

BIOLOGICAL ASSESSMENT REPORT

LUMMI NATION BOAT RAMP AT FISHERMAN'S COVE

Prepared for the Lummi Nation

Prepared by:
Lummi Natural Resources Department

April 15, 2003

LUMMI NATION BOAT RAMP AT FISHERMAN'S COVE

Biological Assessment for Listed Species and Candidate species

SUMMARY

The Lummi Nation Boat Ramp at Fisherman's Cove is a tribal project that involves installing pre-cast concrete panels on tribal tidelands to create a new boat ramp on the Lummi Indian Reservation (Reservation). The current use of the upland property is the Fisherman's Cove Boat Launching and Storage facility. The proposed boat ramp will be constructed near an existing concrete dock structure which was constructed prior to the 1960s and that has become unsuitable for launching larger boats due to the degradation of support pilings. The boat ramp will provide replacement launch facilities for the tribal fishing fleet, agency boats (e.g., water quality sampling, oil spill response, habitat monitoring and assessment), and recreational boaters while a long-term solution to the concrete dock structure is identified, designed, financed, and implemented. Once the repairs to the existing structure are completed, the boat ramp will provide a supplemental launching facility.

The proposed work is to install a 20-foot wide boat ramp approximately 180 feet in length, of which 140 feet will be placed waterward of the mean higher high water (MHHW) line. The total area that will be occupied by the boat ramp is approximately 3,600 square feet (0.08 acres). Of this area, approximately 2,800 square feet (0.06 acres) will be placed waterward of the mean higher high water (MHHW) line. The adjacent upland area is paved or compacted gravel/cobble material that is currently used for parking vehicles. The boat ramp will be constructed of pre-cast, reinforced concrete panels that have dimensions of 0.5 feet thick, 1.92 feet wide, and 20 feet long. The pre-cast concrete panels are connected to each other by the use of steel eyes and hooks embedded along the length of each panel during the casting process that occurs off-site (at Bellingham Marine in Bellingham, WA). A total of 70 panels will be placed waterward of the MHHW line. As each panel has a volume of 0.71 cubic yards, a total of 49.8 cubic yards of will be placed waterward of the MHHW.

The boat ramp will be constructed during low-tide conditions (i.e., when the lower low tide is predicted to be -2 ft MLLW) when the site is de-watered. After purchasing the concrete panels and stock-piling them on the adjacent uplands, the boat ramp footprint will be bladed to obtain a flat surface. Due to the harden nature of the beach face at the project site, it is anticipated that this blading can be accomplished with the back of the bucket of a rubber-tired backhoe. However, the back of the blade of a small tracked bulldozer may be used at the discretion of the contractor. Maintaining the existing hardened surface is desired and the blading is only intended to remove any protruding rocks or debris that could preclude laying the concrete panels flat on the beach face. Once the boat ramp site has been bladed, starting at the upland end, the panels will be connected together (hooks from one panel put in the eyes of the other panel) in a sequential manner until the distal end of the boat ramp is completed. The panels will be moved into position using either a small crane or an excavator. The crane or excavator will work from the constructed boat ramp to avoid disturbing the beach face outside of the boat

ramp foot print. Ideally, the placement of the concrete panels can occur during a single tidal cycle but will be scheduled to occur so that there are sequential days with a lower low tide predicted to be approximately -2 ft MLLW.

The project site is located in a commercial area along the marine waters of Hale Passage. Hale Passage, which is located between the Reservation and Lummi Island, is located between the southern extent of Georgia Strait and Bellingham Bay. The affected property is located in Township 37N, Range 01E, Section 3. The action area is comprised of the tidelands within and adjacent to the project site, the marine waters of Hale Passage, and the commercial and residential area near the project site. Hale Passage is the receiving waters for storm water originating from the project site.

The presence of listed species and species of concern have been documented in the project vicinity. This Biological Assessment evaluated species presence for the action area based on a combination of previously documented reports, on-site observations, and habitat availability. The following is a list of federally listed species and species of concern known or potentially associated with the action area and the effect determination for each:

Listed Species

chinook salmon (*Oncorhynchus tshawytscha*) - may affect, not likely to adversely affect
bull trout (*Salvelinus confluentus*) - may affect, not likely to adversely affect
bald eagle (*Haliaeetus leucocephalus*) - may affect, not likely to adversely affect
marbled murrelet (*Brachyramphus marmoratus*)- may affect, not likely to adversely affect

Candidate Species

coho salmon . (*Oncorhynchus Kisutch*) - may affect, not likely to adversely affect

Other Species

Pacific herring (*Clupea harengus pallasii*) Cherry Point stocks - may affect, not likely to adversely affect

The purpose of this biological assessment is to analyze the proposed boat ramp project and associated construction impacts to plant and animal species that have been listed or are candidate species for listing under the federal Endangered Species Act. Following an evaluation of the identified listed species, species of concern, and their habitat requirements, it is determined that the proposed Lummi Nation Fisherman’s Cove Boat Ramp project “**may affect, not likely to adversely affect**” certain federally listed species and species of concern.

The format used to present this Biological Assessment is based on the BE/BA Format Guidance of the U.S. Army Corps of Engineers version of January 5, 2000.

