and could include members of several designated stocks that may occur in the vicinity of the proposed project area. Whales are known to use the Icy Strait corridor to enter and exit inland waters and are observed in every month of the year, with certain pods being observed inside Port Frederick passing directly in front of Hoonah (Dahlheim 2015).

NMFS examined only summer and fall (no spring) results from a line-transect survey by Dalheim et al. (2008) and determined the maximum number of combined resident and transient killer whales. During a single two-month survey period (September/October) of 1992, 173 resident whales were observed, or an average of 87 per month. The greatest number of transient sightings occurred in 1993 with 32 sightings over two months for an average of 16 sightings per month. Combining maximum resident and transient whales sighting per month (87+16) results in a monthly average of 103 and a total take estimate of (103*4) 412 killer whales over the 4 month activity period. Mean group size for resident killer whales in summer was greatest in 2004 at 45. For transients the mean group average also peaked during the same year at 15. Recent information provided by Dahlheim (2015) indicated that group sizes for specific resident killer whale pods found in the Icy Strait area ranged from 42 to 79. Using the best information available, NMFS has estimated take at 412 killer whales which allows for Level B take of several large pods of killer whales during the authorization period and also account for multiple repeated counts of pods.

Minke whale – The original take estimate provided in the Federal Register (80 FR 14945) requesting public comments remains unchanged as no comments were received regarding Minke whales.

Pacific white-sided dolphin – Dalheim et al. 2008 did not observe Pacific white-sided dolphins during the summer season during the final years (2006, 2007) of a survey run in the years 1991 through 2007. These dolphins were observed intermittently during the years 1992 and 1993 when there were 39 and 122 sightings, respectively. However, members of this species have not been observed in Frederick Strait since the early 1990's. The Commission recommended utilizing a mean group size when estimating take for this species if it is anticipated to be encountered in low numbers. The mean group size ranged from 19.5 (1992) to 152.5(1996). As part of a conservative approach, NMFS will authorize Level B take of 153 white-sided dolphins. Table 2 demonstrates the number of animals that could be exposed to received noise levels that could cause Level B behavioral harassment for the proposed work associated with the re-

development of the Icy Strait Point Cruise Ship Terminal in Hoonah, Alaska. The analyses provided represents between <0.01% to 14.4% of the stocks of humpback whale, Steller sea lion, harbor seal, Dall's porpoise, gray whale, harbor porpoise, minke whale, and Pacific white-sided dolphin that could be affected by Level B behavioral harassment. NMFS therefore concludes that small numbers of these stocks will be taken relative to the total populations of the affected species or stocks.

As explained previously, we are proposing to authorize 412 takes (Level B harassment only) of killer whales from three stocks of killer whales that are known to occur in the Icy Strait area: (1) Alaska resident stock with an estimated population of 2,347; (2) Gulf of Alaska, Aleutian Islands, and Bering Sea transient stock with an estimated population of 587; and (3) West Coast transient stock with an estimated population of 354. Given that all three stocks occur in the Icy Strait Area, the 412 proposed takes will most likely be apportioned among the three stocks. As described in the estimated above, based on sightings data, NMFS expects approximately 348 takes (87 per month * 4 months) of the resident stock to occur and 64 (16 per month * 4 months) of the two transient stocks to occur. These numbers are small relative to the population sizes of the resident and transient stocks. Furthermore, NMFS notes that the number of takes proposed to be authorized represents the estimated incidents of take, not the number of individuals taken. More likely, fewer individuals would be taken, but a subset would be taken more than one time during the duration of the Authorization.

Specific resident pods are frequently encountered throughout Icy Strait according to Dalheim (2015). These would be the AG pod numbering a minimum of 42 whales and the AF pod with a minimum count of 79 whales. Whales from these two pods have been seen in the area every month of the year and the Icy Strait corridor is a major route for them both entering and exiting inland waters. The AG pod, specifically, has been observed on numerous occasions inside Port Frederick, passing directly off shore of Hoonah. As such, many of the anticipated takes are likely to be repeated takes of the same animals from AG and AF pods. However, even in a worst-case scenario in which all 412 takes came from the resident stock, the number of takes would still be small compared to the population size (approximately 17.6%).

