APPENDIX C

ENDANGERED SPECIES ACT SECTION 7 CONSULTATION AND COORDINATION



Federal Highway Administration Western Federal Lands Highway Division 610 E. Fifth Street Vancouver, WA 98661 Phone 360-619-7700 Fax 360-619-7846

September 25, 2020

In Reply Refer To: HFL-17

Jon Kurland Assistant Regional Administrator for Protected Resources NMFS, Alaska Region PO Box 21668 Juneau, AK 99802

Re: Request for Initiation of Informal Consultation under section 7(a)(2) of the Endangered Species Act (ESA) for the Shotgun Road Extension Project

Dear Mr. Kurland:

The Western Federal Lands Highway Division of the Federal Highway Administration (FHWA) proposes to fund the proposed project as described below. We request initiation of informal consultation under section 7(a)(2) of the Endangered Species Act (ESA) for the Shotgun Road Extension Project. We have determined that the proposed activity may affect, but is not likely to adversely affect endangered fin whale (*Balaenoptera physalus*), endangered Western North Pacific Distinct Population Segment (DPS) and threatened Mexico DPS humpback whale (*Megaptera novaeangliae*), and endangered Western DPS Steller sea lion (*Eumetopias jubatus*). Our supporting analysis is provided below. We request your written concurrence if you agree with our determinations.

Project Description

This proposed project is intended to extend Shotgun Cove Road approximately 2.5 miles from its existing terminus near Second Salmon Run (Mile 2.0) onto U.S. Forest Service (Forest Service) land at Trinity Point (Mile 4.5) in Whittier, Alaska. We expect work to commence in summer 2022 and extend through the end of 2025, although construction is dependent of funding and would likely occur in phases.

Project Location

Shotgun Cove Road is located in Whittier, Alaska, approximately 55 miles southeast of Anchorage within the Valdez–Cordova Census Area. The project is located within Sections 3, 8, 9, and 17, Township 8 North, Range 5 East, Seward Meridian. The project can be located on the USGS Seward (D-5) SE Quadrangle (Figure 1). The project would be an extension of the existing Shotgun Cove Road, from mile 2.0 to Trinity Point, and would run roughly parallel to the shoreline of Passage Canal.





Project Overview

The proposed project is located in a rural area currently used primarily for recreation with no roadway beyond the existing terminus. The proposed road extension would be constructed approximately 250 to 350 feet (ft) from the shoreline and would run roughly down the middle of City of Whittier-owned land, ending with a small parking lot at Trinity Point (Figure 2). Project design includes several spur roads to the north and south along the alignment to allow for future beach access points, trailheads for uplands access, and access to potential private parcels. The purpose of the proposal is to improve access to federal and state lands, alleviate pressure on Whittier's regional transportation system, and realize potential economic growth.

The majority of the roadway would be located on City of Whittier-owned land and would end with a parking area on Forest Service property at Trinity Point. Construction of the main road section would include an approximately 80-ft wide clearing limit and would install two 10-ft gravel travel lanes, two 5-ft gravel shoulders, and rock catchment area. The smaller spur roads would consist of an approximately 65-ft wide clearing limit and two 9-ft gravel travel lanes. Construction would also include drainage swales or rock cuts along uphill sides and culverts at major creeks and small drainage features that meet Alaska Department of Fish and Game fish passage criteria where anadromous and resident fish species are present.



Figure 2. Proposed Shotgun Cove Road Alignment

Construction Methods *Transport of Materials and Equipment*

Construction materials and equipment would be transported from Whittier to the project site via the existing Shotgun Cove Road, and the initial staging area would be located at the current road terminus. No barges or other ocean vessels would be used to transport materials, equipment, or personnel during construction.

The project traverses a steep grade, requiring a combination of rock cuts and fill. Since the project site is located in a rural area with no easily-accessible material sites, the project aims to balance cut fills from the site by using blasted rock for the embankments and road section. Material from the road excavation would be hauled by truck to the rock crushing area located at the staging area at the beginning of the project.

Blasting Procedure

For this project, two types of blasting would be employed: subgrade blasting and exposed rock cut slope blasting (i.e. production/controlled blasting). Subgrade blasting consists of fragmenting the bedrock underneath the road section to create a free draining subgrade. Due to the shallow depth of bedrock throughout the project area, subgrade blasting would occur along much of the length of the proposed roadway. When subgrade blasting is not integrated with exposed rock cut slope blasting, it requires much smaller charges and has little above-ground impact.

Exposed rock blasting is proposed only in areas where steep slopes require benching for road construction. Rock slope blasting would be directed toward the portion of roadway that has previously been excavated. While blast designs vary, exposed rock cut slope blasting of this scale would be constructed using a series of 100- to 200-pound (lb) explosive charges detonated sequentially with 25 millisecond (ms) delays.

Blasted material would be collected and loaded on to dump trucks and hauled back on the road to the rock crushing area. In this manner, blasting would progress along the alignment. Spillage outside the roadway limit would be minimal, as the contractor would design the blast procedure to obtain and collect the most rock possible for use as aggregate for the road section. The rock being blasted will be used for the embankments and roadway structural section of the mainline and spur roads so the road will progress similar to digging a tunnel.

Dates and Duration

It is estimated that there would be approximately 8 blasts required over 30 days of blasting (Station 165+50 to 168+50, 5 blasts; Station 437+25 to 444+00, 3 blasts) within 50 meters (m) of the shoreline that have the potential to be heard by marine mammals in Passage Canal (see description of the action area below). There would likely be no more than one blast per day. Work is expected to commence in the summer of 2022 with the initial phase of road construction and would continue in phases until complete. Subgrade and rock blasting activities are expected to occur throughout the project over a period of 5-10 construction seasons (not necessarily consecutive).

The total construction duration accounts for the time required to mobilize materials and resources and construct the project. The duration also accounts for potential delays in funding, material deliveries, equipment maintenance, inclement weather, and shutdowns that may occur to prevent impacts to marine mammals.

Mitigation Measures

To minimize the risk of harm to listed marine species from dry blasting on land, the contractor will implement the following mitigation measures:

- 1. No in water work in the Passage Canal will occur.
- 2. Blasting procedures will be designed to minimize spillover of blasted material outside of the designated work zone.
- 3. One or more protected species observers (PSOs), able to accurately identify and distinguish species of Alaska marine mammals, will be present before and during all blasting activities.
- 4. Prior to blasting activities, an exclusion (i.e., shut-down) zone will be established. For this project, the exclusion zone includes all marine waters not blocked by land forms within 1,500 m of the sound source.
- 5. Blasting will not be conducted unless all waters within and adjacent to the exclusion zone are clearly visible.
- 6. The PSO(s) will be positioned such that the entire exclusion zone is visible to them (e.g., situated on a platform, elevated promontory, boat or aircraft).