PROJECT DESCRIPTION

- A. Project Location:** The project site is located on the Lummi Indian Reservation (Reservation), which is located along the western boundary of Whatcom County in northwestern Washington. The project site is located on the shoreline along the marine waters of Hale Passage, which is located between the southern extent of Georgia Strait and Bellingham Bay (see Figure 1). The affected property is located in Township 37N, Range 01E, Section 3.
- B. Project Description:** As shown on Figures 2-4, the Lummi Nation Boat Ramp at Fisherman's Cove project involves installing pre-cast concrete panels on tribal tidelands to create a new boat ramp on the Lummi Indian Reservation (Reservation). The current use of the upland property is the Fisherman's Cove Boat Launching and Storage facility. The proposed boat ramp will be constructed near an existing concrete dock structure which was constructed prior to the 1960s and that has become unsuitable for launching larger boats due to the degradation of support pilings. The boat ramp will provide replacement launch facilities for the tribal fishing fleet, agency boats (e.g., water quality sampling, oil spill response, habitat monitoring and assessment), and recreational boaters while a long-term solution to the concrete dock structure is identified, designed, financed, and implemented. Once the repairs to the existing structure are completed, the boat ramp will provide a supplemental launching facility.

The proposed work is to install a 20-foot wide boat ramp approximately 180 feet in length, of which 140 feet will be placed waterward of the mean higher high water (MHHW) line. The total area that will be occupied by the boat ramp is approximately 3,600 square feet (0.08 acres). Of this area, approximately 2,800 square feet (0.06 acres) will be placed waterward of the mean higher high water (MHHW) line. The adjacent upland area is paved or compacted gravel/cobble material that is currently used for parking vehicles. The boat ramp will be constructed of pre-cast, reinforced concrete panels that have dimensions of 0.5 feet thick, 1.92 feet wide, and 20 feet long. The pre-cast concrete panels are connected to each other by the use of steel eyes and hooks embedded along the length of each panel during the casting process that occurs off-site (at Bellingham Marine in Bellingham, WA). A total of 70 panels will be placed waterward of the MHHW line. As each panel has a volume of 0.71 cubic yards, a total of 49.8 cubic yards of will be placed waterward of the MHHW.

The boat ramp will be constructed during low-tide conditions (i.e., when the lower low tide is predicted to be -2 ft MLLW) when the site is de-watered. After purchasing the concrete panels and stock-piling them on the adjacent uplands, the boat ramp footprint will be bladed to obtain a flat surface. Due to the harden nature of the beach face at the project site, it is anticipated that this blading can be accomplished with the back of the bucket of a rubber-tired backhoe. However, the back of the blade of a small tracked bulldozer may be used at the discretion of the contractor. Maintaining the existing hardened surface is desired and the blading is only intended to remove any protruding rocks or debris that could preclude laying the concrete panels flat on the beach face. Once the boat ramp site has been bladed, starting at the upland end, the panels will be connected together (hooks from one panel put in the eyes of the other panel) in a sequential manner until the distal end of the boat ramp is completed. The panels will be moved into position using either a small crane or an excavator. The crane or excavator will work from the constructed boat ramp to avoid disturbing the beach face outside of the boat ramp foot print. Ideally, the placement of the concrete panels can occur during a single tidal cycle but will be scheduled to occur so that there are sequential days with a lower low tide predicted to be approximately -2 ft MLLW.

The project location was selected to avoid impacts to mapped habitat of forage fish, avoid impacts to bald eagle nests, and to minimize impacts to coastal processes (see attached report prepared by Coastal Geologic Services, Inc.). Figures 5 and 6 show the location of baitfish spawning areas near Gooseberry Point as determined from the 2001 Washington Department of Fish and Wildlife (WDFW) baitfish spawning habitat inventory. As evident in Figures 5 and 6, the project site is in an area where there is no documented forage fish spawning sites. Figure 7 shows the project location in relation to the nearest bald eagle nests and that it is located greater than ½ mile from the nearest nest. A coastal processes expert (Coastal Geologic Services, Inc.) evaluated the potential impacts of the proposed project and concluded that there does not appear to be a more suitable site for a boat ramp in terms of coastal processes, mapped habitats for sand lance and surf smelt, and water depths for more than 5 miles in either direction.

- C. Action Area Definition:** The action area, defined as the area at and around the project that would be affected directly or indirectly by the activity, is shown on Figures 1 and 2. The action area is comprised of the tidelands within and adjacent to the project site, the marine waters of Hale Passage, and the commercial and residential area near the project site. Hale Passage is the receiving waters for storm water originating from the project site.

2. SPECIES AND HABITAT INFORMATION

- A. Species Information:** Information obtained from local biologists, pertinent literature, and other knowledgeable sources was used to identify the affected species of concern and to indicate whether or not there is designated critical habitat. The listed or candidate species utilization within the action area and range-wide are described below.

Plants: A review of the forty-one rare or sensitive plants reported to occur in adjacent Whatcom County and information from the Washington Department of Natural Resources Natural Heritage Database found no evidence of any of these species within the action area. No sensitive, threatened, or endangered plant species were identified in the action area of the proposed project. No rare plants were identified in the action area. No direct impacts have been identified to any sensitive, threatened, or endangered plant species in or near the action area.

Fish and Wildlife: The presence of listed species and candidate species have been documented in the project vicinity. This Biological Assessment evaluated species presence in the action area based on a combination of previously documented reports, on-site observations, and habitat availability. The federal listed species and candidate species known or potentially associated with the action area and the effect determination for each are described below. In addition, the impacts of the proposed project on Pacific herring were evaluated.

