UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
1201 NE Lloyd Boulevard, Suite 1100
PORTLAND, OR 97232-1274

**Refer to NMFS No:**
**WCRO-2020-02919**

June 25, 2021

Michelle Walker
Corps of Engineers, Seattle District
Regulatory Branch CENWS-OD-RG
P.O. Box 3755
Seattle, Washington 98124-3755

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Latitude Development LLC Baywood Stormwater Outfall, Port of Everett, Washington, COE Number: NWS-2020-788, Sixth Field HUC: 171100191100 – Port Gardner.

Dear Ms. Walker:

Thank you for your letter of October 16, 2020, requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) for the U.S. Army Corps of Engineers' (COE) authorization of Latitude Development LLC's Baywood Stormwater Outfall project.

Thank you, also, for your request for consultation pursuant to the essential fish habitat (EFH) provisions in Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1855(b)) for this action.

The enclosed document contains the biological opinion (opinion) prepared by the NMFS pursuant to section 7 of the ESA on the effects of the proposed action. In this opinion, the NMFS concludes that the proposed action would adversely affect but is not likely to jeopardize the continued existence of Puget Sound (PS) Chinook salmon or to result in the destruction or adverse modification of their designated critical habitat. This document also serves to document our concurrence that the proposed action is not likely to adversely affect PS steelhead, Puget Sound/Georgia Basin (PS/GB) bocaccio, PS/GB yelloweye rockfish, southern resident (SR) killer whales, and designated critical habitat for those species.

This opinion includes an incidental take statement (ITS) that describes reasonable and prudent measures (RPMs) the NMFS considers necessary or appropriate to minimize the incidental take associated with this action, and sets forth nondiscretionary terms and conditions that the COE must comply with to meet those measures. Incidental take from actions that meet these terms and conditions will be exempt from the ESA's prohibition against the take of listed species.

Section 3 of this document includes our analysis of the action's likely effects on EFH Pacific Coast Salmon, Pacific Coast Groundfish, and Coastal Pelagic Species pursuant to Section 305(b) of the MSA. Based on that analysis, the NMFS concluded that the action would adversely affect designated EFH for Pacific Coast Salmon, Pacific Coast groundfish, and coastal pelagic species. Therefore, we have provided 2 conservation recommendations that can be taken by the COE to avoid, minimize, or otherwise offset potential adverse effects on EFH.

Section 305(b) (4) (B) of the MSA requires Federal agencies to provide a detailed written response to NMFS within 30 days after receiving this recommendation. If the response is inconsistent with the EFH conservation recommendations, the COE must explain why the recommendations will not be followed, including the scientific justification for any disagreements over the effects of the action and recommendations. In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, we request that in your statutory reply to the EFH portion of this consultation you clearly identify the number of conservation recommendations accepted.

Please contact Donald Hubner in the North Puget Sound Branch of the Oregon/Washington Coastal Office at (206) 526-4359, or by electronic mail at Donald.Hubner@noaa.gov if you have any questions concerning this consultation, or if you require additional information.

Sincerely,

Kim W. Kratz, Ph.D
Assistant Regional Administrator
Oregon Washington Coastal Office

cc: Amanda Nadjkovic, COE

**Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the**

**for**

Latitude Development LLC's Baywood Stormwater Outfall project, Everett, Washington, COE Number: NWS-2020-788, Sixth Field HUC: 171100191100 – Port Gardner

**NMFS Consultation Number**: WCRO-2020-02919

**Action Agency**: U.S. Army Corps of Engineers

**Affected Species and NMFS' Determinations**:

| ESA-Listed Species | Status | Is Action Likely to Adversely Affect Species? | Is Action Likely To Jeopardize the Species? | Is Action Likely to Adversely Affect Critical Habitat? | Is Action Likely To Destroy or Adversely Modify Critical Habitat? |
|---|---|---|---|---|---|
| Chinook salmon (*Oncorhynchus tshawytscha*) Puget Sound (PS) | Threatened | Yes | No | Yes | No |
| Steelhead (*O. mykiss*) PS | Threatened | No | No | N/A | N/A |
| Bocaccio (*Sebastes paucispinis*) Puget Sound /Georgia Basin (PS/GB) | Endangered | No | No | No | No |
| Yelloweye rockfish (*S. ruberrimus*) PS/GB | Threatened | No | No | No | No |
| Killer whales (*Orcinus orca*) Southern resident (SR) | Endangered | No | No | No | No |

**Affected Essential Fish Habitat (EFH) and NMFS' Determinations:**

| Fishery Management Plan That Describes EFH in the Project Area | Does Action Have an Adverse Effect on EFH? | Are EFH Conservation Recommendations Provided? |
|---|---|---|
| Pacific Coast Salmon | Yes | Yes |
| Coastal Pelagic Species | Yes | Yes |
| Pacific Coast Groundfish | Yes | Yes |

**Consultation Conducted By**: National Marine Fisheries Service, West Coast Region

**Issued By**:

Kim W. Kratz, Ph.D
Assistant Regional Administrator
Oregon Washington Coastal Office

**Date**: June 25, 2021

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## LIST OF ABREIVIATIONS

BA – Biological Assessment
BMP – Best Management Practices
CFR – Code of Federal Regulations
COE – Corps of Engineers, U.S. Army
DPS – Distinct Population Segment
DQA – Data Quality Act
EF – Essential Feature
EFH – Essential Fish Habitat
ESA – Endangered Species Act
ESU – Evolutionarily Significant Unit
FR – Federal Register
FMP – Fishery Management Plan
HAPC – Habitat Area of Particular Concern
HUC – Hydrologic Unit Code
HPA – Hydraulic Project Approval
ITS – Incidental Take Statement
JARPA – Joint Aquatic Resources Permit Application
MPG – Major Population Group
MSA – Magnuson-Stevens Fishery Conservation and Management Act
NMFS – National Marine Fisheries Service
NOAA – National Oceanic and Atmospheric Administration
OHWL – Ordinary High Water Line
PAH – Polycyclic Aromatic Hydrocarbons
PBF – Physical or Biological Feature
PCB – Polychlorinated Biphenyl
PCE – Primary Constituent Element
PFMC – Pacific Fishery Management Council
PS – Puget Sound
PSTRT – Puget Sound Technical Recovery Team
RPA – Reasonable and Prudent Alternative
RPM – Reasonable and Prudent Measure
SAV – Submerged Aquatic Vegetation
SR – Southern Resident (Killer Whales)
TSS – Total Suspended Sediments
VSP – Viable Salmonid Population
WCR – West Coast Region (NMFS)
WDFW – Washington State Department of Fish and Wildlife
WDOE – Washington State Department of Ecology

# 1. INTRODUCTION

This Introduction section provides information relevant to the other sections of this document and is incorporated by reference into Sections 2 and 3, below.

## 1.1 Background

The National Marine Fisheries Service (NMFS) prepared the biological opinion (opinion) and incidental take statement (ITS) portions of this document in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.), and implementing regulations at 50 CFR 402, as amended.

We also completed an essential fish habitat (EFH) consultation on the proposed action, in accordance with section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801 et seq.) and implementing regulations at 50 CFR 600.

We completed pre-dissemination review of this document using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (DQA) (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The document will be available within two weeks at the NOAA Library Institutional Repository [https://repository.library.noaa.gov/welcome]. A complete record of this consultation is on file at the Oregon Washington Coastal Office.

## 1.2 Consultation History

On April 6, 2020, the NMFS received a request for informal consultation from the COE for their authorization of the Port of Everett's combined Bay Wood Shoreline Interim Cleanup, which included the installation of the stormwater outfall considered in this opinion (COE 2020a; NWS-2019-1052; WCRO-2020-00802). However, due to the independent utility of the two projects, and the availability of a programmatic consultation that covered the planned restoration work, the COE withdrew their April 6, 2020 request on June 23, 2020, and the shoreline restoration project was re-submitted by the COE on June 24, 2020 under the Fish Passage and Restoration Action in Washington State (FPRP III) Programmatic Consultation (WCRO-2014-00004-2056).