- 7. The PSO(s) will have the following to aid in determining the location of observed listed species, to take action if listed species enter the exclusion zone, and to record these events:
 - a. Binoculars
 - b. Range finder
 - c. GPS
 - d. Compass
 - e. Two-way radio communication with construction foreman/superintendent
 - f. A log book of all activities which will be made available to NMFS upon request
- 8. The PSO(s) will have no other primary duty than to watch for and report on events related to marine mammals.
- 9. The PSO(s) will be in direct communication with on-site project lead and will have shutdown authority.
- 10. The PSO(s) will work in shifts lasting no longer than 4 hours with at least a 1-hour break between shifts, and will not perform duties as a PSO for more than 12 hours in a 24-hour period (to reduce PSO fatigue).
- 11. The PSO(s) will scan the exclusion zone for the presence of listed species for 30 minutes before any blasting activities take place or if more than 30 minutes has elapsed in absence of blasting activity.
 - a. If the shutdown zone has been observed to be clear of listed species for 30 minutes, blasting activities may commence.
 - b. If any listed species are present within a shutdown zone, blasting activities will not begin until the animal(s) has left the shutdown zone or no listed species have been observed in the shutdown zone for 15 minutes (for pinnipeds) or 30 minutes (for cetaceans).
- 12. Throughout all blasting activity, the PSO(s) will continuously scan the exclusion zone to ensure that listed species do not enter it.
 - a. If any listed species enter, or appear likely to enter, the exclusion zone during blasting activities, all blasting activity will cease immediately. Blasting activities may resume when the animal(s) has been observed leaving the area on its own accord. If the animal(s) is not observed leaving the area, blasting may begin 15 minutes (for pinnipeds) or 30 minutes (for cetaceans) after the animal is last observed in the area. Note: If a marine mammal is first observed within the exclusion zone during construction operations, the PSO will notify NMFS immediately after ordering a shutdown of operations.
- 13. Monthly PSO reports and a final PSO report with observation forms will be provided to NMFS.
 - a. The reporting period for each monthly PSO report will be the entire calendar month, and reports will be submitted by close of business on the fifth day of the month following the end of the reporting period (e.g., the monthly report covering April 1 to 30, 2021, will be submitted to the NMFS by close of business on May 5, 2021).
 - b. PSO report data will also include the following for each listed marine mammal observation or "sighting event" if repeated sightings are made of the same animal(s):
 - i. Species, date, and time for each sighting event.
 - ii. Number of animals per sighting event; and number of adults/juveniles/calves per sighting event.

- iii. Primary, and, if observed, secondary behaviors of the marine mammals in each sighting event.
- iv. Geographic coordinates for the observed animals, with the position recorded by using the most precise coordinates practicable (coordinates must be recorded in decimal degrees, or similar standard, and defined coordinate system).
- v. Time of the most recent blasting or other project activity prior to marine mammal observation.
- vi. Environmental conditions as they existed during each sighting event, including Beaufort sea state, weather conditions, visibility (km/mi), lighting conditions, and percent ice cover.
- c. A final technical report will be submitted to NMFS within 90 days after the final blast sequence has been completed for the project. The report will summarize all activities associated with the proposed action, and results of marine mammal monitoring conducted during blasting activities. The final technical report will include items from the list above as well as the following:
 - i. Summaries of monitoring efforts including total hours, total distances, and marine mammal distribution through the study period, accounting for sea state and other factors that affect visibility and detectability of marine mammals.
 - ii. Analyses on the effects from various factors that may have influenced detectability of marine mammals (e.g., sea state, number of observers, fog, glare, and other factors as determined by the PSOs).
 - iii. Species composition, occurrence, and distribution of marine mammal sightings, including date, water depth, numbers, age/size/gender categories (if determinable), group sizes, and ice cover.
 - iv. Effects analyses of the project activities on listed marine mammals.
 - v. Number of marine mammals observed (by species) during periods with and without project activities (and other variables that could affect detectability), such as:
 - 1. Initial marine mammal sighting distances versus project activity at time of sighting.
 - 2. Observed marine mammal behaviors and movement types versus project activity at time of sighting.
 - 3. Numbers of marine mammal sightings/individuals seen versus project activity at time of sighting.
 - 4. Distribution of marine mammals around the action area versus project activity at time of sighting.
- 14. Though take is not authorized, if a listed marine mammal is taken (i.e., a listed marine mammal(s) is observed entering the 1,500-m exclusion zone before blasting operations can be shut down), reinitiation of consultation is required, and the take must be reported to NMFS within one business day. PSO records for listed marine mammals taken by project activities must include:
 - a. all the information required to be listed in the PSO report,
 - b. number of listed animals taken,
 - c. the date and time of each take,
 - d. the cause of the take (e.g., blasting operations),

- e. the time the animal(s) entered the exclusion zone, and, if known, the time it exited the zone, and
- f. mitigation measures implemented prior to and after the animal entered the exclusion zone.
- 15. Monthly and final reports and reports of take will be submitted to: NMFS Protected Resources Division, Anchorage Office (point of contact to be determined).

Description of the Action Area

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

For this project, the action area included an area 1,500 m from where land-based blasting occurs within 50 m of the shoreline within Passage Canal. The action area is further explained and justified below.

The effects to ESA-listed (hereafter, listed) species from the project involve impulsive noise from land-based blasting associated with exposed rock slope production along the project corridor near the shoreline (within 50 m) of Passage Canal. Subgrade blasting and any blasting activities greater than 50 m away from the shoreline would not be expected to be experienced by listed species, as the noise would be dampened by the ground, distance, trees and vegetation, and topography, and would not affect listed species or marine mammals in Passage Canal. No inwater or on-shore blasting would occur. Indirect effects of the action would be non-existent, since the project would not involve the addition of marine facilities or increase vessel traffic or other detectable noise within Passage Canal.

Exact information about the weights and placements of explosives that will be used in the project is unknown. Therefore, conservative distances to disturbance thresholds were estimated based on proxy source levels from acoustic modeling performed in conjunction with the Seward Highway MP 105-107 Windy Corner Project (Heat, Light, and Sound Research 2014). Blasting that has the potential to affect listed species (large rock cut areas closer than 50 m from Passage Canal shoreline) would occur at two locations along the proposed roadway mainline and spur road sections (Figure 3). These sections are elevated at least 10 m above sea level or higher.

In-water Noise

Using the best available science, National Marine Fisheries Service (NMFS) has developed acoustic thresholds that identify the received level of sound above which exposed marine mammals would be potentially injured (Level A harassment) or to be behaviorally disturbed (Level B harassment) (NMFS 2018). This guidance largely relates to in-water sound sources, and only a few studies examine the relationship between how sound generated in air is transmitted underwater (Peng and Zhang 2016).

Sound that is produced on land will experience a reduction in source level energy when it passes through the air/water interface because of the great difference between the acoustic impedances of the two mediums. The greater the difference between acoustic impedances of two materials, the greater the amount of reflection in sound when it passes the boundary between the two; because of the large ratio in acoustic impedance of air to that of water (1/3600), only a little energy generated by an airborne source would transmit into water and the rest would be reflected (Peng and Zhang 2016).

However, there is a potential for noise from the project to impact marine mammals if they are in Passage Canal during construction-related blasting activities. Using proxy source levels from upland blasting acoustic modeling in conjunction with the Seward Highway Windy Corner Project, the estimated distance to the Level A threshold (180 dBrms re:1 μ Pa for impulsive sources) is 358 m; the estimated distance to the Level B harassment threshold (160 dBrms re:1 μ Pa for impulsive sources) is 1,500 m (Figures 4 and 5).

In-air Noise

In addition to in-water noise, pinnipeds such as Steller sea lions can be adversely affected by inair noise. Loud noises can cause hauled-out pinnipeds to flush back into the water, leading to disturbance and possible injury. NMFS has established an in-air noise disturbance threshold of 100 dBrms re:20µPa for Steller sea lions (NMFS 2020). Distances to thresholds from in-air noise was estimated using the average maximum noise levels from rock blasting measured at 50 ft (126 dB; Washington State Department of Transportation 2020). The predicted distances to the in-air noise disturbance threshold for hauled-out sea lions (100 dBrms) based on this proxy source level will not extend more than 300 m from blasting activities. Since 300 m is a shorter distance than 1,500 m, and for ease in monitoring requirements, the threshold distance of 1,500 m will be used for all marine mammals.

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Figure 3. Proposed Nearshore Rock Cut Areas



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Figure 4. Shotgun Cove Road Extension Project Action Area

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Figure 5. Shotgun Cove Road Extension Project Action Area

NMFS Listed Species and Critical Habitat in the Action Area

Within the action area, the following ESA-listed species may occur.