Listed Species

chinook salmon (*Oncorhynchus tshawytscha*) - may affect, not likely to adversely affect
bull trout (*Salvelinus confluentus*) - may affect, not likely to adversely affect
bald eagle (*Haliaeetus leucocephalus*) - may affect, not likely to adversely affect
marbled murrelet (*Brachyramphus marmoratus*) - may affect, not likely to adversely affect

Candidate Species

coho salmon . (*Oncorhynchus Kisutch*) - may affect, not likely to adversely affect

Other Species

Pacific herring (*Clupea harengus pallasii*) Cherry Point stocks - may affect, not likely to adversely affect

Listed Species

Chinook Salmon: Chinook salmon have been listed as a threatened species in Puget Sound (which includes the action area). Chinook, coho, pink, and chum salmon are all known to utilize the Nooksack River system and pass through the estuary both as adults to spawn in the upper reaches and to outmigrate as smolts. All five Pacific salmon species utilize Georgia Strait and Hale Passage in varying numbers either as juveniles or adults. In consultation with the Biologist that developed the Biological Assessment for the adjacent Lummi Shore Road Project (Eissenger 1999), WDFW Biologist Don Hendrick stated that as smolts, these five species utilize the near-shore habitat upon entering saltwater and travel along shorelines and shallows. Returning adults however utilize deeper water and may or may not use shorelines as their travel route depending on the species.

Chinook are the least abundant Pacific salmon. Juvenile stream- and ocean-type chinook salmon have adapted to different ecological niches. Ocean-type chinook salmon tend to utilize estuaries and coastal areas more extensively for juvenile rearing. Stream-type juveniles are much more dependent on freshwater stream ecosystems because of their extended residence in these areas.

Coast-wide, chinook salmon remain at sea from 1 to 6 years (more commonly 2 to 4 years), with the exception of a small proportion of yearling males which mature in freshwater or return after 2 or 3 months in salt water. Ocean-type chinook salmon tend to migrate along the coast, while stream-type chinook salmon are found far from the coast in the central North Pacific. Adult spring-run chinook salmon in the Puget Sound typically return to freshwater in April and May and spawn in August and September. Summer-run fish begin their freshwater migration in June and July and spawn in September, while summer/fall-run chinook salmon begin to return in August and spawn from late September through January. (NOAA-NMFS-NWFSC TM-35: Chinook Status Review 1998. Chinook Salmon Life History and Ecology Juvenile Life History)

Chinook are carnivorous and feed on a variety of freshwater and marine fish and invertebrates including other salmon, Pacific herring, smelt, and squid. Juvenile chinook salmon utilize near-shore marine habitats and shallow areas associated with Hale Passage, Lummi Bay, and Georgia Strait. According to Don Hendrick, WDFW Biologist, there has been 30 years of survey data accumulated for the Gooseberry Point side of Hale Passage. The data collected was from in-shore areas and targeted chum and pink salmon that utilize the shallower waters. Pink and chum fry utilize in-shore shallows from a few inches of water through the intertidal margin to eelgrass. Yearling smolt size fish have also been recorded, probably coho or possibly chinook which utilize deeper water. Chinook juveniles also utilize eelgrass meadows and are more difficult to detect. Within the action area, salmon smolts occur along the nearshore primarily between March and September. Chinook peaks occur in May, June, and July, and are primarily of hatchery origin (Mike MacKay, Lummi Fisheries 1999). In synchrony with the peaks of outmigrating chinook salmon, is the herring and surf smelt spawning along the Lummi Peninsula shoreline. This concentration of food for emerging chinook is an important aspect perpetuating the local stocks, which have been declining. As was shown in Figure 5 and Figure 6, the project site is in an area where there is no documented forage fish spawning sites.

Bull Trout: Bull Trout, also known as Dolly varden (*Salvelinus confluentus*), utilize streams and near-shore marine habitats throughout western Washington. Much of the same type of

marine habitat and areas utilized by bull trout are shared with sea run cutthroat trout. In consultation with the Biologist that developed the Biological Assessment for the Lummi Shore Road Project (Eissenger 1999), WDFW Biologist Jim Johnston explained that while in Puget Sound, cutthroat and bull trout feed and migrate along beaches, most frequently in waters less than 3 meters in depth. Feeding areas are typically within the intertidal margin of high gradient fine gravel beaches, particularly in coves and small bays with cool waters and good tidal flow or current. Eelgrass and macro algae meadows are not preferred habitat, however, cutthroat and bull trout may hunt along the edges of these habitats for their preferred prey of smaller fish which concentrate in the cover of these substrates.

Bull trout may out-migrate at any time. From the Nooksack into Bellingham Bay, outmigration is likely guided by prey and habitat preferences, which possibly includes avoiding shallow and warm areas such as Portage Bay. Bull trout, like cutthroat trout, likely utilize portions of Hale Passage and Georgia Strait near shore habitat. However timing and concentrations are not known and are likely patchy. Mike Mackay of the Lummi Natural Resources Department knows of no bull trout records resulting from beach seining along portions of the Lummi Peninsula shoreline.