On October 16, 2020, the NMFS received the COE's new request for informal consultation for the stormwater outfall considered in this opinion (COE 2020b). That request included the applicant's biological assessment (BA, Shannon and Wilson 2019a), project drawings (Soundview 2020), and a Joint Aquatic Resources Permit Application (JARPA) Form (Latitude 2020).The NMFS requested additional information about the stormwater treatment system on October 29, 2020, which the COE provided on November 13, 2020 (COE 2020c). It is uncertain when the NMFS determined that formal consultation was required for the proposed action. We didn't inform the COE or the applicant until February 26, 2021, when, via email, the NMFS informed the Port of Everett that formal consultation was required, and the Port then informed the COE and the applicant. However, formal consultation was initiated on November 13, 2020, when the COE provided the requested stormwater treatment information.

This opinion is based on the information in the applicant's BA, JARPA, and drawings, information provided by the COE (COE 2020a-c); the project's HPA (WDFW 2020); recovery plans, status reviews, and critical habitat designations for ESA-listed PS Chinook salmon; published and unpublished scientific information on the biology and ecology of those species; and relevant scientific and gray literature (see Literature Cited).

### 1.3 Proposed Federal Action

Under the ESA, "Action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies (50 CFR 402.02), whereas under the MSA, Federal action means any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken by a Federal Agency (50 CFR 600.910).

The COE proposes to authorize Latitude Development LLC (the applicant) to install a stormwater outfall at 200 West Marine View Drive, in Everett, Washington (Figure 1). The proposed stormwater outfall would be the discharge end of the applicant planned stormwater system that is designed to capture, treat, and discharge the stormwater from their larger Baywood Industrial development project, which is being taken in coordination with the Port of Everett's larger restoration plan for the property as part of the Puget Sound Initiative environmental cleanup (Shannon and Wilson 2019a). The COE has no authority over the upland portion of the Baywood Industrial development project. However, because the outfall that the COE proposes to authorize would be an integral part of the larger project, the planned upland development and its stormwater management system are described at the end of this section, and the potential effects of stormwater discharge from the Baywood Industrial development site into the waters of Port Gardner is included in the effects analysis of this opinion.

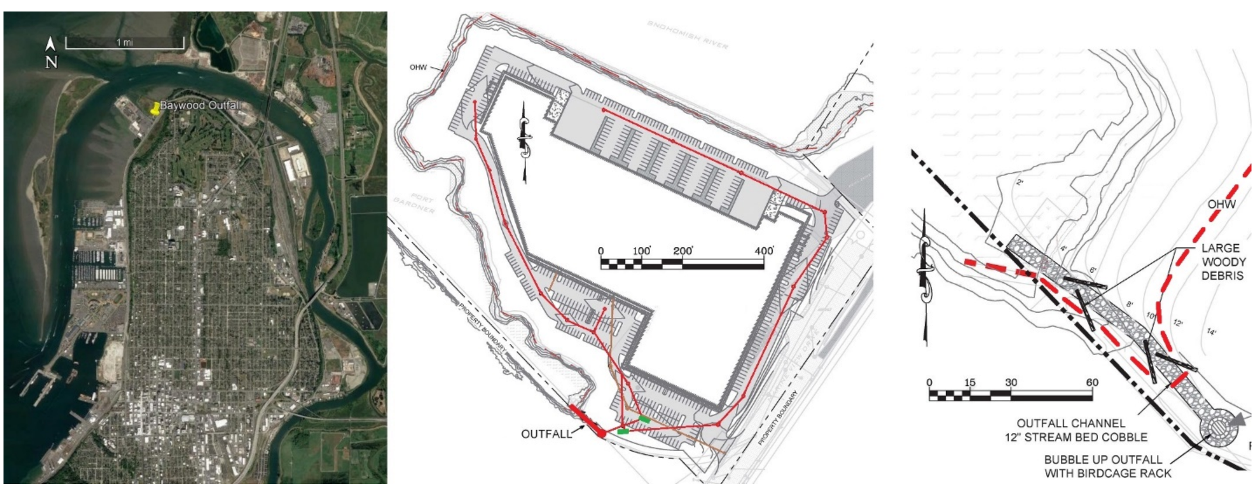


**Figure 1.** Google satellite photograph and two drawings of the Baywood project site on the northeast corner of Everett, Washington. The yellow pin in the left image indicates the shoreline project site on Port Gardner. The red lines and green rectangles in the center image indicate the planned conveyance system and outfall for stormwater from the Baywood Industrial development project. The green rectangles indicate biofiltration units. The right image is a close-up overhead drawing of the proposed outfall. The dashed red line indicates the ordinary high water line.

The applicant's contractors would operate standard land-based earth-moving and construction equipment and employ standard construction techniques to install an outfall with a bioengineered conveyance within a drainage ditch that exists on the site's southwestern corner. The outfall would consist of a vertical bubble-up type discharge port with a birdcage rack over the opening. Waterward of the outfall, they would line the drainage ditch with 12-inch stream cobbles, and install two sets of large woody debris that would be anchored at angles across the cobble conveyance flow path (Figures 1 & 2). About 3 weeks of work would be required to install and test the entire stormwater management system (Soundview 2021). To reduce potential impacts on aquatic resources, all work below Ordinary High Water Line (OHWL) would be done during the July 16 to February 15 in-water work window for bull trout, because it is more restrictive than the July 2 to March 2 work window for Chinook salmon in the area. Additionally, the contractors would be required to comply with the best management practices (BMPs) and conservation measures identified in the applicant's BA, Joint Aquatic Resources Permit Application (JARPA) Form, and the Hydraulic Project Approval (HPA) for this project (WDFW 2020).

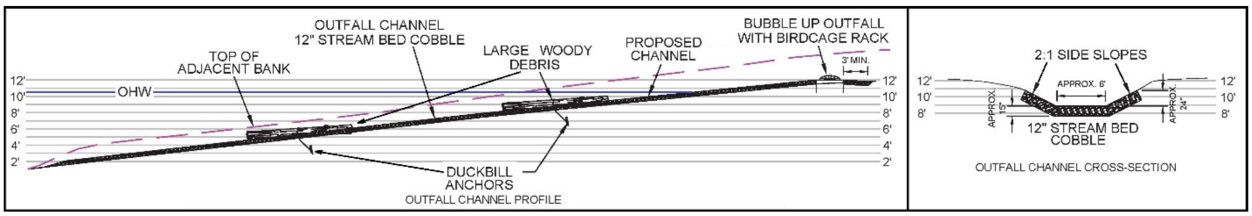


**Figure 2.** Profile and cross-section drawings of the Port of Everett's proposed outfall and bioengineered conveyance that would be installed in the existing drainage ditch.

The NMFS also considered whether or not the proposed action would cause any other activities, and determined that the action would facilitate the larger Baywood Industrial development project because without the stormwater outfall, the project would not be constructed.

At the project site, the applicant would contract upland work to construct a large warehouse that would house commercial and industrial spaces that would be used for manufacturing and distribution, as well as office spaces. They would also construct associated driveways, parking areas, and a truck loading dock. The development would include 3 30-foot tall pole-mounted 240-Watt LED lights, and 21 120-Watt LED and 13 240-Watt lights mounted on the exterior wall of the buildings (EnvisionLED 2021). When complete, the project would create about 11.35 acres of impervious surfaces, including about 5.97 acres of driveways and parking areas, and 5.38 acres of rooftop (Blueline 2021). The roof would be coated with 0.6-mil thick Thermoplastic Polyolefin (TPO) roofing material, which reportedly releases little to no toxins or residue, and qualifies as a non-pollution generating surface per the WDOE manual. No unpainted galvanized materials will be used on the roof or anywhere on the site (Soundview 2021). The project includes no in-water work other than the installation of the outfall within an existing drainage ditch along the south border of the property. Once the site opens, vehicular traffic at the site would increase. Up to a couple hundred vehicles would be present at the site every day due to the site's tenants and their customers, as well as the delivery, service, and emergency vehicles that would also be frequently present at the site.

To address stormwater from the new impervious surface at the site, the applicant would install a stormwater conveyance and treatment system that has been designed to avoid over-topping for storms less intense than 100-year events, and would discharge to the outfall that is the subject of this consultation (Blueline 2021). In addition to storm drains and conveyance pipes, the applicant would install two Modular Wetland Linear System (MWLS) units to provide enhanced treatment for all of the stormwater from the site's driveways and parking areas (Blueline 2021; Latitude 2020). Each unit includes a multistage filter system that consists of a pretreatment chamber, a biofiltration chamber, and a discharge chamber. The pretreatment and biofiltration chambers both include filtration media that come standard with all MWLSs (NMFS 2019). The standard MWLS is advertised to provide removal efficiencies of about 85% for total suspended solids (TSS); 95% for motor oil; 50% for total copper (38% dissolved copper); 69% for total zinc (66% dissolved zinc); 64% for total phosphorus (67% ortho phosphorus); and 45% for nitrogen (Bio Clean 2019). The use of MLWS is approved by the Washington State Department of Ecology (WDOE) for general use level (GULD) stormwater treatment to provide Basic, Phosphorus, and Enhanced water quality treatment levels for stormwater runoff (WDOE 2019).