- Endangered Northeast Pacific Stock fin whale (*Balaenoptera physalus*)
- Endangered Western North Pacific Distinct Population Segment (DPS) and threatened Mexico DPS humpback whale (*Megaptera novaeangliae*)
- Endangered Western DPS Steller sea lion (*Eumetopias jubatus*)

Critical habitat has been designated for Western DPS Steller sea lions approximately 0.5 miles east of the project area. Critical habitat for Western North Pacific DPS and Mexico DPS humpback whales has been proposed by NMFS but not finalized by the date of this letter. Critical habitat for fin whales has not been designated.

Northeast Pacific Stock Fin Whales

The fin whale was listed as endangered under the ESA on December 2, 1970 (35 FR 18319). NMFS completed a recovery plan for the fin whale in 2010 (75 FR 47538). Fin whales are found seasonally off the coast of Alaska, mainly during the summer months when they migrate north to feeding grounds following prey movements. There are no reliable estimates of current and historical abundances for the entire Northeast Pacific Stock, and stock assessments for fin whales vary widely because they are a pelagic species and difficult to track. Surveys in the Gulf of Alaska in 2017 estimated a population of 3,168 fin whales (Muto et al. 2019). No critical habitat has been designated for fin whales.

Fin whales occur very rarely within Passage Canal, typically during the summer but may occur as early as April. Usually fin whales do not migrate as far north as the Gulf of Alaska until May and generally remain at the entrance to Prince William Sound, preferring to travel in deep waters away from the coast rather than the coastal waters near the project area (NMFS 2010; Consiglieri et al. 1982). It is unlikely that this species would be in the vicinity of the proposed project during construction because sightings of fin whales are extremely rare near Whittier (DOT&PF 2019). If present in this region, they would be foraging, moving into and out of feeding areas and would only be seen intermittently. Breeding occurs in tropical areas during the winter months (NMFS 2020a).

Fin Whale Critical Habitat

Critical habitat has not been designated for fin whales (NMFS 2010).

Based on the information above, fin whales are not expected in the project area because they are rare in Passage Canal. We conclude that it would be extremely unlikely to encounter a fin whale in the action area; however, the contractor would implement shutdown procedures if a fin whale is observed likely to enter the shutdown zone.

Humpback Whale

The humpback whale was listed as endangered under the Endangered Species Conservation Act (ESCA) on December 2, 1970 (35 FR 18319). Congress replaced the ESCA with the ESA in 1973, and humpback whales continued to be listed as endangered. NMFS' recovery plan for

humpback whales was completed in 1991. NMFS completed a global status review of humpback whales and on September 8, 2016 published a final rule that changed the status of humpback whales under the ESA (81 FR 62259). Under a final rule, the Western North Pacific DPS is listed as endangered, the Mexico DPS is listed as threatened, and the Hawaii DPS (which includes the majority of whales found in the Gulf of Alaska) is not listed (81 FR 66260; September 8, 2016). Based on an analysis of migration between winter mating/calving areas and summer feeding areas using photo-identification, Wade et al. (2016) concluded that whales feeding in Prince William Sound waters belong primarily to the Hawaii DPS (now recovered), with small contributions of threatened Mexico DPS (about 10 percent) and endangered Western North Pacific DPS (less than 1 percent). The proposed project is located within what Wade et al. classifies as the summer feeding area for these DPS. Humpback whales usually do not return from their more temperate breeding grounds until May, but may be seen in Prince William Sound in all months of the year. Humpback whales generally visit this region to feed on the abundant crustacean and small fish species in the summer, and they typically would stay in this region only intermittently. Anecdotal reports from whale watching charters based in Whittier indicate that these whales appear only very rarely in Passage Canal, perhaps as little as once per year (Alaska Department of Transportation & Public Facilities 2019).

Similar to the rest of Prince William Sound, based on the analysis of Wade et al., there is an 89 percent probability that humpback whales occurring in the action area belong to the non-listed (recovered) Hawaii DPS and an 11 percent probability that humpback whales occurring in Passage Canal belong to the threatened Mexico DPS or endangered Western North Pacific DPS.

Humpback Whale Critical Habitat

Prince William Sound is proposed as critical habitat for the Mexico DPS of humpback whales in a proposed rule to designate critical habitat for the Central America, Mexico, and Western North Pacific DPS of humpback whales that was published on October 9, 2019 in the Federal Register (84 FR 54354). The comment period for the proposed rule closed on January 31, 2020; however, a final determination has not yet been made. Critical habitat for humpback whales will not be considered further in this consultation.

Given their widespread range and abundant food resources in other areas of Prince William Sound, we conclude that humpback whales are unlikely to be in the project action area during the proposed project activities; however, the contractor would implement shutdown procedures if a humpback whale is observed likely to enter the shutdown zone.

Steller Sea Lion

The Steller sea lion was listed as a threatened species under the ESA on November 26, 1990 (55 FR 49204). In 1997, NMFS reclassified Steller sea lions as two DPSs based on genetic studies and other information (62 FR 24345); at that time, the eastern DPS was listed as threatened and the western DPS was listed as endangered. Both the western DPS and eastern DPS are present in Prince William Sound (NMFS 2019, NMFS 2019a). The two DPS are divided at Cape Suckling, Alaska, which is approximately 130 miles southeast of the project site in Prince William Sound (Alaska Department of Fish & Game 2020a). On November 4, 2013, the eastern DPS was removed from the endangered species list (78 FR 66139). NMFS completed a recovery plan for the Steller sea lion in 1992 and a published a revision to the plan in 2008 (73 FR 11872). The

most recent population assessment for the U.S. portion of the western DPS Steller sea lion stocks is 53,628 animals, based on aerial photographic and land-based survey data (Muto et al. 2019). Steller sea lions are also a "strategic stock" under the Marine Mammal Protection Act and listed as depleted (Alaska Department of Fish & Game 2020).

Generally speaking, Steller sea lions occupy exposed rookeries and haulouts during the summer (late-May to early-July) and move towards protected areas in the winter (Alaska Department of Fish & Game 2020). Presence of this species could overlap with the time the proposed project is scheduled to take place. Steller sea lions do not migrate, but follow seasonal concentrations of prey and may return to this region in the fall for overwintering and foraging; individuals will remain in these protected areas for days at a time (NMFS 2020b).

There are no known haulouts or rookeries in Passage Canal, but concentrations of these animals have been documented near Whittier during May to August salmon runs. Anecdotally, small groups of up to ten sea lions haul out year-round on a buoy within Shotgun Cove. The buoy is approximately one mile southeast of the end of the project and on the other side of Trinity Point (Alaska Department of Transportation & Public Facilities 2019).

Steller Sea Lion Critical Habitat

NMFS designated critical habitat for the Steller sea lion on August 27, 1993 (58 FR 45269) and includes major rookeries and haulouts in Prince William Sound, and a 20 nautical mile (nm) zone around each. The project action area does not overlap Steller sea lion critical habitat. The closest designated haulout is Perry Island, approximately 21 nm southeast of the project area.

Given their widespread range and their opportunistic foraging strategies, we conclude that Steller sea lions may be in the project action area during the proposed project activities; however, the contractor would implement shutdown procedures if a Steller sea lion is observed likely to enter the shutdown zone.

Effects Determination

Acoustic Disturbance

Possible impacts to marine mammals exposed to loud underwater noise include mortality (directly from the noise, or indirectly from a reaction to the noise), injury, and disturbance ranging from severe (e.g., abandonment of vital habitat) to mild (e.g., startle response), if blasting is not shut down when individuals are within the action area.