As stated above, the anticipated number of takes attributable to the transient stocks (64) is small compared to the population sizes of both the West coast transient stock and the Gulf of Alaska, Aleutian Islands, and Bering Sea transient stock. Further, also believes that small numbers of the West Coast transient stock would be taken based on the limited region of exposure in comparison with the known distribution of the transient stock. The West Coast transient stock ranges from Southeast Alaska to California while the proposed project activity would be stationary. As described in the Description of Marine Mammals in the Area of the Specified Activity section in our Federal Register notice announcing the proposed authorization (80 FR 14945; March 20, 2015), a notable percentage of West Coast transient whales have never been observed in Southeast Alaska. Only 155 West Coast transient killer whales have been identified as occurring in Southeast Alaska according to Dahlheim and White (2010). The same study identified three pods of transients, equivalent to 19 animals, that remained almost exclusively in the southern part of Southeast Alaska (i.e. Clarence Strait and Sumner Strait). This information indicates that only a subset of the entire West Coast Transient stock would be at risk for take in the Icy Strait area because a sizable portion of the stock has either not been observed in Southeast Alaska or consistently remains far south of Icy Strait. Similarly, only a very small number of Gulf of Alaska, Aleutian Islands, and Bering Sea transient killer whales have been observed in Southeast Alaska with sightings being an

uncommon occurrence (Dalheim 2015). Whales from this stock occur mainly from Prince William Sound through the Aleutian Islands and Bering Sea and are spread across a vast area.

In summary, NMFS concludes that small numbers of each of the three stocks of killer whales known to occur in the Icy Strait region will be taken relative to the population sizes of the affected stocks. This conclusion is based on the small likelihood that all of the incidents of take would come from only one stock; the reduced percentage of transient stocks of killer whales likely to be found in the Icy Strait area due to the wide geographic distribution of these two stocks; and the likelihood of repeated exposures of both transient and resident whales, especially among the two resident pods identified as commonly frequenting the waters near the action area.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the mitigation and monitoring measures, which are expected to reduce the number of marine mammals potentially affected by the proposed action, NMFS finds that small numbers of marine mammals will be taken relative to the populations of the affected species or stocks.

Table 2. Estimated Numbers of Incidences that Marine Mammals May Be Exposed to Level B Harassment

Species	Total proposed authorized takes^{***}	Abundance	Percentage of total stock
Humpback whale -CNP Stock (Southeast Alaska aggregation)	316	5,833 (2,251)	5.4% (14.0%)
Steller sea lion (Eastern DPS)	528	36,551	14.4% [*]
Steller sea lion (Western DPS)		48,676	1.1% [*]
Harbor seal	480	5,042	9.5%
Dall's porpoise	692	83,400	<0.01%
Gray whale	12	19,126	<0.01%
Harbor porpoise	1288	11,146	11.5%
Killer whale (AK Resident Stock; GOA, Aleutian Islands, Bering Sea Transient Stock; West Coast Transient Stock)	412	3,288 ^{**}	12.5% ⁺

Minke whale	8	1,233	<0.01%
Pacific white-sided dolphin	153	26,880	<0.01%

* These percentages assume a worst-case, unlikely scenario in which all 528 estimated takes accrue to a single Steller sea lion DPSs.

** Combined populations of AK Resident Stock; GOA, Aleutian Islands, Bering Sea Transient Stock; and West Coast Transient Stock.

*** Note that these numbers assume that every modeled take happens to a different animal, which is unlikely, as both individuals and groups of marine mammals are observed utilizing the same geographic location repeatedly.

+ See information above regarding killer whales for further explanation.

4.2. Effects of Alternative 2 – No Action Alternative

Under the No Action Alternative, we would not issue an Authorization to HTC. As a result, HTC would not receive an exemption from the MMPA prohibitions against the take of marine mammals and would be in violation of the MMPA if take of marine mammals occurs.

The impacts to elements of the human environment resulting from the No Action alternative – conducting construction of the cruise ship terminal in the absence of required protective measures for marine mammals under the MMPA – would be greater than those impacts resulting from Alternative 1, the Preferred Alternative.