## 2. ENDANGERED SPECIES ACT: BIOLOGICAL OPINION AND INCIDENTAL TAKE STATEMENT

The ESA establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat upon which they depend. As required by section 7(a)(2) of the ESA, each Federal agency must ensure that its actions are not likely to jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their designated critical habitat. Per the requirements of the ESA, Federal action agencies consult with NMFS and section 7(b)(3) requires that, at the conclusion of consultation, NMFS provide an opinion stating how the agency's actions would affect listed species and their critical habitats. If incidental take is reasonably certain to occur, section 7(b)(4) requires NMFS to provide an ITS that specifies the impact of any incidental taking and includes non-discretionary reasonable and prudent measures (RPMs) and terms and conditions to minimize such impacts.

The COE determined that the proposed action is not likely to adversely affect all of the species critical habitats identified in Table 1. Because the NMFS has concluded that the proposed action is likely to adversely affect PS Chinook salmon and its designated critical habitat, the NMFS has proceeded with formal consultation. Our concurrence with the COE's "not likely to adversely affect" determinations for the remaining species and critical habitats identified in Table 1 is documented in the "Not Likely to Adversely Affect" Determinations section (2.12).

**Table 1.** ESA-listed species and critical habitats that may be affected by the proposed action.

| ESA-listed species and critical habitat likely to be adversely affected (LAA) | | | | |
|---|---|---|---|---|
| **Species** | **Status** | **Species** | **Critical Habitat** | **Listed / CH Designated** |
| Chinook salmon (*Oncorhynchus tshawytscha*) Puget Sound | Threatened | LAA | LAA | 06/28/05 (70 FR 37160) / 09/02/05 (70 FR 52630) |
| **ESA-listed species and critical habitat not likely to be adversely affected (NLAA)** | | | | |
| **Species** | **Status** | **Species** | **Critical Habitat** | **Listed / CH Designated** |
| steelhead (*O. mykiss*) Puget Sound | Threatened | NLAA | N/A | 05/11/07 (72 FR 26722) / 02/24/16 (81 FR 9252) |
| bocaccio (*Sebastes paucispinis*) Puget Sound/Georgia Basin | Endangered | NLAA | NLAA | 04/28/10 (75 FR 22276) / 11/13/14 (79 FR 68041) |
| yelloweye rockfish (*S. ruberrimus*) PS/GB | Threatened | NLAA | NLAA | 04/28/10 (75 FR 22276) / 11/13/14 (79 FR 68041) |
| killer whales (*Orcinus orca*) southern resident | Endangered | NLAA | NLAA | 11/18/05 (70 FR 57565) / 11/29/06 (71 FR 69054) |

LAA = likely to adversely affect NLAA = not likely to adversely affect
N/A = not applicable. The action area is outside designated critical habitat, or critical habitat has not been designated.

## 2.1 Analytical Approach

This biological opinion includes both a jeopardy analysis and an adverse modification analysis. The jeopardy analysis relies upon the regulatory definition of "jeopardize the continued existence of" a listed species, which is "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50 CFR 402.02). Therefore, the jeopardy analysis considers both survival and recovery of the species.

This biological opinion relies on the definition of "destruction or adverse modification," which "means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species" (50 CFR 402.02).

Critical habitat designations prior to 2016 used the terms "primary constituent element" (PCE) or "essential feature" (EF) to identify important habitat qualities. However, the 2016 critical habitat regulations (50 CFR 424.12) replaced those terms with "physical or biological features" (PBFs). The shift in terminology does not change the approach used in conducting a "destruction or adverse modification" analysis, which is the same regardless of whether the original designation identified PCEs, EFs, or PBFs. In this biological opinion, we use the term PBF to mean PCE or EF, as appropriate for the specific critical habitat.

The 2019 regulations define effects of the action using the term "consequences" (50 CFR 402.02). As explained in the preamble to the regulations (84 FR 44977), that definition does not change the scope of our analysis and in this opinion we use the terms "effects" and "consequences" interchangeably.

We use the following approach to determine whether a proposed action is likely to jeopardize listed species or destroy or adversely modify critical habitat:

- Evaluate the range-wide status of the species and critical habitat expected to be adversely affected by the proposed action.
- Evaluate the environmental baseline of the species and critical habitat.
- Evaluate the effects of the proposed action on species and their habitat using an exposure-response approach.
- Evaluate cumulative effects.
- In the integration and synthesis, add the effects of the action and cumulative effects to the environmental baseline, and, in light of the status of the species and critical habitat, analyze whether the proposed action is likely to: (1) directly or indirectly reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species, or (2) directly or indirectly result in an alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.
- If necessary, suggest a reasonable and prudent alternative to the proposed action.

## 2.2 Rangewide Status of the Species and Critical Habitat

This opinion examines the status of each species that would be adversely affected by the proposed action. The status is determined by the level of extinction risk that the listed species face, based on parameters considered in documents such as recovery plans, status reviews, and listing decisions. This informs the description of the species' likelihood of both survival and recovery. The species status section also helps to inform the description of the species' "reproduction, numbers, or distribution" as described in 50 CFR 402.02. The opinion also examines the condition of critical habitat throughout the designated area, evaluates the conservation value of the various watersheds and coastal and marine environments that make up the designated area, and discusses the function of the PBFs that are essential for the conservation of the species.

The summaries that follow describe the status of the ESA-listed species, and their designated critical habitats, that occur within the action area and are considered in this opinion. More detailed information on the biology, habitat, and conservation status and trend of these listed resources can be found in the listing regulations and critical habitat designations published in the Federal Register and in the recovery plans and other sources at: https://www.fisheries.noaa.gov/species-directory/threatened-endangered, and are incorporated here by reference.

**<u>Listed Species</u>**

<u>Viable Salmonid Population (VSP) Criteria:</u> For Pacific salmonids, we commonly use four VSP criteria (McElhany et al. 2000) to assess the viability of the populations that constitute the species. These four criteria (spatial structure, diversity, abundance, and productivity) encompass the species' "reproduction, numbers, or distribution" as described in 50 CFR 402.02. When these

parameters are collectively at appropriate levels, they maintain a population's capacity to adapt to various environmental conditions and allow it to sustain itself in the natural environment.

"Spatial structure" refers both to the spatial distributions of individuals in the population and the processes that generate that distribution. A population's spatial structure depends on habitat quality and spatial configuration, and the dynamics and dispersal characteristics of individuals in the population.

"Diversity" refers to the distribution of traits within and among populations. These range in scale from DNA sequence variation in single genes to complex life history traits.

"Abundance" generally refers to the number of naturally-produced adults that return to their natal spawning grounds.

"Productivity" refers to the number of naturally-spawning adults produced per parent. When progeny replace or exceed the number of parents, a population is stable or increasing. When progeny fail to replace the number of parents, the population is in decline.

For species with multiple populations, we assess the status of the entire species based on the biological status of the constituent populations, using criteria for groups of populations, as described in recovery plans and guidance documents from technical recovery teams. Considerations for species viability include having multiple populations that are viable, ensuring that populations with unique life histories and phenotypes are viable, and that some viable populations are both widespread to avoid concurrent extinctions from mass catastrophes and spatially close to allow functioning as metapopulations (McElhany et al. 2000).

The summaries that follow describe the status of the ESA-listed species, and their designated critical habitats, that occur within the geographic area of this proposed action and are considered in this opinion. More detailed information on the status and trends of these listed resources, and their biology and ecology, are in the listing regulations and critical habitat designations published in the Federal Register.