Hearing loss, Discomfort, or Injury

If a received sound level is high enough, the sound may cause discomfort or tissue damage to auditory or other systems. An animal may experience temporary loss of hearing, partial, or full hearing loss. Marine mammals exposed to high received sound levels may experience non-auditory physiological effect such as increased stress, neurological effects, bubble formation, resonance effects, and other types of organ or tissue damage. Permanent, partial, or full hearing loss may occur if marine mammals are exposed to underwater sounds exceeding the injury threshold of 180 or 190 dB re:1µPa (NMFS 2018). Although proposed blasting will introduce impulsive sounds into the water, the activities are not expected cause hearing loss, discomfort, or

injury due to the implementation of previously discussed mitigation measures, including the maintenance of an exclusion zone.

Behavioral Changes

Marine mammals that are exposed to elevated noise levels associated with anthropogenic noise could exhibit behavioral changes such as increased swimming speed, increased surfacing time, or decreased foraging. Additional responses of marine mammals to blasting activity might include a reduction of acoustic activity, a reduction in the number of individuals in the area, and avoidance of the area. Of these, temporary avoidance of the noise-impacted area is anticipated to be the most likely response on this project. Avoidance responses may be initially strong if an individual moves rapidly away from the source or weak if animal movement is only slightly deflected away from the source. Individuals likely return after completion of blasting, as demonstrated by a variety of studies about temporary displacement of marine mammals by industrial activity (Richardson et al. 1995).

The project area is within an existing navigation channel, and therefore marine mammals that come into the area may already be habituated to increased noise levels. Sound levels from existing vessel traffic (including cruise ships, day cruises, barges, and recreational boaters), vessel loading and unloading, and Alaska Railroad operations near Whittier have likely resulted in the habituation of whales and sea lions to noise in the area, since they are sometimes seen in the area when vessels are nearby.

Masking

Marine mammal auditory signals may be masked by increased noise levels or overlapping frequencies. As previously mentioned, Passage Canal and the action area currently experiences elevation noise and it is likely that marine mammals have been habituation to the potential for masking.

We do not anticipate that nearshore rock cut blasting will expose any ESA-listed species to SPLs that reach Level A or B acoustic harassment thresholds because: 1) the projects incorporate monitoring and mitigation measures that includes a conservative 1,500-m exclusion zone which minimizes the risk of exposure for any individual that enters it; 2) sound vibrations from blasting will be dampened by not being directly in the water, thereby reducing the likelihood of exposure to listed species; and 3) sound levels from existing vessel traffic and loading and Alaska Railroad operations has resulted in habituation to noise among whales (particularly humpback whales) and sea lions occurring near the area.

Noise Impact to Prey Species

Fish populations in the project area that serve as whale and Steller sea lion prey could be affected by noise from blasting. High underwater SPLs have been documented to alter behavior, cause hearing loss, and injure or kill individual fish by causing serious internal injury (Hastings and Popper 2005). However, given the small area of the project site, the short duration of nearshore blasting, and the fact that any physical changes to this habitat would not be likely to reduce the localized availability of fish, it is unlikely that listed whales or Steller sea lions would be affected. FHWA considers potential impacts to prey resources to be discountable.

Habitat Alteration

The project would occur over 21 nm from the nearest Steller sea lion critical habitat, and the project is not expected to impact any of the essential features that define critical habitat for either species. Substrate disturbance or increased turbidity would not occur as a result of blasting, as no in-water blasting is planned. No habitat disturbance from the proposed project is anticipated.

Construction of this project will not result in additional noise in the action area, and thus, there are no anticipated impacts to listed species or their prey from noise in the future. We have also considered the likelihood that an increase in noise from blasting activities associated with the proposed project would generally increase the risk of impacts to marine mammals and their prey from acoustic disturbance or habitat alteration in the action area above baseline conditions. Blasting will occur over a very short time period. Given the extremely short time that noise will be above existing levels in this reach of Passage Canal, effects to listed species and their prey are insignificant.

Conclusions

FHWA, as the lead federal agency, is requesting informal consultation as allowed by 51 CFR § 402.12(j). Based on the analysis that all effects of the proposed project will be insignificant and/or discountable, we have determined that the Shotgun Cove Road Extension Project is not likely to adversely affect any listed species or critical habitat under NMFS's jurisdiction. We have used the best scientific and commercial data available to complete this analysis. We request your concurrence with this determination.

FHWA understands, as stipulated in ESA Section 7(b)(1)(A) and 50 CFR § 402.14(e) informal consultation will be initiated by your receipt of this informal consultation request and will conclude within 30 days of that date. We look forward to receiving a letter from you in 30 days concurring with our effect determinations.

If you have any questions or need additional information, please contact Seth English-Young at 360-619-7803 or at <u>seth.english-young@dot.gov</u>.

Sincerely,

Scott Smithline Environmental Manager FHWA - Western Federal Lands Highway Division

cc:

Tim Charnon, US Forest Service

Scott Korbe, City of Whittier

Seth English-Young, FHWA-WFLHD

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NMFS CONCURRENCE



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

January 20, 2021

Mr. Scott Smithline Western Federal Lands Highway Division Federal Highway Administration 610 E. Fifth Street Vancouver, WA 98661

Re: Shotgun Cove Road Extension Project Letter of Concurrence, NMFS #AKRO-2020-02892, HFL-17

Dear Mr. Smithline:

The National Marine Fisheries Service (NMFS) has completed informal consultation under section 7(a)(2) of the Endangered Species Act (ESA) regarding the proposed extension of Shotgun Cove Road in Whittier, Alaska (Figure 1). The Western Federal Lands Division of the Federal Highway Administration (FHWA) requested written concurrence that the proposed action may affect, but is not likely to adversely affect, the endangered fin whale (*Balaenoptera physalus*), endangered Western North Pacific Distinct Population Segment (DPS) and threatened Mexico DPS humpback whale (*Megaptera novaeangliae*), or endangered Western DPS Steller sea lion (*Eumetopias jubatus*). Based on our analysis of the information you provided to us, and additional literature cited below, NMFS concurs with your determination.

This letter underwent pre-dissemination review in compliance with applicable Data Quality Act guidelines. A complete administrative record of this consultation is on file in this office.

FHWA determined that this project will have no effect on Steller sea lion critical habitat (English-Young, pers. comm., 10/15/20) because the action area does not extend into critical habitat. Therefore, Steller sea lion critical habitat will not be discussed further in this consultation.

Consultation History

NMFS received your request for consultation on September 28, 2020. NMFS requested more information about the FHWA determination for Steller sea lion critical habitat and duration of the project via email on October 15, 2020. On October 15, 2020, FHWA provided NMFS with the additional information and NMFS initiated consultation the same day.

Description of the Proposed Action

The proposed project extends Shotgun Cove Road approximately 2.5 miles from its existing terminus near Second Salmon Run (Mile 2.0) onto US Forest Service land at Trinity Point (Mile 4.5) in Whittier, Alaska. The work is expected to commence in 2022 and may take 5-10 construction seasons (i.e. years) to complete; not necessarily consecutive.





Figure 1. Proposed Shotgun Cove Road extension (dotted blue line) from the existing Shotgun Cove Road (solid blue line).

The road extension will be 250 to 350 feet (76 to 107 meters) from the shoreline and includes an approximately 80-foot wide clearing limit, two 10-foot gravel travel lanes, two 5-foot gravel shoulders, and a rock catchment area. Smaller spur roads will be built that will consist of approximately a 65-foot clearing limit and two 9-foot gravel travel lanes. Drainage swales or rock cuts along uphill sides, and culverts at major creeks and small drainage features will also be included.

Construction materials and equipment will be transported to the project site via the existing road, not via barge or other ocean vessels.

The project aims to use cut fills from the site by using blasted rock for the embankments and road section. Material from the road excavation will be hauled by truck to the rock crushing area at the staging area.