Bald Eagle: Bald eagles occur in Western Washington throughout the year as both resident and wintering populations. As a shoreline associated species, resident, non-breeding, and wintering bald eagles utilize the areas around the Lummi Peninsula. Significant shallow nearshore habitat provides a large productive foraging area from the Nooksack River estuary to Sandy Point. Georgia Strait and Hale Passage provide excellent shoreline habitat and foraging opportunities for bald eagles including seasonal herring, salmon, and waterfowl concentrations. Anadromous fish including salmon associated with the Nooksack River system and resident marine fish including spawning sand lance and surf smelt occur in the shallow nearshore habitats and provide a substantial year-round food source for bald eagles in this area. Waterfowl, gulls, garter snakes, and carrion (primarily fish carcasses) are also utilized. Upland forest and individual mature shoreline trees such as black cottonwood, grand fir, and Douglas fir provide suitable nest and perch trees.

Due to the prime habitats available, the bald eagle breeding population of the combined areas of Lummi Peninsula, Portage Island, and Lummi Island is relatively dense. For the Lummi Peninsula, there are 16 eagle nesting territories identified. The two eagle nests shown on Figure 7 were built in 1999 and are more than ½ mile from the proposed project site.

Marbled Murrelet: Marbled murrelets are a threatened species and an uncommon marine bird that requires old growth forest for nesting. Based on the Ecology and Conservation of the Marbled Murrelet (Ralph et al 1995), murrelets forage in nearshore marine areas for small fish and invertebrates, primarily Euphansiiids. The primary fish consumed by marbled murrelets are sand lance (*Ammodytes hexapterus*) which make up about 50% of the murrelets diet, Pacific herring (juvenile) and anchovy make up nearly 30%. Smelt, including surf smelt and seaperch, were also important food items. Since herring, surf smelt, and sand lance spawn near the action area, it is assumed that this area is important habitat for marbled murrelets.

Marbled murrelets are known to utilize the nearshore marine areas of Hale Passage year-round, including the breeding season (Eissinger 1994). Their occurrence in this area is common but generally in low numbers. However, concentrations increase from March through May during the herring spawning period. This increased concentration is documented for Hale Passage (Wahl et. al. 1981). Murrelet nesting on the nearby upland areas and the Lummi Peninsula is unlikely due to the lack of suitable nesting habitat.

Although nesting on Portage and Lummi islands is possible, no suitable nesting habitat for Marbled murrelets is available in or near the action area.

Candidate Species

Coho Salmon: Coho salmon are relatively common in small streams and marine waters throughout western Washington. Due to declining returns over time, coho stocks of Puget Sound and Georgia Strait are now a candidate species and under consideration for listing and protection under the federal Endangered Species Act.

Coho salmon return to freshwater in late summer to late fall, and spawn during the winter in headwater reaches of the stream. This species requires cool sediment free water, clean gravel for spawning, and unobstructed access to headwater stream reaches. Fry emerge from the gravel in the early spring and remain in the freshwater until the following spring before outmigrating to the sea.

Of the coho originating from central British Columbia south, the vast majority of adults are 3-year-olds, having spent approximately 18 months in fresh water and 18 months in salt water. There does not appear to be any clear, regional pattern for either smolt outmigration timing or smolt size in west coast coho salmon. Regardless of the area of origin, peak outmigration timing generally occurs in May, with some runs earlier or later. Generally coho enter salt water as old as two years. Once reaching the estuaries, coho salmon fall prey to a number of other species and may be impacted by human changes, such as shoreline development, residential drainage, and the filling of marine wetlands. The time spent in this habitat is critical to the development of the species and their ability to survive in the offshore environment. After entering marine waters, coho remain close to shore, feeding on invertebrates at first and as growth advances, prey include crab larvae, small and juvenile fish including smelt, herring, and other salmonids. During their 2-3 years at sea, coho remain associated with coastal areas primarily in Washington and British Columbia. Adults return to natal rivers beginning in August to December and spawn from November to December and occasionally into January. (NOAA-NWFSC Tech Memo-24: Status Review of Coho Salmon - Coho Salmon Life History 1997).

All five species of Pacific salmon, including coho, are present in the waters of Georgia Strait, Lummi Bay, and Hale Passage. The salmon runs consist of both hatchery plants and wild stocks in the Nooksack River. Studies being conducted by the Lummi Nation show that the outmigrants use the intertidal area within the action area as rearing and feeding habitat. Salmon smolts occur along the nearshore primarily between May and September. Coho peaks occur during hatchery releases that usually occur in May-June (Mike MacKay, Lummi Fisheries 1999). Like chinook, coho are carnivorous and depend on the abundant preybase available at the river estuaries and associated waters including Georgia Strait, Lummi Bay, and Hale Passage. Returning adults however utilize deeper water and may or may not use shorelines as their travel route to the river estuary.

Other Species

Pacific Herring (Cherry Point Stocks): The Pacific Herring have recently been included on the Washington State candidate species list because of declining stocks and for their importance both commercially and as one of the most abundant prey for salmon, marine mammals, and seabirds. The Cherry Point stock is the largest in the state and utilizes an area from southern Hale Passage north to Drayton Harbor. Herring spawn on intertidal and subtidal eelgrass and macro algae located between 0 to -40 feet in tidal elevation. Eggs hatch within 2 weeks time and the larvae float with the tides and currents for the next 3

months at which time they metamorphose into adults. Adults move in large schools feeding on and off shore until sexually mature at 2 to 3 years of age.