<u>Puget Sound (PS) Chinook Salmon:</u> The PS Chinook salmon evolutionarily significant unit (ESU) was listed as threatened on June 28, 2005 (70 FR 37160). We adopted the recovery plan for this ESU in January 2007. The recovery plan consists of two documents: the Puget Sound salmon recovery plan (SSPS 2007) and the final supplement to the Shared Strategy's Puget Sound salmon recovery plan (NMFS 2006). The recovery plan adopts ESU and population level viability criteria recommended by the Puget Sound Technical Recovery Team (PSTRT) (Ruckelshaus et al. 2002). The PSTRT's biological recovery criteria will be met when all of the following conditions are achieved:

- The viability status of all populations in the ESU is improved from current conditions, and when considered in the aggregate, persistence of the ESU is assured;
- Two to four Chinook salmon populations in each of the five biogeographical regions of the ESU achieve viability, depending on the historical biological characteristics and acceptable risk levels for populations within each region;

- At least one population from each major genetic and life history group historically present within each of the five biogeographical regions is viable;
- Tributaries to Puget Sound not identified as primary freshwater habitat for any of the 22 identified populations are functioning in a manner that is sufficient to support an ESU-wide recovery scenario; Production of Chinook salmon from tributaries to Puget Sound not identified as primary freshwater habitat for any of the 22 identified populations occurs in a manner consistent with ESU recovery; and
- Populations that do not meet all the Viable Salmon Population (VSP) parameters are sustained to provide ecological functions and preserve options for ESU recovery.

General Life History: Chinook salmon are anadromous fish that require well-oxygenated water that is typically less than 63º F (17º C), but some tolerance to higher temperatures is documented with acclimation. Adult Chinook salmon spawn in freshwater streams, depositing fertilized eggs in gravel "nests" called redds. The eggs incubate for three to five months before juveniles hatch and emerge from the gravel. Juveniles spend from three months to two years in freshwater before migrating to the ocean to feed and mature. Chinook salmon spend from one to six years in the ocean before returning to their natal freshwater streams where they spawn and then die.

Chinook salmon are divided into two races, stream-types and ocean-types, based on the major juvenile development strategies. Stream-type Chinook salmon tend to rear in freshwater for a year or more before entering marine waters. Conversely, ocean-type juveniles tend to leave their natal streams early during their first year of life, and rear in estuarine waters as they transition into their marine life stage. Both stream- and ocean-type Chinook salmon are present, but ocean-type Chinook salmon predominate in Puget Sound populations.

Chinook salmon are further grouped into "runs" that are based on the timing of adults that return to freshwater. Early- or spring-run chinook salmon tend to enter freshwater as immature fish, migrate far upriver, and finally spawn in the late summer and early autumn. Late- or fall-run Chinook salmon enter freshwater at an advanced stage of maturity, move rapidly to their spawning areas, and spawn within a few days or weeks. Summer-run fish show intermediate characteristics of spring and fall runs, without the extensive delay in maturation exhibited by spring-run Chinook salmon. In Puget Sound, spring-run Chinook salmon tend to enter their natal rivers as early as March, but do not spawn until mid-August through September. Returning summer- and fall-run fish tend to enter the rivers early-June through early-September, with spawning occurring between early August and late-October.

Yearling stream-type fish tend to leave their natal rivers late winter through spring, and move relatively directly to nearshore marine areas and pocket estuaries. Out-migrating ocean-type fry tend to migrate out of their natal streams beginning in early-March. Those fish rear in the tidal delta estuaries of their natal stream for about two weeks to two months before migrating to marine nearshore areas and pocket estuaries in late May to June. Out-migrating young of the year parr tend to move relatively directly into marine nearshore areas and pocket estuaries after leaving their natal streams between late spring and the end of summer.

Spatial Structure and Diversity: The PS Sound Chinook salmon ESU includes all naturally spawning populations of Chinook salmon from rivers and streams flowing into Puget Sound including the Straits of Juan De Fuca from the Elwha River, eastward, including rivers and streams flowing into Hood Canal, South Sound, North Sound and the Strait of Georgia in Washington. The ESU also includes the progeny of numerous artificial propagation programs (NWFSC 2015). The PSTRT identified 22 extant populations, grouped into five major geographic regions, based on consideration of historical distribution, geographic isolation, dispersal rates, genetic data, life history information, population dynamics, and environmental and ecological diversity. The PSTRT distributed the 22 populations among five major biogeographical regions, or major population groups (MPGs), that are based on similarities in hydrographic, biogeographic, and geologic characteristics (Table 2).

**Table 2.** Extant PS Chinook salmon populations in each biogeographic region (Ruckelshaus *et al*. 2002, NWFSC 2015).

| Biogeographic Region | Population (Watershed) |
|---|---|
| Strait of Georgia | North Fork Nooksack River |
| | South Fork Nooksack River |
| Strait of Juan de Fuca | Elwha River |
| | Dungeness River |
| Hood Canal | Skokomish River |
| | Mid Hood Canal River |
| Whidbey Basin | Skykomish River |
| | Snoqualmie River |
| | North Fork Stillaguamish River |
| | South Fork Stillaguamish River |
| | Upper Skagit River |
| | Lower Skagit River |
| | Upper Sauk River |
| | Lower Sauk River |
| | Suiattle River |
| | Upper Cascade River |
| Central/South Puget Sound Basin | Cedar River |
| | North Lake Washington/ Sammamish River |
| | Green/Duwamish River |
| | Puyallup River |
| | White River |
| | Nisqually River |

Hatchery-origin spawners are present in high fractions in most populations within the ESU, with the Whidbey Basin the only MPG with consistently high fractions of natural-origin spawners. Between 1990 and 2014, the fraction of natural-origin spawners has declined in many of the populations outside of the Skagit watershed (NWFSC 2015).

<u>Abundance and Productivity:</u> Available data on total abundance since 1980 indicate that abundance trends have fluctuated between positive and negative for individual populations, but productivity remains low in most populations, and hatchery-origin spawners are present in high fractions in most populations outside of the Skagit watershed. Available data now show that

most populations have declined in abundance over the past 7 to 10 years. Further, escapement levels for all populations remain well below the PSTRT planning ranges for recovery, and most populations are consistently below the spawner-recruit levels identified by the PSTRT as consistent with recovery (NWFSC 2015). The current information on abundance, productivity, spatial structure and diversity suggest that the Whidbey Basin MPG is at relatively low risk of extinction. The other four MPGs are considered to be at high risk of extinction due to low abundance and productivity (NWFSC 2015). The most recent 5-year status review concluded that the ESU should remain listed as threatened (NMFS 2017).

Limiting Factors: Factors limiting recovery for PS Chinook salmon include:

- Degraded floodplain and in-river channel structure
- Degraded estuarine conditions and loss of estuarine habitat
- Riparian area degradation and loss of in-river large woody debris
- Excessive fine-grained sediment in spawning gravel
- Degraded water quality and temperature
- Degraded nearshore conditions
- Impaired passage for migrating fish
- Severely altered flow regime

PS Chinook Salmon within the Action Area: The PS Chinook salmon that are most likely to occur in the action area would be summer run fish from the Skykomish River population, and fall run fish from the Skykomish and Snoqualmie River populations. (NWFSC 2015; WDFW 2021a). Both stream- and ocean-type Chinook salmon are present in these populations, with the majority being ocean-types. Since 1965, the estimated total abundance for returning adult PS Chinook salmon has fluctuated between about 966 and 7,614 in the Skykomish River basin, and about 321 and 3,600 in the Snoqualmie River basin (WDFW 2021b), with the average trend being slightly negative in both basins, and natural productivity in the Skykomish considered below replacement for all years since the mid-1980s (NWFSC 2015). In 2020, the total numbers of returning adults were about 2,722 and 1,211 for the Skykomish and Snoqualmie Rivers, respectively (WDFW 2021b). Since 1997, the fraction of natural-origin spawners has fluctuated between about 34 to 83 percent, and 65 to 93 percent, respectively. The 2020 fraction of natural-origin spawners was about 73 and 66 percent, respectively (WDFW 2021b).

Adult and juvenile Chinook salmon utilize the lower Snohomish River, and Port Gardner Union Slough, as a migration corridor. Juvenile Chinook salmon also utilize the area for foraging during their outmigration. No spawning habitat occurs in the action area. Returning adult Chinook salmon tend to enter the Snohomish River and migrate past the project site June through September to mid-October. Spawning occurs well upstream of the action area, mostly from mid-September to mid-November. Young of the year juveniles are reported in the Snohomish River estuary February through September, with peak density occurring between May and June (Rice *et al*. 2014; Rowes and Fresh 2003), but stream-type fish may be present in the system year-round.