Two types of blasting will be used in this project. <u>Subgrade blasting</u> fragments the bedrock underneath the road section to create a free draining subgrade. It will occur along much of the proposed roadway and requires small charges (40 lbs per delay) with little above-ground impact. <u>Exposed rock blasting</u> will be used in two areas where steep slopes require benching for road construction. This project will use a series of 100- to 200-pound (45 to 91 kg) explosive charges detonated sequentially with 25 millisecond delays. There will be approximately 8 blasts required over 30 days of blasting within 50 meters of the shoreline that have the potential to be heard by marine mammals in Passage Canal (5 blasts from Station 165+50 to 168+50; 3 blasts from Station 437-25 to 444+00; see blast locations in Figure 2, Figure 4). There will be no more than one blast per day.



Figure 2. Proposed nearshore rock cut areas

Action Area

The action area is defined in the ESA regulations (50 CFR § 402.02) as the area within which all direct and indirect effects of the project will occur. The action area is distinct from and larger than the project footprint because some elements of the project may affect listed species some distance from the project footprint. The action area, therefore, extends out to a point where no measurable effects from the project are expected to occur. While all blasting will occur on land, it is anticipated that any near-shore blasting (within 200 meters of the shoreline) may propagate into the water. We use modeling for the propagation of sound from near-shore exposed rock blasting into the water to estimate the distances from shore into the water that sound could travel (see Appendix A). Blasting occurring more than 40 m from the shoreline is anticipated to propagate 330 m or less into the water before attenuating to $\leq 160 \text{ dB}_{rms}$ re 1µPa (the level at which we would expect marine mammals to be behaviorally disturbed, known as Level B, for impulsive sources¹), and blasting closer than 40 m from shoreline is anticipated to propagate up

¹ We express noise as the sound force per unit micropascals (μ Pa), where 1 pascal (Pa) is the pressure resulting from

to about 1,500 m into the water before attenuation to $\leq 160 \text{ dB}_{rms}$ re 1µPa. The modeling does not take into account that blasting is occurring at higher elevations than sea level, thus the propagation estimates are conservative distances as sound would attenuate more to reach sea level.

In-air noise was not used to define the action area because the distance to Level B was less than the in-water Level B distance.

The action area extends 1,500 meters from the two points where land-based exposed rock blasting occurs within 40 meters of the shoreline within Passage Canal (Figure 3), and to 350 m from shore for the rest of the length of the proposed Shotgun Road extension. As described above, although in-water attenuation is expected to occur at 330 m, FHWA agreed to a conservative 350 m shutdown zone. In some cases, it will extend on either side of a spit of land as the road heads towards Trinity Point.



Figure 3. Shotgun Cove Road Extension action areas extending 1,500 meters from both exposed rock blast locations.

a force of one newton exerted over an area of one square meter. Sound pressure level is expressed as the ratio of a measured sound pressure and a reference level. The commonly used reference pressure level in acoustics is 1 μ Pa, and the units for underwater sound pressure levels are decibels (dB) expressed in root mean square (rms), which is the square root of the arithmetic average of the square instantaneous pressure values.

Mitigation Measures

The FHWA informed NMFS in its consultation request that the project would incorporate the following mitigation measures to minimize the risk of harm to listed marine species from dry blasting on land:

- 1. No in water work in the Passage Canal will occur.
- 2. Blasting procedures will be designed to minimize spillover of blasted material outside of the designated work zone.
- 3. One or more protected species observers (PSOs), able to accurately identify and distinguish species of Alaska marine mammals, will be present before and during all blasting activities.
- 4. Prior to blasting activities, shutdown zones will be established. For this project, the shutdown zones include:
 - a. All marine waters within 1,500 m of the shoreline when exposed rock blasting occurs closer than 40 meters from shore, or
 - b. All marine waters within 350 m of the shoreline when exposed rock blasting occurs farther than 40 meters from shore.
- 5. Blasting will not be conducted unless all waters within and adjacent to the shutdown zone are clearly visible.
- 6. The PSO(s) will be positioned such that the entire shutdown zone is visible to them (e.g., situated on a platform, elevated promontory, boat or aircraft).
- 7. The PSO(s) will have the following to aid in determining the location of observed listed species, to take action if listed species enter the shutdown zone, and to record these events:
 - a) Binoculars
 - b) Range finder
 - c) GPS
 - d) Compass
 - e) Two-way radio communication with construction foreman/superintendent
 - f) A log book of all activities which will be made available to NMFS upon request
- 8. The PSO(s) will have no other primary duty than to watch for and report on events related to marine mammals.
- 9. The PSO(s) will be in direct communication with on-site project lead and will have shutdown authority.
- 10. The PSO(s) will work in shifts lasting no longer than 4 hours with at least a 1-hour break between shifts, and will not perform duties as a PSO for more than 12 hours in a 24-hour period (to reduce PSO fatigue).
- 11. The PSO(s) will scan the shutdown zone for the presence of listed species for 30 minutes before any blasting activities take place or if more than 30 minutes has elapsed in absence of blasting activity.
 - a) If the shutdown zone has been observed to be clear of listed species for 30 minutes, blasting activities may commence.
 - b) If any listed species are present within a shutdown zone, blasting activities will not begin until the animal(s) has left the shutdown zone or no listed species have been

observed in the shutdown zone for 15 minutes (for pinnipeds) or 30 minutes (for cetaceans).

- 12. Throughout all blasting activity, the PSO(s) will continuously scan the shutdown zone to ensure that listed species do not enter it.
 - a) If any listed species enter, or appear likely to enter, the shutdown zone during blasting activities, all blasting activity will cease immediately. Blasting activities may resume when the animal(s) has been observed leaving the area on its own accord. If the animal(s) is not observed leaving the area, blasting may begin 15 minutes (for pinnipeds) or 30 minutes (for cetaceans) after the animal is last observed in the area. <u>Note</u>: If a marine mammal is first observed within the shutdown zone during construction operations, the PSO will notify NMFS immediately after ordering a shutdown of operations.
- 13. Monthly PSO reports and a final PSO report with observation forms will be provided to NMFS.
 - a) The reporting period for each monthly PSO report will be the entire calendar month, and reports will be submitted by close of business on the fifth day of the month following the end of the reporting period (e.g., the monthly report covering April 1 to 30, 2021, will be submitted to the NMFS by close of business on May 5, 2021).
 - b) PSO report data will also include the following for each listed marine mammal observation or "sighting event" if repeated sightings are made of the same animal(s):
 - i. Species, date, and time for each sighting event.
 - ii. Number of animals per sighting event; and number of adults/juveniles/calves per sighting event.
 - iii. Primary, and, if observed, secondary behaviors of the marine mammals in each sighting event.
 - iv. Geographic coordinates for the observed animals, with the position recorded by using the most precise coordinates practicable (coordinates must be recorded in decimal degrees, or similar standard, and defined coordinate system).
 - v. Time of the most recent blasting or other project activity prior to marine mammal observation.
 - vi. Environmental conditions as they existed during each sighting event, including Beaufort sea state, weather conditions, visibility (km/mi), lighting conditions, and percent ice cover.
 - c) A final technical report will be submitted to NMFS within 90 days after the final blast sequence has been completed for the project. The report will summarize all activities associated with the proposed action, and results of marine mammal monitoring conducted during blasting activities. The final technical report will include items from the list above as well as the following:
 - i. Summaries of monitoring efforts including total hours, total distances, and marine mammal distribution through the study period, accounting for sea state and other factors that affect visibility and detectability of marine mammals.
 - ii. Analyses on the effects from various factors that may have influenced detectability of marine mammals (e.g., sea state, number of observers, fog, glare, and other factors as determined by the PSOs).