Because the Cherry Point herring stock is the largest and most important in the Puget Sound/Georgia Strait, their health and productivity is critical for the maintenance of the region's population. Due to the presence of eelgrass along the majority of shoreline in the action area, the intertidal and subtidal areas paralleling the action area are considered sensitive habitat for Pacific herring as well as other shore spawning species including surf smelt and sand lance.

- B. Survey Results:** A review of the biological documentation indicates that few systematic, multi-season field surveys have been conducted to record species specifically associated with the action area. Because of the lack of detailed field surveys and inventories, certain species could be incorrectly included or omitted. The limited surveys that have been conducted in the action area are primarily herring spawning surveys, sand lance, and surf smelt. These surveys indicate that although herring, sand lance, and surf smelt would not be expected to spawn in the action area, adjacent areas do support vegetation upon which herring can be expected to spawn and suitable substrate for sand lance. Most of the herring spawning occurs from mid-April through mid-May. Although spawning occurs year round in Puget Sound, the peak spawning season for sand lance is from November through January and April through August for smelt.
- C. Existing Environmental Conditions (Environmental Baseline):** The affected environment within the action area has been used as a boat launch and commercial facility for over the last 50 or more years. The upland areas are comprised of paved and unpaved parking areas, commercial buildings, Lummi Nation office buildings, and the Fisherman's Cove Boat Launching and Storage facility. The proposed boat ramp will be constructed to the west of an existing concrete dock structure which was constructed prior to the 1960s and that has become unsuitable for launching larger boats due to the degradation of support pilings. The Lummi Island ferry terminal is located to the east of the existing concrete dock structure.

Water Resources: The water resources associated with the action area are storm water runoff from the adjacent parking areas and the adjacent marine waters of Hale Passage. The following describes the fresh and marine water habitats and includes accounts of associated species from various sources including observations and field survey results from the Biological Assessment for the adjacent Lummi Shore Road project (Eissinger 1999).

Freshwater Streams and Wetlands

The storm water from the upland area discharge to Hale Passage through an existing culvert that is located between the existing launching facilities and the proposed boat ramp. Depending on flow and tidal conditions, the storm water either infiltrates into the beach sands, flows across the beach sands to the marine waters, or discharges directly to the marine waters. The storm water culvert is not a fish bearing stream.

As most of the boat ramp will be installed waterward of the mean higher high water line, and the adjacent upland area is already largely an impervious surface (i.e., buildings, paved parking lot, compacted gravel/cobble parking lot), no increase in surface water runoff is expected (LIBC 1998). Similarly, since the proposed project will simply allow the continuation of long-standing practices and land use, no change in water quality is expected (LIBC 1998).

Hale Passage

The marine water area known as Hale Passage is a rich marine habitat for a multitude of resident and migratory fish, birds, mammals, and marine invertebrates. Anadromous fish including all salt water associated salmon species utilize the area during migrations to and from spawning grounds. Returning adult salmonids utilize deeper water than juvenile fish and may follow shorelines or use mid-channels in their approach to their natal river or stream system.

Salmon returning to the Fraser River in Canada and/or the Nooksack and Skagit rivers or smaller systems in-between pass through Hale Passage generally from August to January. Between September and October, fall chinook and coho are the main runs of salmon. Although the sockeye salmon usually travel to the west of Lummi Island, late Fraser River sockeye, early Nooksack River chum, and late Nooksack River pinks may also occur in Hale Passage.

The young of certain salmon species may linger during certain phases of their life cycle. Sand lance and surf smelt spawning is well documented along the upper intertidal zone of Hale Passage (+6.0-9.0 MLLW) (Pentilla, 1996). However, there is no mapped forage fish spawning sites at the proposed location of the boat ramp (WDFW 2001). Beach seine sampling in 1995 documented the occurrence of juvenile chinook, coho, and chum salmon, primarily from June to August.

The eelgrass and macro algae of the near shore of Hale Passage provide a spawning substrate for herring which concentrate from the south end of Hale Passage north into Georgia Strait during the spring spawn. This area constitutes an important habitat component for the Cherry Point Pacific herring stocks, the most abundant herring stocks in the state and also the most vulnerable due to declines. In addition, significantly large concentrations of diving birds are attracted to feed on herring and their roe during the spring migration north. This aggregation of diving birds and herring in Hale Passage and Georgia Strait during spring months between March and June is the largest concentration of these two groups in the northwest region (Wahl et. al. 1981)(WDFW 1999).

Vegetation: Vegetation within the action area has experienced a wide variety of long-term and temporary impacts. These include residential and commercial development, road and road related activities, and storm water drainage modifications. These disturbances have provided suitable habitat for a number of weedy plant species, including those considered noxious. Many of the areas in the vicinity of the project are dominated almost entirely by nonnative weedy species. Several community types are present adjacent to the action area: mixed deciduous-coniferous forest, palustrine forested wetland, upland shrub, bluff communities, and beach communities.

Mixed Deciduous-Coniferous Forest

The dominate forest type adjacent to the action area is mixed deciduous-coniferous forest which provides a rich variety of habitat opportunities. Although the forests are fragmented, significant forest habitat areas contain large cottonwood, big-leaf maples, mature red alder and willow of significant size, and conifers of various ages and habitat quality. The prevalence of mature deciduous trees offer excellent woodpecker and cavity nesting habitat as well as habitat for arboreal rodents and bats.