## Critical Habitat

This section describes the status of designated critical habitat that would be affected by the proposed action by examining the condition and trends of physical or biological features (PBFs) that are essential to the conservation of the listed species throughout the designated areas. The PBFs are essential because they support one or more of the species' life stages (e.g., sites with conditions that support spawning, rearing, migration and foraging). The proposed project would affect critical habitat for PS Chinook salmon.

The NMFS designated critical habitat for PS Chinook salmon on September 2, 2005 (70 FR 52630). That critical habitat is located in 16 freshwater subbasins and watersheds between the Dungeness/Elwha Watershed and the Nooksack Subbasin, inclusively, as well as in nearshore marine waters of the Puget Sound that are south of the US-Canada border and east of the Elwha River, and out to a depth of 30 meters. Although offshore marine is an area type identified in the final rule, it was not designated as critical habitat for PS Chinook salmon.

The PBFs of salmonid critical habitat include: (1) Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development; (2) Freshwater rearing sites with: (i) Water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; (ii) Water quality and forage supporting juvenile development; and (iii) Natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks; (3) Freshwater migration corridors free of obstruction and excessive predation with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival; (4) Estuarine areas free of obstruction and excessive predation with: (i) Water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater; (ii) Natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels; and (iii) Juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation; (5) Nearshore marine areas free of obstruction and excessive predation with: (i) Water quality and quantity conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation; and (ii) Natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels; and (6) Offshore marine areas with water quality conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation. The PBF for PS Chinook salmon CH are listed in Table 3.

Major tributary river basins in the Puget Sound basin include the Nooksack, Samish, Skagit, Sauk, Stillaguamish, Snohomish, Lake Washington, Cedar, Sammamish, Green, Duwamish, Puyallup, White, Carbon, Nisqually, Deschutes, Skokomish, Duckabush, Dosewallips, Big Quilcene, Elwha, and Dungeness rivers and Soos Creek. Critical habitat throughout the Puget Sound basin has been degraded by numerous activities, including hydropower development, loss of mature riparian forests, increased sediment inputs, removal of large wood from the waterways, intense urbanization, agriculture, alteration of floodplain and stream morphology (i.e., channel modifications and diking), riparian vegetation disturbance, wetland draining and conversion, dredging, armoring of shorelines, marina and port development, road and railroad construction and maintenance, logging, and mining. Changes in habitat quantity, availability, and diversity, and flow, temperature, sediment load and channel instability are common limiting factors of critical habitat throughout the basin.

**Table 3.** Physical or biological features (PBFs) of designated critical habitat for PS Chinook salmon, and corresponding life history events. Although offshore marine areas were identified in the FR, no offshore marine areas were designated as critical habitat for PS Chinook salmon.

| **Physical or Biological Features** | | |
|---|---|---|
| **Site Type** | **Site Attribute** | **Life History Event** |
| Freshwater spawning | Water quantity<br>Water quality<br>Substrate | Adult spawning<br>Embryo incubation<br>Alevin growth and development |
| Freshwater rearing | Water quantity and Floodplain connectivity<br>Water quality and Forage<br>Natural cover | Fry emergence from gravel<br>Fry/parr/smolt growth and development |
| Freshwater migration | (Free of obstruction and excessive predation)<br>Water quantity and quality<br>Natural cover | Adult sexual maturation<br>Adult upstream migration and holding<br>Kelt (steelhead) seaward migration<br>Fry/parr/smolt growth, development, and seaward migration |
| Estuarine | (Free of obstruction and excessive predation)<br>Water quality, quantity, and salinity<br>Natural cover<br>Forage | Adult sexual maturation and "reverse smoltification"<br>Adult upstream migration and holding<br>Kelt (steelhead) seaward migration<br>Fry/parr/smolt growth, development, and seaward migration |
| Nearshore marine | (Free of obstruction and excessive predation)<br>Water quality, quantity, and forage<br>Natural cover | Adult growth and sexual maturation<br>Adult spawning migration<br>Nearshore juvenile rearing |
| Offshore marine | Water quality and forage | Adult growth and sexual maturation<br>Adult spawning migration<br>Subadult rearing |

Land use practices have likely accelerated the frequency of landslides delivering sediment to streams. Fine sediment from unpaved roads also contributes to stream sedimentation. Unpaved roads are widespread on forested lands in the Puget Sound basin, and to a lesser extent, in rural residential areas. Historical logging removed most of the riparian trees near stream channels. Subsequent agricultural and urban conversion permanently altered riparian vegetation in the river valleys, leaving either no trees, or a thin band of trees. The riparian zones along many agricultural areas are now dominated by alder, invasive canary grass and blackberries, and provide substantially reduced stream shade and LW recruitment (SSPS 2007).

Diking, agriculture, revetments, railroads and roads in lower stream reaches have caused significant loss of secondary channels in major valley floodplains in this region. Confined main channels create high-energy peak flows that remove smaller substrate particles and LW. The loss of side-channels, oxbow lakes, and backwater habitats has resulted in a significant loss of juvenile salmonid rearing and refuge habitat. When the water level of Lake Washington was lowered 9 feet in the 1910s, thousands of acres of wetlands along the shoreline of Lake Washington, Lake Sammamish and the Sammamish River corridor were drained and converted to agricultural and urban uses. Wetlands play an important role in hydrologic processes, as they store water which ameliorates high and low flows. The interchange of surface and groundwater in complex stream and wetland systems helps to moderate stream temperatures. Thousands of acres of lowland wetlands across the region have been drained and converted to agricultural and urban uses, and forest wetlands are estimated to have diminished by one-third in Washington State (FEMAT 1993; Spence et al. 1996; SSPS 2007).

Loss of riparian habitat, elevated water temperatures, elevated levels of nutrients, increased nitrogen and phosphorus, and higher levels of suspended sediment, presumably from urban and highway runoff, wastewater treatment, failing septic systems, and agriculture or livestock impacts, have been documented in many Puget Sound tributaries (SSPS 2007).
Peak stream flows have increased over time due to paving (roads and parking areas), reduced percolation through surface soils on residential and agricultural lands, simplified and extended drainage networks, loss of wetlands, and rain-on-snow events in higher elevation clear cuts (SSPS 2007). In urbanized Puget Sound, there is a strong association between land use and land cover attributes and rates of coho spawner mortality likely due to runoff containing contaminants emitted from motor vehicles (Feist et al. 2011).

Dams constructed for hydropower generation, irrigation, or flood control have substantially affected PS Chinook salmon populations in a number of river systems. The construction and operation of dams have blocked access to spawning and rearing habitat, changed flow patterns, resulted in elevated temperatures and stranding of juvenile migrants, and degraded downstream spawning and rearing habitat by reducing recruitment of spawning gravel and LW to downstream areas (SSPS 2007). These actions tend to promote downstream channel incision and simplification (Kondolf 1997), limiting fish habitat. Water withdrawals reduce available fish habitat and alter sediment transport. Hydropower projects often change flow rates, stranding and killing fish, and reducing aquatic invertebrate (food source) productivity (Hunter 1992).

Juvenile mortality occurs in unscreened or inadequately screened diversions. Water diversion ditches resemble side channels in which juvenile salmonids normally find refuge. When diversion headgates are shut, access back to the main channel is cut off and the channel goes dry. Mortality can also occur with inadequately screened diversions from impingement on the screen, or mutilation in pumps where gaps or oversized screen openings allow juveniles to get into the system. Blockages by dams, water diversions, and shifts in flow regime due to hydroelectric development and flood control projects are major habitat problems in many Puget Sound tributary basins (SSPS 2007).

The nearshore marine habitat has been extensively altered and armored by industrial and residential development near the mouths of many of Puget Sound's tributaries. A railroad runs along large portions of the eastern shoreline of Puget Sound, eliminating natural cover along the shore and natural recruitment of beach sand (SSPS 2007).

Degradation of the near-shore environment has occurred in the southeastern areas of Hood Canal in recent years, resulting in late summer marine oxygen depletion and significant fish kills. Circulation of marine waters is naturally limited, and partially driven by freshwater runoff, which is often low in the late summer. However, human development has increased nutrient loads from failing septic systems along the shoreline, and from use of nitrate and phosphate fertilizers on lawns and farms. Shoreline residential development is widespread and dense in many places. The combination of highways and dense residential development has degraded certain physical and chemical characteristics of the near-shore environment (HCCC 2005; SSPS 2007).