- iii. Species composition, occurrence, and distribution of marine mammal sightings, including date, water depth, numbers, age/size/gender categories (if determinable), group sizes, and ice cover.
- iv. Effects analyses of the project activities on listed marine mammals.
- v. Number of marine mammals observed (by species) during periods with and without project activities (and other variables that could affect detectability), such as:
 - 1) Initial marine mammal sighting distances versus project activity at time of sighting.
 - 2) Observed marine mammal behaviors and movement types versus project activity at time of sighting.
 - 3) Numbers of marine mammal sightings/individuals seen versus project activity at time of sighting.
 - 4) Distribution of marine mammals around the action area versus project activity at time of sighting.
- 14. Though take is not authorized, if a listed marine mammal is taken (i.e., a listed marine mammal(s) is observed entering the 1,500-m exclusion zone before blasting operations can be shut down), reinitiation of consultation is required, and the take must be reported to NMFS within one business day. PSO records for listed marine mammals taken by project activities must include:
 - a) all the information required to be listed in the PSO report,
 - b) number of listed animals taken,
 - c) the date and time of each take,
 - d) the cause of the take (e.g., blasting operations),
 - e) the time the animal(s) entered the exclusion zone, and, if known, the time it exited the zone, and
 - f) mitigation measures implemented prior to and after the animal entered the exclusion zone.
- 15. Monthly and final reports and reports of take will be submitted to <u>AKR.section7@noaa.gov</u>.

Summary of Agency Contact Information

Reason for Contact	Contact Information
Consultation Questions	Greg Balogh: greg.balogh@noaa.gov
Final Reports & Data Submittal	AKR.section7@noaa.gov
Stranded, Injured, or Dead Marine Mammal	Stranding Hotline (24/7 coverage) 877-925-7773
In the event that this contact information becomes obsolete	NMFS Anchorage Main Office: 907-271-5006

Listed Species and Critical Habitat

Within the action area, the following ESA-listed species may occur: endangered Northeast Pacific stock fin whale, endangered western North Pacific DPS and threatened Mexico DPS humpback whale, and endangered western DPS Steller sea lion.

Western DPS Steller Sea Lions

The Steller sea lion was listed as a threatened species under the ESA on November 26, 1990 (55 FR 49204). On May 5, 1997, NMFS reclassified Steller sea lions into two DPSs based on genetic studies and other information (62 FR 24345); at that time the eastern DPS was listed as threatened and the western DPS was listed as endangered. The eastern DPS has been removed from the endangered species list (78 FR 66140, 11/04/2013). Information on Steller sea lion biology and habitat (including critical habitat) is available at: http://alaskafisheries.noaa.gov/pr/steller-sea-lions

The action area is approximately 21 nm northwest of the nearest designated haulout at Perry Island and a half mile west of the nearest designated foraging area. We assume western DPS Steller sea lions may be present in the Shotgun Cove Road Extension project area for the following reasons:

- Steller sea lions (5-10 individuals at a time) are known to utilize a haulout in Shotgun Cove.
- Potential prey sources exist near the project area (ADF&G 2020): Trinity Creek and another unnamed creek are along the project area are utilized by pink salmon for spawning.

The ability to detect sound and communicate underwater is important for a variety of Steller sea lion life functions, including reproduction and predator avoidance. NMFS categorizes Steller sea lions in the otariid pinniped functional hearing group, with an applied frequency range between 60 Hz and 39 kHz in water (NMFS 2018).

Humpback Whales

The humpback whale was listed as endangered under the Endangered Species Conservation Act (ESCA) on June 2, 1970 (35 FR 8491 (baleen whales listing; 35 FR 18319, December 2, 1970 (humpback whale listing)). Congress replaced the ESCA with the ESA in 1973, and humpback whales continued to be listed as endangered. NMFS conducted a global status review that changed the status of humpback whales under the ESA and divided the species into 14 DPSs, three of which occur in waters of Alaska. The Hawaii DPS (which includes most humpback whales found in the Aleutian Islands, Bering Sea, Gulf of Alaska, and Southeast Alaska) is not listed (81 FR 62260; September 8, 2016). The Western North Pacific DPS (which includes a small proportion of humpback whales found in the Aleutian Islands, Bering Sea, and Gulf of Alaska) is listed as endangered; the Mexico DPS (which includes a small proportion of humpback whales found in the Aleutian Islands, Bering Sea, Gulf of Alaska, and Southeast Alaska) is listed as endangered; the Mexico DPS (which includes a small proportion of humpback whales found in the Aleutian Islands, Bering Sea, Gulf of Alaska, and Southeast Alaska) is listed as endangered; the Mexico DPS (which includes a small proportion of humpback whales found in the Aleutian Islands, Bering Sea, Gulf of Alaska, and Southeast Alaska) is listed as threatened. Critical habitat has not been designated for the Western North Pacific or Mexico DPSs.

The abundance estimate for humpback whales in the Gulf of Alaska is estimated to be 2,089 (CV=0.09) animals, which includes whales from the Hawaii DPS (89%), Mexico DPS (10.5%), and Western North Pacific DPS (0.5%) (NMFS 2016a, Wade et al. 2016). Humpback whales occur throughout the central and western Gulf of Alaska from Prince William Sound to the Shumagin Islands. Seasonal concentrations are found in coastal waters of Prince William Sound, Barren Islands, Kodiak Archipelago, Shumagin Islands, and south of the Alaska Peninsula. Large numbers of humpbacks have also been reported in waters over the continental shelf, extending up to 100 nm offshore in the western Gulf of Alaska (Wade et al. 2016).

Humpback whales may be seen year round in Prince William Sound. Anecdotal reports from whale watching charters based in Whittier indicate that humpback whales appear rarely in Passage Canal, perhaps as infrequently as once per year (AKDOT&PF 2019).

Humpback whales produce a variety of vocalizations ranging from 20 Hz to 10 kHz (Winn et al. 1970, Tyack and Whitehead 1983, Payne and Payne 1985, Silber 1986, Thompson et al. 1986, Richardson et al. 1995, Au 2000, Frazer and Mercado III 2000, Erbe 2002, Au et al. 2006, Vu et al. 2012). NMFS categorizes humpback whales in the low-frequency cetacean functional hearing group, with an applied frequency range between 7 Hz and 35 kHz (NMFS 2018).

Additional information on humpback whale biology and natural history is available at: <u>https://www.fisheries.noaa.gov/species/humpback-whale</u> <u>https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region</u>

Fin Whales

The fin whale was decimated by commercial whaling in the 1800s and early 1900s. It was listed as an endangered species under the ESCA on June 2, 1970 (35 FR 8491 (baleen whales listing); 35 FR 18319, December 2, 1970 (fin whale listing)), and continued to be listed as endangered following passage of the ESA. Information on fin whale biology and habitat is available at: https://www.fisheries.noaa.gov/species/fin-whale

https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stockassessment-reports-region

Fin whales are frequent in Prince William Sound from April through June when they are migrating through the Gulf of Alaska to the Bering Sea (NMFS 2010). Fin whales prefer to travel in deep waters away from the coast rather than the coastal waters, such as those associated with the project area. There has been one record of a fin whale within Passage Canal in the past 20 years (ADOT&PF 2019). Therefore it is unlikely that fin whales will be in the vicinity of the proposed project.

Fin whales produce a variety of low-frequency sounds in the 10 Hz to 0.2 kHz range (Watkins 1981, Watkins et al. 1987, Edds 1988, Thompson et al. 1992). While there is no direct data on hearing in low-frequency cetaceans, the applied frequency range is anticipated to be between 7 Hz and 35 kHz (NMFS 2018). Synthetic audiograms produced by applying models to X-ray computed tomography scans of a fin whale calf skull indicate the range of best hearing for fin

whale calves to range from approximately 20 Hz to 10 kHz, with maximum sensitivities between 1 to 2 kHz (Cranford and Krysl 2015).