4.2.1. Impacts to Marine Mammal Habitat

Under the No Action Alternative, the effects on the physical environment or on components of the biological environment that function as marine mammal habitat would result from HTC’s planned construction activities, are similar to those described in Section 1.4.2. These impacts include sediment disturbance and a temporary increase ~~in turbidity~~ in turbidity. Even without mitigation measures, however, impacts to marine mammal habitat (including prey species) would be minimal and temporary for the following reasons:

- Vibratory driving will be the preferred method of pile installation. Impact driving will be utilized only when vibratory driving is not tenable due to local geotechnical conditions.
- The area of potential effect is limited in both space and time (e.g. driving days limited to 4 month authorization period); and
- There are no rookeries or major haul-out sites nearby or ocean bottom structure of significant biological importance to marine mammals that may be present in the project area.

The most likely impact to marine mammal habitat would be minor impacts to the immediate substrate during installation of piles and removal of falsework during the project or temporary avoidance by prey species of the immediate area. This Alternative would result in similar effects on the physical environment and components of the biological environment that function as marine mammal habitat as Alternative 1.

4.2.2. Impacts to Marine Mammals

Under the No Action Alternative, HTC's planned construction activities could result in increased amounts of Level B harassment to marine mammals, although no takes by injury (Level A harassment), serious injury, or mortality would be expected even in the absence of mitigation and monitoring measures. While it is difficult to provide an exact number of takes that might occur under the No Action Alternative, the numbers would be expected to be larger than those presented in Table 2 above because HTC would not be required to implement measures designed to warn marine mammals of the impending increased underwater sound levels, and additional species may be incidentally taken because HTC would not be required to shut down activity if any marine mammals occurred in the project vicinity.

If the activities proceeded without the protective measures and reporting requirements required by Alternative 1, the direct, indirect, and cumulative effects on the human or natural environment of not issuing the Authorization would include the following:

- Increases in the number of behavioral responses and potential takes to additional species, because of the lack of mitigation measures required in the Authorization. Thus, the incidental take of marine mammals would likely occur at higher levels than we have already identified and evaluated in our *Federal Register* notice on the proposed Authorization; and
- We would not be able to obtain the monitoring and reporting data needed to assess the anticipated impact of the activity upon the species or stock; and increased knowledge of the species as required under the MMPA.

4.3. Unavoidable Adverse Impacts

HTC's application, our notice of a proposed Authorization, and other environmental analyses identified previously summarize unavoidable adverse impacts to marine mammals or the populations to which they belong or on their habitats occurring in the proposed project area. We incorporate those documents by reference.

We acknowledge that the incidental take authorized would potentially result in unavoidable adverse impacts including marine mammal behavioral responses and alterations in the distribution of local populations. However, we do not expect HTC's activities to have adverse consequences on the annual rates of recruitment or survival of marine mammal species or stocks in Southeast Alaska waters, and we do not expect the marine mammal populations in that area to experience reductions in reproduction, numbers, or distribution that might appreciably reduce their likelihood of surviving and recovering in the wild. We expect that the numbers of individuals of all species taken by harassment would be small (relative to species or stock abundance), that the proposed project and the take resulting from the proposed project activities would have a negligible impact on the affected species or stocks of marine mammals.

The MMPA requirement of ensuring the proposed action has no unmitigable adverse impact to subsistence uses does not apply here because there are no permitted subsistence uses of marine mammals in the region.

4.4. Cumulative Effects

NEPA defines cumulative effects as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR

§1508.7). Cumulative impacts can result from individually minor but collectively significant actions that take place over a period of time.

This cumulative effects analysis focuses on activities that may temporally or geographically overlap with HTC's activities and would most likely impact the marine mammals present in the proposed areas. We consider the impact of HTC's presence and effects of conducting activities in the proposed action areas to be insignificant when compared to other human activities in the area.