Critical Habitat within the Action Area: The Snohomish River from Puget Sound and Port Gardner to slightly upstream of Highway 2 has been designated nearshore marine critical habitat for PS Chinook salmon. The critical habitat within the action area primarily supports migration of PS Chinook salmon juveniles and adults, as well as nearshore marine rearing of juveniles (NOAA 2021; WDFW 2021a).

## 2.3 Action Area

"Action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02).

The project site is situated at the landward (southeast) end of a relatively narrow 1,450-foot long inlet at the north end of Port Gardner, Everett, Washington. As described in sections 2.5, stormwater and artificial lighting are the only project-related stressors likely to impact PS Chinook salmon and their critical habitat. Detectable stormwater effects would typically be limited to within a few hundred feet away from the stormwater outfall, but to be conservative, the NMFS considers that detectable effects could be reasonably expected to occur anywhere within the inlet. Detectable lighting impacts are estimated to be limited to about 100 feet from the outer edges of the new complex, which could affect a narrow strip of water along the north side of the development as well as the inlet. As such, the NMFS defines the action area for fish to include all waters and substrates within the inlet, and waters within 100 feet of the norther outer edges of the new complex (Figure 3).


**Figure 3.** Google satellite photograph of the north end of Port Gardner with the areas where PS Chinook salmon may be affected by the action's stormwater and nighttime artificial lighting outlined in red.

However, trophic connectivity between PS Chinook salmon and the SR killer whales that feed on them would extend the action area into the marine waters of Puget Sound. The described area overlaps with the geographic ranges of the ESA-listed species and the boundaries of designated critical habitats identified in Table 1. The action area also overlaps with areas that have been designated, under the MSA, as EFH for Pacific Coast salmon, Pacific Coast groundfish, and coastal pelagic species.

## 2.4 Environmental Baseline

The "environmental baseline" refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultations, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR 402.02).

<u>Environmental conditions at the project site and the surrounding area:</u> The project site is located at the confluence of the Snohomish River and the northern reaches of Port Gardner, along the northwestern shoreline of Everett, Washington (Figures 1, 3, & 4). Although the action area includes the marine waters of Puget Sound, as described in sections 2.5 & 2.12, all detectable effects of the action would be limited to an area within about 1,450 feet of the proposed outfall. Therefore, this section focuses on habitat conditions in the Snohomish River basin and Port Gardner, and does not discuss habitat conditions in Puget Sound.

The Snohomish River basin is the second-largest watershed that flows into Puget Sound. It includes the Skykomish, Snoqualmie, Pilchuck, and Tolt Rivers, which join to become the Snohomish River. It originates on the western slopes of the Cascade Mountains, and drains about 1.2 million acres as it flows westerly through broad, glaciated lowland valleys, before it enters Puget Sound north of Everett. Average annual precipitation ranges from about 35 inches in the western lowlands to over 120 inches in the headwaters.

Since the mid-1800s, most of the land within the basin has been converted from dense old-growth forests to agricultural and low-density residential lands, with high density residential and industrial development occurring mostly near the Snohomish River estuary. Current land uses across the basin include forestry, agriculture, residential/ urban, infrastructure (roads and railroads; gas, water, and power lines), light industry, recreation, and mining. Agricultural lands, account for about 5% of the basin, but dominate the floodplains (SBSRF 2005). Rural residential development is also scattered throughout the lowlands and river floodplains, and many roads follow stream banks, resulting in the loss of mature riparian vegetation in many areas. Although conditions vary between individual reaches, in general, water quality, wetlands, streambanks, large-wood abundance, and floodplain connectivity are all considered degraded throughout the basin (SBSRTC 2002). The Basin now includes large portions of King and Snohomish Counties, with a combined population of a bit over 3.5 million people, and a combined annual growth rate of about 1.5 % since 2010 (King County 2021; Snohomish County 2021). The basin is the major source of municipal water for the area, including the cities of Everett and Seattle. It is also the receptor for the effluent from numerous municipal wastewater treatment plants.

The geography and ecosystems in and adjacent to the action area have been heavily altered by human activity since European settlers first arrived in the 1820s. Logging camps and sawmills were established across the area in the 1850s.In the late 1880s and the 1890s, large-scale waterfront development of factories, smelting plants, pulp and paper plants, saw mills, ship builders, maritime support services, marine shipping terminals, and fishing-related industry occurred. In 1901, an offshore pile jetty was built to protect the Port of Everett. Subsequent placement of rip rap and dredged materials along the pile jetty led to the creation of Jetty Island. By 1918, Everett was a thriving seaport and a formally established town (Port of Everett 2019a).

Currently, Everett is the 5th largest city on Puget Sound. The majority of the shoreline along Everett's western waterfront has been modified by extensive dredge and fill activity. Concrete and sheet pile bulkheads, steeply sloped riprap banks, piers, and wharves predominate along most of the shoreline. Upland of the hardened shoreline, most of the land consists of industrial yards and buildings, parking lots and roads, and previously developed vacant lots, such as the project site.

The Port of Everett is a deep-water commercial seaport located in Port Gardner. It includes eight shipping terminals, and the 3-basin, 2,300-slip Everett Marina (Port of Everett 2019a and b). The Everett Naval Station is located between the Port's shipping terminals and the marina's south basin parking lot.

The Port has identified six specific cleanup sites within their area of responsibility where previous waterfront activities contaminated groundwater, as well as upland and marine sediments

(Port of Everett. 2019c). This includes the project site. The shoreline restoration area on the lowland portion of the property is located within the Bay Wood Model Toxics Control Act (MTCA) cleanup site boundaries. Within the narrow inlet that separates the project site from the industrial property to the south, WDOE has identified sediment contamination attributed to releases from the southern property. Sediment sampling within the inlet in 2012 primarily detected polychlorinated biphenyl (PCB) congeners and dioxins/furans. PCB congener concentrations were greater than 0.561 milligrams per kilogram (mg/kg) organic carbon normalized (OCN), and dioxin/furan concentrations exceeded 5 nanograms per kilogram (ng/kg) (Anchor 2013; WDOE 2021).

A sawmill and log processing yard occupied the upland portion of the project area adjacent to the proposed outfall from the 1940s through the 1990s. The property has been vacant since 1995. In the late 1990s, all structures were removed, along with residual bark, wood chips, and rock debris. A dike was constructed, and the upland area was backfilled with sand. Additional upland cleanup was done between 2012 and 2013. The project area's northern shoreline consists of a riprap and pile "training wall" that is maintained by the COE (visible in Figures 3 & 4). The mudflats north of the training wall are destined MTCA cleanup in the future.

Prior to the Port of Everett's 2020-2021 shoreline restoration project at the site (Figure 4), the western shoreline consisted of eroded slopes of exposed fill material and debris that face the navigation channel. The southern shoreline is the north bank of an inlet that is relatively protected from wind and waves. The southern shoreline included (and still includes) areas of gentle slopes with freshwater seeps that are exposed during low tide, as well as vegetated wetlands in the upper tidal reaches in some areas, as well as areas with steep slopes and no vegetation. Large woody debris was present along the upper banks of some on portions of the southern shoreline. A drainage channel and a wetland were located at the east end of the inlet. Multiple derelict marine industrial structures, including creosote-treated timber piers, piles, and bulkheads, along with a wide range of debris such as riprap, asphalt, concrete, steel pipe, log skids, wire cables, trash, tires, wood debris, and miscellaneous anthropogenic wastes were found along the south and west shorelines of the project area. Invasive plants constituted a large portion of the existing vegetation. As stated above, the mud substrate of the inlet channel is contaminated with PCBs and dioxins/furans, and is to be included as part of the future MTCA cleanup of the inlet and the property to the south of the inlet. The inlet currently supports benthic invertebrate communities, but very little submerged aquatic vegetation (SAV).

**Figure 4.** Arial photograph facing east toward the Baywood project site showing the shoreline restoration area along the west and south sides of the project site (Port of Everett 2021).

The Port's recent restoration work rehabilitated about 1,300 linear feet of shoreline along the south and west border of the project site (Figure 4). The project removed multiple derelict marine industrial structures, including creosote-treated timber piers, piles, and bulkheads, along with a wide range of other debris such as riprap, asphalt, concrete, steel pipe, log skids, wire cables, trash, tires, and miscellaneous anthropogenic wastes. The shoreline was graded to recreate a more natural slope, which was followed by the placement of clean sands and gravels and large woody debris. The project also included the reestablishment of intertidal marsh and enhancement of about 2,200 feet of riparian buffer along the shoreline by removing invasive species and seeding and planting of native grasses, shrubs, and trees.