Effects of the Action

For purposes of the ESA, "effects of the action" means all consequences to listed species or critical habitat that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR § 402.02). The applicable standard to find that a proposed action is "not likely to adversely affect" listed species or critical habitat is that all of the effects of the action are expected to be insignificant, extremely unlikely to occur, or completely beneficial. "Insignificant effects" relate to the size of the impact and are those that one would not be able to meaningfully measure, detect, or evaluate; insignificant effects should never reach the scale where take occurs.

This consultation includes NMFS guidance on the term "harass," which means to "create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering" (Wieting 2016).

The potential effects of the proposed action on listed species and critical habitat include acoustic disturbance from exposed rock blasting.

Acoustic Thresholds

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

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

Under the PTS Technical Guidance, NMFS uses the following thresholds (Table 2) for underwater sounds that cause injury, referred to as Level A harassment under section 3(18)(A)(i) of the MMPA (16 U.S.C. § 1362(18)(A)(i)) (NMFS 2018). Different thresholds and auditory weighting functions are provided for different marine mammal hearing groups, which are defined in the Technical Guidance (NMFS 2018). The generalized hearing range for each hearing group is provided in Table 1.

Table 1. Underwater marine mammal hearing groups specific to this action (NMFS 2018).

Hearing Group	ESA-listed Marine Mammals In the Project Area	Generalized Hearing Range ¹	
Low-frequency (LF) cetaceans (Baleen whales)	Humpback and fin whales	7 Hz to 35 kHz	
Otariid pinnipeds (OW) (sea lions and fur seals)	Steller sea lions	60 Hz to 39 kHz	
¹ Respresents the generalized hearing range for the entire group as a composite (i.e., all species within the group), where individual species' hearing ranges are typically not a broad. Generalized hearing range chosen based on ~65 db threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall et al. 2007) and PW pinniped (approximation).			

These acoustic thresholds are presented using dual metrics of weighted cumulative sound exposure level (L_E) and peak sound level (L_{pk}) for impulsive sounds, and weighted L_E for non-impulsive sounds.

Table 2. P	TS Onset Acou	stic Thresholds fo	r Level A	Harassment f	or marine r	nammals j	present in
this projec	ct action area (1	NMFS 2018).				-	

	PTS Onset Acoustic Thresholds* (Received Level)			
Hearing Group	Impulsive Non-impulsive			
Low-Frequency (LF) Cetaceans	<i>L</i> pk,flat: 219 dB <i>L</i> _E ,LF,24h: 183 dB	L _E ,LF,24h: 199 dB		
Otariid Pinnipeds (OW) (Underwater)	<i>L</i> pk,flat: 232 dB <i>L</i> _E ,OW,24h: 203 dB	<i>L</i> _E ,OW,24h: 219 dB		

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

<u>Note</u>: Peak sound pressure (L_{pk}) has a reference value of 1 μ Pa, and cumulative sound exposure level (L_E)

has a reference value of 1μ Pa²s. The subscript "flat" is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds), and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (i.e., varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

In addition, NMFS uses the following thresholds for in-air sound pressure levels from broadband sounds that cause Level B behavioral disturbance under section 3(18)(A)(ii) of the MMPA (16 U.S.C. § 1362(18)(A)(ii)):

• 100 dB_{rms} re 20µPa for non-harbor seal pinnipeds

Acoustic Disturbance

Possible impacts to marine mammals from acoustic disturbance include mortality, injury, and disturbance. Acoustic disturbance can cause discomfort or tissue damage to auditory or other systems. Marine mammals may also experience increased stress, neurological effects, or other physical impacts. Permanent, partial, or full hearing loss may occur if marine mammals are exposed to underwater sounds exceeding the Level A injury threshold (Table 2); however that is not anticipated to occur during this project due to the small amount of blasting sound energy transmitted into the water from terrestrial operations. Marine mammals may alter their behavior such as increasing swimming speed, decreasing foraging, or increasing their surface time. Auditory masking may also occur during blasting due to the increased noise levels or overlapping frequencies.

While source energy levels are expected to be dampened by impedance between water and air, there is potential for noise from the project to impact marine mammals in Passage Canal during the exposed rock blasting. There will be approximately 8 exposed rock cut blasts required over 30 days of blasting (over 5-10 years) within 40 meters of the shoreline that have the potential to be heard by marine mammals in Passage Canal; only one blast is anticipated to occur per day. Vegetation and topography is expected to dampen the sound generated by blasting, and blasting occurring at least 10 meters above sea level will further attenuate sound propagation. No inwater or on-shoreline blasting will occur.

The FHWA proposed a shut-down zone for marine mammals of 1,500 meters from shore at the two sites at which exposed rock blasting will occur within 40 meters of shore. NMFS additionally proposed, and FHWA agreed to, a shutdown zone of 350 m from shore for the rest of the extent of blasting more than 40 meters from shore.

In-air sound levels for exposed rock blasting are expected to drop to 100 dB_{rms} re 1 μ Pa (in-air disturbance threshold) at 300 meters, thus NMFS concludes that in-air sound should not impact Steller sea lions due to the 350 meter and 1,500 meter shut-down zones associated with in-water sound propagation.

Based on the very conservative shutdown zones to ensure that no humpback or fin whales or Steller sea lions are impacted by the blasting, the low number of anticipated blasts over 5-10 years, the fact that humpback and fin whales only very infrequently utilize Passage Canal, and additional mitigation measures, NMFS concludes that the potential effects of sound generated by exposed rock blasting are insignificant.

Conclusion

Based on this analysis, NMFS concurs with your determination that the proposed action may affect, but is not likely to adversely affect, western DPS Steller sea lions, western North Pacific or Mexico DPS humpback whales, or fin whales. Reinitiation of consultation is required where discretionary federal involvement or control over the action has been retained or is authorized by law and if (1) take of listed species occurs, (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered,

(3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this concurrence letter, or (4) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR § 402.16).

Please direct any questions regarding this letter to Sarah Pautzke at Sarah.Pautzke@noaa.gov.

Sincerely,

Jonathan M. Kurland

Jonathan M. Kurland Assistant Regional Administrator for Protected Resources

cc: Seth English-Young (<u>Seth.English-Young@dot.gov</u>), Jennifer Chariarse (<u>Jennifer.Chariarse@dot.gov</u>), Scott Korbe (<u>SKorbe@whittieralaska.gov</u>), Carrie Connaker (<u>Carrie@solsticeak.com</u>), Robin Reich (<u>Robin@solsticeak.com</u>), Tim Charnon (<u>Tim.Charnon@usda.gov</u>), Kori Marchowsky (<u>Kori.Marchowsky@usda.gov</u>)

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Appendix A: Sound Calculations

Introduction

The results in this appendix are based on a range of potential upland blast distances from shore and estimating the sound pressure level (SPL) as measured in decibels (dB) generated in water from the transfer of energy from the blast site through the upland substrate, and subsequently from the upland substrate to water. Air to water transfer of energy was not considered as a source of in-water sounds as the water to air interface is a highly effective sound reflector.

The included calculations are unweighted values² for estimating areas of potential impacts to ESA-listed species. Peak SPLs are derived as described below in the methods and using the assumptions described there. The results derived in this document are most likely overestimates of potential impacts based on the use of conservative assumptions throughout the process.

The isopleths contained herein for behavior and hearing threshold shifts will be larger than a weighted estimation of potential impacts would be for most marine mammals based on the sound frequencies generated by explosives. Most of the wave energy from the use of explosives is clustered below 100 Hertz (Hz) (Stroujkova et al. 2012), while marine mammal hearing begins at 100Hz for low frequency cetaceans, with hearing thresholds that are much higher for other marine mammal species.