Mixed deciduous-coniferous forest is dominated by native plant species including: big-leaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), bitter cherry (*Prunus emarginata*), western red cedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), Douglas fir (*Pseudotsuga menziesii*), grand fir (*Abies grandis*), vine maple (*Acer circinatum*), ocean spray (*Holodiscus discolor*), Indian plum (*Oemleria cerasiformis*), red-elderberry (*Sambucus*

racemosa), salmonberry (*Rubus spectabilis*), snowberry (*Symphoricarpos albus*), stinging nettle (*Urtica dioica*), sword fern (*Polystichum munitum*), lady fern (*Athyrium filix-femina*), bracken (*Pteridium aquilinum*) and trailing blackberry (*Rubus ursinus*). The conifers are scattered throughout these forests, but comprise less than 20 percent of the community.

Palustrine Forested Wetlands

Palustrine forested wetlands are located adjacent to the south and east of the action area. These wetlands have a mature canopy of black cottonwood (*Populus balsamifera*) with a second, lower canopy of trembling aspen (*Populus tremula*) mixed with willows and red alder. Understory plants include black twinberry (*Lonicera involucrata*) and hardhack (*Spiraea douglasii*). This stand harbors the bald eagle nests.

Upland Shrub

Upland shrub communities are found within the action area. Most appear to be naturalizing cleared areas. Representative species include Himalayan blackberry, ocean spray, snowberry, Scouler's willow, thimbleberry, salmonberry and trailing blackberry.

The predominance of fruit bearing plants in both the upland shrub and wetland scrub-shrub habitats is an important habitat feature for many passerine birds and most medium sized mammals who depend on fruit as a seasonal food staple. Shrubs also provide extensive and in some cases impenetrable cover for small birds, ground nesters, a variety of small and medium sized mammals, as well as snakes and amphibians.

Bluff Communities

This community type inhabits the steep bluff to the east of the action area. This community is a mix of native and nonnative plant species that have been impacted by Lummi View Road, utilities construction, and associated maintenance activities over time. Dominant species in this community include: Himalayan blackberry (*Rubus discolor*), Scouler's willow (*Salix hookeriana*), Oceanspray, snowberry, thimbleberry, tansy (*Tanacetum vulgare*), oxeye daisy (*Leucanthemum vulgare*). Douglas fir, western red cedar and grand firs are scattered along the tops of the bluffs.

Although most areas along the bluff rim are only remanent strips of vegetation, this is valuable habitat as well as serving as soil stabilizers. The combination of tree, shrub and meadow provides excellent foraging opportunities for a wide variety of bird species in particular. Birds of prey, gulls, herons, corvids as well as passerines utilize the bluff line trees for perching. These are important features for hunting and foraging, resting, preening, socializing and waiting. The shrub habitats provide foods and shelter or cover. Along the moderately high bluffs, the shrubs (rose and others) hang over the edge of the bluff concealing swallow nesting borrows in the bluff face. It is noted that the bluff-line vegetation will not be affected by this proposed project as it is located over ¼ mile to the east of the project site.

Beach

This community type is located between the upper high tide limit along the marine environment and the landward terrestrial habitat, which is a steep bluff within the action area. Plants in this habitat require soils that are not regularly flooded by saltwater, but are influenced by it. Species identified in the action area are silver burweed (*Ambrosia chamissonis*), entire-leaved gumweed (*Grindelia integrifolia*), and European beachgrass (*Ammophila arenaria*).

No sensitive, threatened or endangered plant species were identified in the immediate area of the proposed project.

3. EFFECTS OF THE ACTION

- A. Effects Analysis:** The effects analysis below considers direct effects, interrelated/interdependent effects, and cumulative effects of the Lummi Nation Boat Ramp at Fisherman's Cove project

Direct Effects

The direct effects resulting from the Lummi Nation Boat Ramp at Fisherman's Cove project include the following:

- Covering approximately 3,600 square feet (0.08 acres) of sand, pebble, and cobble beach with pre-cast concrete panels is an unavoidable impact of the boat ramp project. Unavoidable impacts associated with a boat ramp are being minimized in this project by limiting the width of the boat ramp to 20 feet, using pre-cast concrete panels (rather than pouring in place), and working during periods of low tide when the site is de-watered.
- Available mapping developed as part of the Washington Department of Fish and Wildlife 2001 baitfish spawning habitat inventory indicates that there is no suitable spawning habitat for sand lance, surf smelt, and Pacific herring at the proposed project location. Consequently, no direct impacts to these baitfish are anticipated as a result of the boat ramp project.
- Noise and general disturbance will increase slightly along the access road corridor from Haxton Way to the project site during the short period required to transport the pre-cast concrete panels from Bellingham as well as to mobilize the construction equipment needed for the project. The small volume of increased traffic noise and associated disturbance is believed to be insignificant and no more than what commonly occurs in support of construction projects on Lummi Island (the Lummi Island ferry terminal is immediately adjacent to the existing pier/boat launching facility). This minor increase in traffic is not expected to be disruptive to wildlife species in the vicinity. No disturbance to bald eagles is anticipated due to both the distance from the nearest nest (approximately ½ mile), the small level of activity represented by the proposed project, and the fact that the proposed work is expected to occur when nesting activities are largely completed.
- Blading the beach face at the distal end of the boat ramp will temporarily disturb intertidal sediments that may contain infauna and epifauna that may be important food for fish species. However, re-colonization of these mostly opportunistic species is quite rapid. Conducting the work during periods of low tide when the project site is de-watered will minimize water quality impacts.
- Blading and placement of concrete panels may disturb juvenile fish, including Chinook salmon that may be migrating along the shoreline area during the placement of the panels. However, timing of the project to largely avoid peak juvenile Chinook out migration periods in May, June and early July and conducting the work during periods of low tide will substantially reduce the potential for this effect.