Past, present, and reasonably foreseeable impacts to marine mammal populations include the following: climate change; coastal development; marine pollution; disease; and marine mammal whale watching. These activities account for cumulative impacts to regional and worldwide populations of marine mammals, many of which are a small fraction of their former abundance. However, quantifying the biological costs for marine mammals within an ecological framework is a critical missing link to our assessment of cumulative impacts in the marine environment and assessing cumulative effects on marine mammals (Clark *et al.*, 2009). Despite these regional and global anthropogenic and natural pressures, available trend information indicates that most local populations of marine mammals in the Pacific Ocean are stable or increasing (Carretta *et al.*, 2013).

The proposed project would add another, albeit temporary, activity in the waters of Southeast Alaska. This activity would be limited to a small area at Icy Strait Point for a relatively short period of time. This section provides a brief summary of the human-related activities affecting the marine mammal species in the action area.

4.4.1. Climate Change

Global climate change could significantly affect the marine resources of Southeast Alaska region. Possible impacts include temperature and rainfall changes and potentially rising sea levels and changes to ocean conditions. These changes may affect the coastal marine ecosystem in the proposed action area by increasing the vertical stratification of the water column and changing the intensity and rhythms of coastal winds and upwelling. Such modifications could cause ecosystem regime shifts as the productivity of the regional ecosystem undergoes various changes related to nutrients input and coastal ocean process (USFWS, 2011).

The precise effects of global climate change on the action area, however, cannot be predicted at this time because the coastal marine ecosystem is highly variable in its spatial and temporal scales.

4.4.2. Coastal Development

Urban and coastal development encompasses housing, businesses, transportation infrastructure, streets and parking lots, domestic wastewater effluent, floating structures and mixing zones. Coastal development is one of the highest sources of nonpoint source pollution in Southeastern Alaska (Baker *et al.*, 2011). Coastal development not only displaces organisms that once used a particular site but also indirectly affects a much broader area through non-point source and point source pollution. However, HTC's proposed project consists largely of the re-development of an area that already supports a built environment. Therefore, the proposed HTC project will have a very limited cumulative effect on coastal development in Southeast Alaska.

4.4.3. Marine Pollution

Marine mammals are exposed to contaminants via the food they consume, the water in which they swim, and the air they breathe. Point and non-point source pollutants from coastal runoff, offshore mineral and gravel mining, at-sea disposal of dredged materials and sewage effluent, marine debris, and organic compounds from aquaculture are all lasting threats to marine mammals in the project area. The long-term impacts of these pollutants, however, are difficult to measure.

The persistent organic pollutants (POPs) tend to bioaccumulate through the food chain; therefore, the chronic exposure of POPs in the environment is perhaps of the most concern to high trophic level predators such as California sea lions, harbor seals, and Steller sea lions.

HTC's activities associated with the cruise ship terminal construction project are not expected to cause increased exposure of POPs to marine mammals in the project vicinity due to the small scale and localized nature of the activities.

4.4.4. Disease

Disease is common in many marine mammal populations and has been responsible for major die-offs worldwide, but such events are usually relatively short-lived. HTC's construction activities are not expected to affect the disease rate among marine mammals in the project vicinity.

4.4.5. Commercial and Private Marine Mammal Watching

Although marine mammal watching is considered by many to be a non-consumptive use of marine mammals with economic, recreational, educational and scientific benefits, it is not without potential negative impacts. One concern is that animals may become more vulnerable to vessel strikes once they habituate to vessel traffic (Swingle *et al.*, 1993; Laist *et al.*, 2001; Jensen and Silber, 2004). Another concern is that preferred habitats may be abandoned if disturbance levels are too high. Several recent research efforts have monitored and evaluated the impacts of people closely approaching, swimming, touching and feeding marine mammals and has suggested that marine mammals are at risk of being disturbed ("harassed"), displaced or injured by such close interactions. Researchers investigating the adverse impacts of marine mammal viewing activities have reported boat strikes, disturbance of vital behaviors and social groups, separation of mothers and young, abandonment of resting areas, and habituation to humans (Nowacek *et al.*, 2001).

While marine mammal watching operations do occur in the vicinity of the proposed project area, HTC's authorized pile driving activities are of short duration encompassing a relatively small area. Therefore, the cumulative adverse effects of the proposed action on the affected populations when added to the effects of marine mammal watching are not expected to be significant.