Methods

Peak particle velocity (PPV) was calculated using a standard calculator for estimating PPV based on explosive weight and distance from source blast from the shoreline, where D is distance from blast in meters and W is the weight of explosives in kg (Wright and Hopke 1998, after Duval and Petkof 1959):

$$PPV = 100(^{D}/_{W^{0.5}})^{-1.6}$$

PPV was converted into pressure³ at the interface between the rock substrate and water at the shoreline, where $V_R = PPV$ in cm/s, D_R is the substrate density (2.64g/cm3), and C_R is the substrate's wave propagation speed (457,200cm/s):

$$P_R = \frac{V_R D_R C_R}{2}$$

Transmission pressure was derived by calculating the ratio of acoustic impedance:

$$\frac{Z_W}{Z_R} = \frac{D_W C_W}{D_R C_W}$$

and substituting into the equation for the transfer of shock pressure between mediums:

² There is no weighting factor to sound exposure levels based on frequency for different functional groups of with different hearing ranges

³ Pressure was converted from dynes to kPa in this step, where 10,000 dynes = 1kPa

$$P_W = \frac{2({}^{Z_W}/{Z_R})P_R}{1 + ({}^{Z_W}/{Z_R})}$$

This calculation results in a pressure transference ratio of 0.2162kPa per 1kPa in the source substrate resulting in the following simplified formula:

$$P_W = 0.2162 P_R$$

The resulting loss of energy that occurs transitioning from rock to water is about 78.4%. This pressure at source is then substituted into NMFS Practical Spreading Loss Model formula using the source location of 0.1m, where TL is the transmission loss constant based on site conditions, R_1 is the received sound distance, and R_0 is the measured source distance.

Transmission Loss =
$$TL * \log_{(10)} (\frac{R_1}{R_0})$$

Substrate reference values were taken from Appendix II table of Wright and Hopke (1998) shown in Table 1, while standard temperature and pressure values were used for water and seawater.

Substrate	$D_R (g/cm^3)$	C _R (cm/s)
Rock (granite, dolomite, or similar)	2.64	457,200
Frozen Soil	1.92	304,800
Seawater	1.03	150,000
Water	1.00	146,300
Ice	0.98	304,800
Saturated Soil	2.08	146,300
Unsaturated Soil	1.92	45,700

Table 3. Substrate values for density and wave propagation speed for various media

Assumptions

All calculations are based on the use of 200lbs (90.82kg) of explosives per charge with a 25ms delay between charges. The source level at the blasting location was back-calculated from the $PPV = 100(D/W^{0.5})^{-1.6}$ calculation to be 8.1 mega Pascals at 0.1 m (the equivalent of 318dB in water).

We assumed that the local upland substrate was granite, basalt, dolomite, or similar (assuming a high density rock provides a conservative approach). Transmission loss is much higher in rock and is derived from the the PPV = $100(D/W^{0.5})^{-1.6}$ formula to be approximately 32, primarily due to increased acoustic impedance of solids compared to water. Additionally, there is a pressure/energy loss that occurs at the interface between the upland substrate and water (approximately 78.4% is for rock to water; this value varies based on substrate). For NMFS

Practical Spreading Loss Model to calculate SPL in water, we used a transmission loss (TL) constant of 15 to reflect the steep sides and deep waters of Passage Canal.⁴

Root mean square (RMS) values are used by NMFS to set isopleths for estimating behavioral impacts to protected species. RMS is derived by calculating the root of the square of the SPL over a selected time period of sound impact. As such, it is lower than the peak dB SPL. Based on extensive data from pile driving, a very conservative approach to estimated RMS when recorded data is not available is to assume that RMS is 10dB lower than the peak SPL, and that is the value we use in calculating isopleths to behavioral thresholds in our results below.

For sound exposure level (SEL), we again take a very conservative approach and assume that the SEL value is 10dB lower than peak SPL. This assumption is also well supported as a very conservative approach by data collected from pile-driving activities as well as Laughlin (2017) and BAART (2018). We are additionally being conservative by ignoring the blast occurring above sea level. We assume a linear distance from the blast source as though it were at sea level. However, because the blast is occurring on a slope, there is an increased linear distance between the blast and shoreline which results in additional energy loss before the sound reaches the water.

SEL is used to estimate the total amount of received sound energy over a 24-hour period, which is the cumulative sound exposure level (cSEL). NMFS assumes that received SEL above 150dB in water can accumulate over a 24-hour period and potentially result in injury from tissue fatigue or other causes when cSEL exceeds 187 dB for an individual animal. cSEL is calculated by adding the expected SEL for a single charge blast (SELss, as measured at the distance of concern) to a log derived value based on the total number of charge blasts during a day ($n_{strikes}$). It is represented by the following formula:

 $cSEL = SEL_{SS} + 10 * log_{10}^{(n_{strikes})}$

Results

The following table contains the in-water isopleth distances from shore based on 200 lb upland blasts at various distances from shore. For example, a 200 lb blast occurring 20 m inland has a 160 dB RM level isopleth distance from shore into the ocean of 1,447.12 m.

⁴ A TL of 10 is used for shallow waters with cylindrical expansion and a TL of 20 is used for spherical expansion of sound energy

Blast Distance from Shore (m)	20m	30m	40m	50m	75m	100m	150m	200m
Marine Mammal PTS Isopleth (203dB)	9.13	3.84	2.08	1.29	0.54	0.29	0.12	0.07
Marine Mammal TTS Isopleth (188dB)	91.31	38.45	20.81	12.93	5.44	2.95	1.24	0.67
Mammal Behavior Isopleth (160dB RMS)	1,447.12	609.32	329.84	204.91	86.28	46.71	19.67	10.65
cSEL Zone (100 shots)	494.1	208.1	112.6	70.0	29.5	15.9	6.7	3.6
cSEL Zone (200 shots)	784.4	330.3	178.8	111.1	46.8	25.3	10.7	5.8

Table 4. dB Peak value isopleth distances from shoreline based on uplands blasts using 200lb of explosives per charge at various distances from shoreline (calculated using dB re 1 μ Pa for in water noise). All values in meters.

Validation

Results were validated against empirical observations of test cases using explosives at Eagle River Flats (BAART 2018) and Keechelus Lake (Laughlin 2017).

Sources

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U.S. FISH AND WILDLIFE SERVICE IPAC REPORT



United States Department of the Interior

FISH AND WILDLIFE SERVICE Anchorage Fish And Wildlife Conservation Office 4700 Blm Road Anchorage, AK 99507 Phone: (907) 271-2888 Fax: (907) 271-2786



In Reply Refer To: Consultation Code: 07CAAN00-2019-SLI-0312 Event Code: 07CAAN00-2020-E-00866 Project Name: Shotgun Cove Road; Whittier, Alaska August 12, 2020

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated critical habitat, and some candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Please note that candidate species are not included on this list. We encourage you to visit the following website to learn more about candidate species in your area: <u>http://www.fws.gov/alaska/fisheries/fieldoffice/anchorage/endangered/candidate_conservation.htm</u>

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/ eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Anchorage Fish And Wildlife Conservation Office

4700 Blm Road Anchorage, AK 99507 (907) 271-2888

Project Summary

Consultation Code:	07CAAN00-2019-SLI-0312
Event Code:	07CAAN00-2020-E-00866
Project Name:	Shotgun Cove Road; Whittier, Alaska
Project Type:	TRANSPORTATION

Project Description: Extension of Shotgun Cove Road in Whittier, Alaska.

Project Location:

Approximate location of the project can be viewed in Google Maps: <u>https://www.google.com/maps/place/60.797539872190455N148.59052839323988W</u>



Counties: Valdez-Cordova, AK

Endangered Species Act Species

There is a total of 0 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. <u>NOAA Fisheries</u>, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.