The past and ongoing anthropogenic impacts described above have reduced the action area's ability to support migrating PS Chinook salmon. However, the action area continues to provide migratory habitat for adults and juveniles, and the area has also been designated as critical habitat for this species.

Climate Change: Climate change has affected the environmental baseline of aquatic habitats across the region and within the action area. However, the effects of climate change have not been homogeneous across the region, nor are they likely to be in the future. During the last century, average air temperatures in the Pacific Northwest have increased by 1 to 1.4° F (0.6 to 0.8º C), and up to 2° F (1.1º C) in some seasons (based on average linear increase per decade; Abatzoglou et al. 2014; Kunkel et al. 2013). Recent temperatures in all but two years since 1998 ranked above the 20th century average (Mote et al. 2013). Warming is likely to continue during the next century as average temperatures are projected to increase another 3 to 10° F (1.7 to 5.6º C), with the largest increases predicted to occur in the summer (Mote et al. 2014).

Decreases in summer precipitation of as much as 30% by the end of the century are consistently predicted across climate models (Mote et al. 2014). Precipitation is more likely to occur during October through March, less during summer months, and more winter precipitation will be rain than snow (ISAB 2007; Mote et al. 2013 and 2014). Earlier snowmelt will cause lower stream flows in late spring, summer, and fall, and water temperatures will be warmer (ISAB 2007; Mote et al. 2014). Models consistently predict increases in the frequency of severe winter precipitation events (i.e., 20-year and 50-year events), in the western United States (Dominguez et al. 2012). The largest increases in winter flood frequency and magnitude are predicted in mixed rain-snow watersheds (Mote et al. 2014).

The combined effects of increasing air temperatures and decreasing spring through fall flows are expected to cause increasing stream temperatures; in 2015, this resulted in 3.5-5.3º C increases in Columbia Basin streams and a peak temperature of 26º C in the Willamette (NWFSC 2015). Overall, about one-third of the current cold-water salmonid habitat in the Pacific Northwest is likely to exceed key water temperature thresholds by the end of this century (Mantua et al. 2009).

Higher temperatures will reduce the quality of available salmonid habitat for most freshwater life stages (ISAB 2007). Reduced flows will make it more difficult for migrating fish to pass physical and thermal obstructions, limiting their access to available habitat (Isaak et al. 2012; Mantua et al. 2010). Temperature increases shift timing of key life cycle events for salmonids and species forming the base of their aquatic food webs (Crozier et al. 2011; Tillmann and Siemann 2011; Winder and Schindler 2004). Higher stream temperatures will also cause decreases in dissolved oxygen and may also cause earlier onset of stratification and reduced mixing between layers in lakes and reservoirs, which can also result in reduced oxygen (Meyer et al. 1999; Raymondi et al. 2013; Winder and Schindler 2004). Higher temperatures are likely to cause several species to become more susceptible to parasites, disease, and higher predation rates (Crozier et al. 2008; Raymondi et al. 2013; Wainwright and Weitkamp 2013).

As more basins become rain-dominated and prone to more severe winter storms, higher winter stream flows may increase the risk that winter or spring floods in sensitive watersheds will damage spawning redds and wash away incubating eggs (Goode et al. 2013). Earlier peak stream flows will also alter migration timing for salmon smolts, and may flush some young salmon and steelhead from rivers to estuaries before they are physically mature, increasing stress and reducing smolt survival (Lawson et al. 2004; McMahon and Hartman 1989).

The adaptive ability of these threatened and endangered species is depressed due to reductions in population size, habitat quantity and diversity, and loss of behavioral and genetic variation. Without these natural sources of resilience, systematic changes in local and regional climatic conditions due to anthropogenic global climate change will likely reduce long-term viability and sustainability of populations in many of these ESUs (NWFSC 2015). New stressors generated by climate change, or existing stressors with effects that have been amplified by climate change, may also have synergistic impacts on species and ecosystems (Doney et al. 2012). These conditions will possibly intensify the climate change stressors inhibiting recovery of ESA-listed species in the future.

## 2.5 Effects of the Action

Under the ESA, "effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities 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 (see 50 CFR 402.17). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b).

As described in Section 1.3, the COE proposes to authorize the applicant to install a stormwater outfall that would be an integral part of a stormwater management system for an upland development project. Work below the OHWL would be limited about 3 weeks between July 16 and February 15 to install a bioengineered stormwater conveyance downslope from a bubble-up type outfall pipe (Figure 2). However, the stormwater and artificial illumination from the new upland development are likely to affect PS Chinook salmon and their designated critical habitat within the waters of Port Gardner.

As described in Section 2.2, adult and juvenile PS Chinook salmon migrate through the project area, which has been designated critical habitat for both species. The proposed work window avoids the peak emigration period for juveniles but overlaps with their nearshore estuarine and marine rearing phase, and with returning adult Chinook salmon. Therefore, the planned work below OHW is likely to cause direct effects on estuarine/marine rearing juveniles, returning adults, and the PBFs of PS Chinook salmon critical habitat through exposure to elevated noise and contaminated water. The proposed action is also likely to cause indirect effects on juvenile and adult PS Chinook salmon and the PBFs of their critical habitat through exposure to contaminated water and artificial illumination related to the upland development.

### 2.5.1 Effects on Listed Species

Construction-related Noise

Exposure to construction-related noise would cause no more than minor effects in PS Chinook salmon. Based on the best available information (Dickerson et al. 2001; CalTrans 2015; FHWA 2017; Reine et al. 2012 & 2014; Richardson et al. 1995) all peak sound levels for the proposed work would be below the 206 $dB_{peak}$ threshold for injury in fish. Additionally, in-water sound levels above the 150 $dB_{SEL}$ threshold for effective quite (Stadler and Woodbury 2009) would be limited to a low number of yards waterward of the east end of the inlet.

It is extremely unlikely that returning adults would swim into the inlet far enough for them to detect construction-related noise, and if any did, the most likely response would be low-level avoidance of the east end of the inlet, and a return to their normal migration route closer in the main channel. Although juveniles are reasonably likely to be in the inlet during construction, they would experience no more than very brief low-level behavioral effects, such as temporary avoidance of the extreme east end of the inlet. For both adults and juveniles, the brief low-level behavioral effects would not affect the fitness or meaningfully affect the normal behaviors of the exposed individuals.

<u>Construction-related contaminated water</u>

Exposure to construction-related contaminated water would cause no more than minor effects in PS Chinook salmon. The proposed work near and below OHW to install the outfall and the bioengineered conveyance could cause temporary water quality impacts through increased turbidity and the introduction of toxic materials from equipment-related spills and discharges. However, most if not all work would be done in the dry, behind sediment and turbidity control devises that are expected to contain the vast majority of mobilized sediments. Additionally, the project includes BMPs specifically intended to reduce the risk and intensity of construction-related discharges and spills. In the unlikely event of a spill or discharge, the event would likely occur above OHW, be very small, and be quickly contained and cleaned.

It is extremely unlikely that returning adults would swim into the inlet far enough to be exposed to construction-related water quality impacts. If any did, the best available information supports the understanding that the in-water presence of spill- and discharge-related contaminants would be very infrequent, very short-lived, and at concentrations too low to cause anything more than brief low-level avoidance of the area immediately adjacent to the outfall construction area, and a return to their normal migration route closer in the main channel. Although juveniles are reasonably likely to be in the inlet during construction, the best available information supports the understanding that they are extremely unlikely to experience anything more than very brief low-level avoidance of the extreme east end of the inlet. For both adults and juveniles, the brief low-level behavioral effects would not affect the fitness or meaningfully affect the normal behaviors of the exposed individuals.

<u>Stormwater:</u>

Stormwater runoff from the upland development would adversely affect PS Chinook salmon. The planned development would increase the volume and chemical nature of the stormwater discharged into the inlet at the site stormwater runoff that would come from the project site. PS Chinook salmon that enter the action area after construction is complete could be directly affected by the stormwater through exposure to water-borne contaminants and/or indirectly through exposure to contaminated prey.