4.4.6. Conclusion

Based on the summation of activity in the area provided in this section, NMFS determined that the incremental impact of an Authorization for the proposed project at Icy Strait Point would not be expected to result in a cumulative significant impact to the human environment from past, present, and future activities. The potential impacts to marine mammals, their habitats, and the human environment in

general are expected to be minimal based on the limited and temporary footprint and mitigation and monitoring requirements of the Authorization.

Chapter 5 List of Preparers and Agencies Consulted

Agencies Consulted

No other persons or agencies were consulted in preparation of this EA.

Prepared By

Rob Pauline

Fishery Biologist

Permits and Conservation Division

Office of Protected Resources, NOAA/National Marine Fisheries Service

Chapter 6 Literature Cited

- Alaska Department of Fish and Game. 2014. Petition to Designate the Central North Pacific Stock of the Humpback Whale (*Megaptera novaeangliae*) as a Distinct Population Segment and Remove the DPS from the List of Endangered and Threatened Species under the Endangered Species Act. Petition to NMFS, dated February 26, 2014.
- Allen, B.M. and R.P. Angliss. 2013. Editors. Alaska marine mammal stock assessments, 2012. National Marine Fisheries Service.
- Allen, B.M. and R.P. Angliss. 2014. Alaska marine mammal stock assessments, 2013. NOAA Technical Memorandum NMFS-AFSC-277, National Marine Fisheries Service: 304.
- Allen, B.M. and R.P. Angliss, editors. 2015. Draft Alaska Marine Mammal Stock Assessments, 2014. NOAA National Marine Fisheries Service.
- Baker, L, Koski, K., Albert, d., and Cohen, N. 2011. A conservation Action Plan for Estuarine Ecosystems in Southeast Alaska. The Nature Conservancy.
- Barlow, Kierstin M, Eric K. Keller, Heidi C. Pearson, Phoebe Vanselow, Chris M. Gabrielle, Janet L. Neilson. In Press. Activity Trends and Distributions of Marine Mammals Opportunistically Sighted in Glacier Bay, AK and Adjacent Waters (2005-2014).
- Braham, H. W. 1984. Migration and feeding of gray whales (*Eschrichtius robustus*) in Alaska. In M. L. Jones, S. L. Swartz, and J. S. Leatherwood (editors), The gray whale, p. 249-266. Acad. Press, N. Y
- Buckland, S. T., Anderson, D. R., Burnham, K. P., and Laake, J. L. (1993). Distance Sampling: Estimating Abundance of Biological Populations. London: Chapman and Hall.
- Carretta, J.V., E. Oleson, D.W. Weller, A.R. Lang, K.A. Forney, J. Baker, et al. 2013. U.S. Pacific marine mammal stock assessments: 2013. NOAA Technical Memorandum NMFS- SWFSC-532, National Marine Fisheries Service: 414.
- Carretta, J.V., E. Oleson, D.W. Weller, A.R. Lang, K.A. Forney, J. Baker, et al. 2014. U.S. Pacific marine mammal stock assessments: 2013. NOAA Technical Memorandum NMFS-SWFSC-532, National Marine Fisheries Service: 414.
- Clark, C. W., Ellison, W. T., Southall, B. L., Hatch, L., Van Parijs, S. M., Frankel, A., & Ponirakis, D. 2009. Acoustic masking in marine ecosystems: intuitions, analysis, and implication. Marine Ecology Progress Series, 395, 201-222.
- Dahlheim, M.E., A. Schulman-Janiger, N. Black, R. Ternullo, D. Ellifrit, and K.C. Balcomb. 2008. Eastern temperate North Pacific offshore killer whales (*Orcinus orca*): Occurrence, movements, and insights into feeding ecology. Marine Mammal Science **24** (3):719-729.
- Dahlheim, M. E. and P. A. White. 2010. Ecological aspects of transient killer whales (*Orcinus orca*) as predators in Southeastern Alaska. Wildlife Biology 16: 308-322.