Interrelated/Interdependent Effects

The interrelated and interdependent effects resulting from Lummi Nation Boat Ramp at Fisherman's Cove project include the following:

- Possible spills and/or leaks of hazardous materials from equipment operating on the shore could occur during the placement of the reinforced concrete panels. However, Best Management Practices (BMPS) will be required as a part of the Lummi Land Use Permit. The highest safety standards practicable for the containment of sediments, toxic substances, fuels, and contaminated run-off will be utilized during the boat ramp installation and operation.
- The boat ramp construction project has the potential to increase garbage and debris in the action area. However, the project will be managed with appropriate commercial waste disposal procedures during the construction and operational period.

Cumulative Effects

Cumulative effects related to the Lummi Nation Boat Ramp at Fisherman's Cove project include the following:

- Any disturbance to salmon populations, including the listed Chinook salmon, could be added to the general stress for the population throughout its life history. Based on the period and duration of the project and preventive measures planned, cumulative effects are not anticipated.

B. Conservation Measures: Measures that will reduce or eliminate adverse effects expected from the Lummi Nation Boat Ramp at Fisherman's Cove project on federally listed species and species of concern known or potentially associated with the action area include the following:

- Project location selected to minimize impacts to forage fish habitat, bald eagles, and coastal processes.
- Implement plans to minimize the area of disturbance and operate only within the footprint of the boat ramp.
- Use reinforced pre-cast concrete planks (rather than poured in place).
- Working during low tides when the beach face is exposed, using existing roads for delivery of material (rather than barge), and using timing restrictions during construction to avoid disturbance of Pacific Herring spawn periods in April, May, and June will minimize disturbance to spawning Pacific herring.
- Conduct installation work during periods of low tide to ensure site is dewatered.
- Utilize the highest safety standards practicable for the containment of sediments, toxic substances, fuels, and contaminated run-off.

C. Determination Of Effect: A summary of the expected impacts of the Lummi Nation Boat Ramp at Fisherman's Cove project on federally listed species and species of concern known or potentially associated with the action area and the effect determination for each is presented below.

Chinook Salmon

Chinook salmon utilize the marine waters associated with the action area. These waters are particularly important to chinook as they outmigrate and forage along the shorelines such as the shorelines adjacent to the project site. However, the site for the proposed boat ramp was selected in part to avoid mapped habitat for forage fish (e.g., herring, sand lance,

and surf smelt) and project activities will impact a relatively small area (0.06 acres waterward of MHHW). In addition, because the proposed project will support continuation of existing activities, no additional impacts to the marine waters associated with changes in storm water quantity and quality are expected to result during the project construction and operation stages.

As the total impervious and semi-impervious area to be created by the project is small (approximately 0.08 acres), and mapped forage fish habitat is avoided, only insignificant effects to chinook salmon are expected as a result of the boat ramp project and associated construction activity. Consequently, **the effects determination for chinook salmon is “may affect, not likely to adversely affect”**.

Bull Trout

Due to the lack of survey data for the action area it is difficult to make a definitive finding regarding potential impacts on bull trout. However, given the habitat conditions and the known preferences of bull trout for cooler, deeper waters, it is unlikely that bull trout frequent the subtidal shoreline areas associated with the project or depend on the habitat available as a critical area. Therefore it is unlikely that the project will have an adverse impact on the species.

Similar to chinook salmon, as the total impervious and semi-impervious area to be created by the project is small (approximately 0.08 acres), and mapped forage fish habitat is avoided, only insignificant effects to bull trout are expected as a result of the boat ramp project and associated construction activity. Consequently, **the effects determination for bull trout is “may affect, not likely to adversely affect”**.

Bald Eagle

As stated previously, due to the prime habitats available, the bald eagle breeding population of the combined areas of Lummi Peninsula, Portage Island, and Lummi Island is relatively dense. However, there are no eagle nests within ½ mile of the proposed boat ramp location and disturbances resulting from this project are not expected to negatively affect bald eagles.

Impacts to food resources (i.e., prey base) of bald eagles needs to be addressed on a large scale. Because eagles are both top line predators and scavengers, they utilize a wide range of prey. Their prey base therefore reflects available resources. Bald eagle prey include nearshore species such as salmon, herring, bottom fish, rock fish, ducks, gulls, grebes, herons, and carrion including dead fish, birds, marine and land mammals. While the reproduction of bald eagles has been encouraged over the past 30 years, little monitoring or active management of food resources has been conducted. With the decline of key fisheries and locally breeding waterfowl populations, bald eagles may be reaching their carrying capacity within the region. The eagles prey base will become a limiting factor for the expansion of the population over time. The boat ramp project itself is not likely to impact food resources directly.

Given the absence of roosting and nesting habitat for bald eagles within the project site, the distance to the nearest nests, and the proposed de-listing of the bald eagle, the impacts to those eagles breeding near the action area are not likely to cause adverse effects to the regional population. Consequently, **the effects determination for bald eagles is “may affect, not likely to adversely affect”**.

Marbled Murrelet

Marbled murrelets are known to occur within the marine portions of the action area along Hale Passage. Since the activity for the project will occur along the shorelines of marine waters, and no known nesting habitat exists near the action area, insignificant impacts to marbled murrelets are expected. Consequently, **the effects determination for marbled murrelet is “may affect, not likely to adversely affect”**.

Potential Impacts to Candidate Species and Species of Concern

Candidate Species

Coho Salmon

Coho salmon are a candidate species that utilize the marine waters associated with the action area. Due to the absence of salmon bearing streams and the upland location where the essentially all of the project work will take place, disturbance and impacts to coho habitat is unlikely.

Similar to chinook salmon and bull trout, as the total impervious and semi-impervious area to be created by the project is small (approximately 0.08 acres), and mapped forage fish habitat is avoided, only insignificant effects to coho salmon are expected as a result of the boat ramp project and associated construction activity. Consequently, **the effects determination for coho salmon is “may affect, not likely to adversely affect”**.

Other Species

Pacific herring - The Pacific herring is one of the most important and abundant prey fish in local waters. Associated with the action area is the Cherry Point herring stock, which is the largest/most productive herring population in the Puget Sound, however its declining population has forced its listing as a candidate species by Washington State. Herring concentrate in the subtidal areas associated with eelgrass and macro algae and these areas are dependent on stable beach substrates. Considering the population decline of herring and the importance of this species for salmon, seabirds and marine mammals, any reduction of spawning habitat should be avoided.

Similar to expected impacts to salmon and bull trout, as the total impervious and semi-impervious area to be created by the project is small (approximately 0.08 acres), and mapped forage fish habitat is avoided, only insignificant effects to Pacific herring are expected as a result of the boat ramp project and associated construction activity.

Consequently, **the effects determination for Pacific herring is “may affect, not likely to adversely affect”**.

4. CONCLUSIONS

The Lummi Nation Boat Ramp at Fisherman’s Cove is a tribal project that involves installing pre-cast concrete panels on tribal tidelands to create a new boat ramp on the Lummi Indian Reservation (Reservation). The current use of the upland property is the Fisherman’s Cove Boat Launching and Storage facility. The proposed boat ramp will be constructed near an existing concrete dock structure which was constructed prior to the 1960s and that has become unsuitable for launching larger boats due to the degradation of support pilings. The boat ramp will provide replacement launch facilities for the tribal fishing fleet, agency boats (e.g., water quality sampling, oil spill response, habitat monitoring and assessment), and recreational boaters while a long-term solution to the concrete dock structure is identified, designed,

financed, and implemented. Once the repairs to the existing structure are completed, the boat ramp will provide a supplemental launching facility.

The project has been designed and located to minimize environmental impacts. The proposed work is to install a 20-foot wide boat ramp approximately 180 feet in length, of which 140 feet will be placed waterward of the mean higher high water (MHHW) line. The total area that will be occupied by the boat ramp is approximately 3,600 square feet (0.08 acres). Of this area, approximately 2,800 square feet (0.06 acres) will be placed waterward of the mean higher high water (MHHW) line. The adjacent upland area is paved or compacted gravel/cobble material that is currently used for parking vehicles. The boat ramp will be constructed of pre-cast, reinforced concrete panels that have dimensions of 0.5 feet thick, 1.92 feet wide, and 20 feet long. The pre-cast concrete panels are connected to each other by the use of steel eyes and hooks embedded along the length of each panel during the casting process that occurs off-site (at Bellingham Marine in Bellingham, WA). A total of 70 panels will be placed waterward of the MHHW line. As each panel has a volume of 0.71 cubic yards, a total of 49.8 cubic yards of will be placed waterward of the MHHW.

The project location avoids impacts to mapped habitat of forage fish, avoids impacts to bald eagle nests, and minimizes impacts to coastal processes. A coastal processes expert (Coastal Geologic Services Inc.) evaluated the potential impacts of the proposed project and concluded that there does not appear to be a more suitable site for a boat ramp in terms of coastal processes, mapped habitats for sand lance and surf smelt, and water depths for more than 5 miles in either direction.

Federally Listed Species and Candidate Species are present within the vicinity of the action area. These species include chinook and coho salmon which migrate and forage along the Hale Passage shoreline, bull trout which likely migrate through nearshore areas in Hale Passage, bald eagles which nest and forage within the upland and shoreline, and marbled murrelet which feed in nearshore waters. Several species of concern also occur in the action area.

Impacts to listed species and species of concern are expected to be minimized by location and design of the project and are expected to be no greater than impacts that exist currently by the adjacent land uses. Disturbances resulting from boat ramp construction will be temporary and isolated to the construction site.

In conclusion, this biological assessment for the Lummi Nation Fisherman's Cove Boat Ramp project has determined that the project "**may affect, not likely to adversely affect**" certain Federally Listed Species and Species of Concern. This effect determination is based on a combination of previously documented reports, on-site observations, and habitat availability.

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