- (Dahlheim, M.E. 2015). Personal communication. March 4, 2015.
- Ferrero, R.C. and Walker, W.A. 1996. Age, growth, and reproductive patterns of the Pacific white-sided dolphin (*Lagenorhynchus obliquidens*) taken in high seas drift nets in the central North Pacific Ocean. *Can. J. Zool.* 74(9):1673-87
- Gabriele, C.M. and T.M. Lewis. 2000. Summary of opportunistic marine mammal sightings in Glacier Bay and Icy Strait 1994–1999. Glacier Bay National Park and Preserve, Gustavus, AK.
- Jensen, A., and G.K. Silber. 2004. Large Whale Ship Strike Database. NOAA Technical Memorandum NMFS-OPR-25. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Silver Spring, MD.
- Laist, D.W., A.R. Knowlton, J.G. Mead, A.S. Collet and M. Podesta. 2001. Collisions between ships and whales. *Marine Mammal Science* 17(1):35-75.
- Mathews EA, Womble JN, Pendleton GW, Jemison LA, Maniscalco JM, et al. (2011) Population growth and colonization of Steller sea lions in the Glacier Bay region of Southeastern Alaska, 1970s–2009. *Mar Mamm Sci* 27: 852–880. doi: 10.1111/j.1748-7692.2010.00455.x
- NMFS (National Marine Fisheries Service). 1991. Recovery Plan for the Humpback Whale (*Megaptera novaeangliae*). Prepared by the Humpback Whale Recovery Team for the National Marine Fisheries Service, Silver Spring, Maryland.
- NMFS. 2013. Status review of the eastern distinct population segment of Steller sea lion (*Eumetopias jubatus*). National Marine Fisheries Service: 236.
- Nowacek, S. M., R. S. Wells and A. R. Solow. 2001. Short-term effects of boat traffic on bottlenose dolphins, *Tursiops truncatus*, in Sarasota Bay, FL. *Marine Mammal Science* 17(4):673-688.
- NRC (National Research Council). 2003. Ocean noise and marine mammals. National Academy of Sciences: 220.
- Perrin, W.F. & R.L. Brownell, Jr (2002). Minke Whales *Balaenoptera acutorostrata* and *B. bonaerensis*. **In:** Perrin W.F., Würsig B. & H.G.M. Thewissen, eds. *Encyclopedia of Marine Mammals*. Page(s) 750-754. Academic Press.
- Rice, D.W. 1998. *Marine Mammals of the World. Systematics and Distribution*. Special Publication No. 4. The Society for Marine Mammology, Lawrence, Kansas. 231pp.
- Richardson, W.J., C.R. Greene, C.I. Malme, and D.H. Thomson. 1995. *Marine Mammals and Noise*. Academic Press, Inc., San Diego, California.
- Swingle, W.M., S.G. Barco, T.D. Pitchford, W.A. McLellan and D.A. Pabst. 1993. Appearance of juvenile humpback whales feeding in the nearshore waters of Virginia. *Marine Mammal Science* 9:309-315.
- USFWS. 2011. Climate Change in the Pacific Northwest. Available at: www.fws.gov/pacific/Climatechange/changepnw.html (accessed August 14, 2014).
- Winans, G.A., and L.L. Jones. 1988. Electrophoretic variability in Dall's porpoise (*Phocoenoides dalli*) in the North Pacific Ocean and Bering Sea. *J. Mammal.* 69(1):14-21.

Womble, J.N., M. Sigler and M F. Willson. 2009. Linking seasonal distribution patterns with prey availability in a central-place forager, the Steller sea lion. *Journal of Biogeography (J. Biogeogr.)* (2009) 36, 439–451.

Womble, J.N., G.W. Pendleton, E.A. Mathews, E.A., G.M. Blundell., N.M. Bool, S.M. Gende 2010. Harbor seal (*Phoca vitulina richardii*) decline continues in the rapidly changing land- scape of Glacier Bay National Park, Alaska, 1992-2008. *Marine Mammal Science* 26: 686-697.

Womble JN, Gende SM (2013) Post-Breeding Season Migrations of a Top Predator, the Harbor Seal (*Phoca vitulina richardii*), from a Marine Protected Area in Alaska. *PLoS ONE* 8(2): e55386. doi:10.1371/journal.pone.0055386

Womble, J.N. and S. M. Gende. 2013.