The major sources of pollutants from the new development would be vehicle-related contaminants that accumulate on roadways and parking lot surfaces (Mcintyre et al. 2015; McQueen et al. 2010; Peter et al. 2018; Spromberg et al. 2015). Contaminants that accumulate on the building rooftops would also add to the chemical loading of the stormwater (WDOE 2008, 2014). Accumulated contaminants from those areas would become mobilized by stormwater and transported to the adjacent inlet via the proposed outfall.

Vehicle-related contaminants include petroleum-based Polycyclic Aromatic Hydrocarbons (PAHs), heavy metals, and a growing list of other contaminants that are just beginning to be identified (Peter et al. 2018). Many common roofing materials leach metals, particularly arsenic, copper, and zinc (WDOE 2014). Rooftop structures such as air conditioners and ducting that are made of unprotected galvanized steel may also leach high levels of zinc (WDOE 2008). Additionally, roof runoff is likely to contain pollutants that accumulate through atmospheric deposition (Lye 2009).

PS Chinook salmon and PS steelhead can uptake contaminants directly through their gills, and through dietary exposure (Karrow et al. 1999; Lee and Dobbs 1972; McCain et al. 1990; Meador et al. 2006; Neff 1982; Varanasi et al. 1993). Direct exposure to runoff-borne pollutants can cause effects in exposed fish that range from avoidance behaviors, to reduced growth, altered immune function, and immediate mortality in exposed individuals. The intensity of effects depends largely on the pollutant, its concentration, and/or the duration of exposure (Beitinger and Freeman 1983; Brette et al. 2014; Feist et al. 2011; Gobel et al. 2007; Incardona et al. 2004, 2005, and 2006; Mcintyre et al. 2012; Meadore et al. 2006; Sandahl et al. 2007; Spromberg et al. 2015).

Beitinger and Freeman (1983) report that fish possess acute chemical discrimination abilities and that very low levels of some water-borne contaminants can trigger strong avoidance behaviors. Exposure to PAHs can cause reduced growth, increased susceptibility to infection, and increased mortality in juvenile salmonids (Meador et al. 2006; Varanasi et al. 1993). Zinc can bind to fish gills and cause suffocation (WDOE 2008). In freshwater, exposure to dissolved copper at concentrations between 0.3 to 3.2 μg/L above background levels has been shown to cause avoidance of an area, to reduce salmonid olfaction, and to induce behaviors that increase juvenile salmon's vulnerability to predators (Giattina et al. 1982; Hecht et al. 2007; McIntyre et al. 2012; Sommers et al. 2016; Tierney et al. 2010). However, dissolved copper's olfactory toxicity in salmon diminishes quickly with increased salinity. Baldwin (2015) reports no toxicity at copper concentrations below 50 μg/L in estuarine waters with a salinity of 10 parts per thousand, and Sommers et al. (2016) report no copper-related impairment of olfactory function in salmon in saltwater. Acute exposure to untreated stormwater runoff from roads and bridges has been directly linked to pre-spawner die off in adult coho salmon (Mcintyre et al. 2015; Spromberg et al. 2015). Recent research indicates that a globally ubiquitous tire rubber antioxidant (6PPD-quinone) is highly toxic to salmon, and is also commonly present at toxic levels in U.S. West Coast streams that receive stormwater runoff from roadways (Z. Tian et al. 2020).

Indirect (trophic) exposure to runoff-borne pollutants can injure juvenile salmonids. Stormwater contaminants that settle to the bottom would be biologically available in the receiving inlet into the foreseeable future. Amphipods and copepods uptake PAHs from contaminated sediments

(Landrum and Scavia 1983; Landrum et al. 1984; Neff 1982), and pass them to juvenile Chinook salmon and other fish through the food web. Varanasi et al. (1993) found high levels of PAHs in the stomach contents of juvenile Chinook salmon in the contaminated Duwamish Waterway. They also reported reduced growth, suppressed immune competence, as well as increased mortality in juvenile Chinook salmon that was likely caused by the dietary exposure to PAHs. Meador et al. (2006) demonstrated that dietary exposure to PAHs caused "toxicant-induced starvation" with reduced growth and reduced lipid stores in juvenile Chinook salmon. The authors surmised that these impacts could severely impact the odds of survival in affected juvenile Chinook salmon.

The stormwater from development's driveways and parking areas would be treated by one of two MWLS units prior to discharge. The MWLS units would remove high levels of pollutants from the stormwater, but not all of them. The system is expected to remove about 85% of the total suspended solids (TSS); 95% of the motor oil; 50% of the total copper; 69% of the total zinc; 64% of the total phosphorus; and 45% of the nitrogen from the incoming stormwater (Bio Clean 2020). The MWLS system is not specifically designed to filter out 6PPD-quinone, however studies have shown running stormwater through a bioretention components as simple as compost and sand, can prevent its acute lethal effects on coho (Spromberg et al. 2015). After MWLS treatment vehicle-related stormwater would be piped to the outfall where it would flow down the rock and large woody debris conveyance and into the inlet on the south side of the property. Stormwater from the rooftops would bypass the MWLS units, but discharge through the same outfall described above.

The concentrations of the contaminants that would remain in the effluent discharged to the inlet are unknown and expected to be highly variable. Similarly, the distance from the outfall where the contaminants would dilute to levels too low to cause detectable direct and/or indirect effects is also unknown and expected to be highly variable. Runoff volumes are highly variable and depend on the intensity and duration of individual storm events. Pollutant concentrations are positively correlated with the volume of traffic and the length of time between precipitation events. The highest stormwater pollutant concentrations would likely occur near the start of heavy downpour events that occur in early- to mid-fall after extended dry periods that allow pollutants to build-up on roadways, parking areas, and rooftops. Lower concentrations would occur after the "first flush' of a given storm, as well as later in the rainy season when precipitation events are more frequent and limit the build-up of pollutants.
Although the discharge from the development site would be small in comparison to the flow of the nearby waterway, the site's stormwater would discharge into a relatively narrow inlet with limited volume exchange, especially at its east end where the stormwater would be discharged, and the discharge from the site would persist for the life of the new industrial complex. Further, the site's stormwater would be added to other ongoing inputs of pollution in the area, to increase the existing contaminant levels within the inlet. However, based on the high level of treatment and the large volume of the receiving waters outside of the inlet, it is extremely unlikely that project-attributable pollutant concentrations at levels high enough to cause any detectable effects in juvenile salmon would extend beyond the inlet. Therefore, to be conservative, the NMFS makes the assumption that any PS Chinook salmon that enter the inlet may be exposed to contaminated stormwater that would be attributable to the Baywood Industrial site.

The annual numbers of PS Chinook salmon that may be exposed to the Baywood Industrial site's stormwater is unquantifiable with any degree of certainty, as is the intensity of any effects that an exposed individual may experience. Although the action area is along a migration corridor to and from natal streams for adult and juvenile Chinook salmon, the annual numbers of fish that would enter the inlet are expected to be very low. There are several routes between Puget Sound and the Snohomish River Basin, most of which are much less developed than the Port Gardner Channel. Therefore, the individuals that annually migrate through Port Gardner likely represent relatively small subsets of their respective cohorts. Further, most returning adult Chinook salmon generally tend to swim near the center of a channel instead of along the shoreline. Therefore, it is very unlikely that any individual adult Chinook salmon that migrates through Port Gardner would enter the inlet where it could be exposed to the site's stormwater.

As stated above, the juvenile Chinook salmon that migrate though Port Gardner are likely to represent a small subset of their cohort. Further, the individuals that migrate along its east shore would be a subset of the total because some of the juveniles are likely to migrate along the Jetty Island side of the channel, well away from the affected area. The exact behaviors of the individuals that approach the inlet are unpredictable. Some individuals are likely to enter and remain within the inlet long enough to be measurable affected by exposure to action-attributable contaminated water and/or forage. However, some of the juveniles that enter the inlet will likely leave relatively quickly, especially if they detect contaminants (Beitinger and Freeman 1983), while others are likely to swim past without entering.

Based on the best available information, the annual numbers of juvenile Chinook salmon that may be exposed to stormwater effects that would be attributable to the proposed outfall would represent extremely small subsets of their respective cohorts, and the numbers of exposed fish would be too low to cause detectable population-level effects.

<u>Artificial Lighting:</u>

Artificial lighting from the new warehouse complex is likely to adversely affect PS Chinook salmon. The development would include the installation of 3 30-foot tall pole-mounted 240-Watt lights and 34 120-Watt and 240-Watt lights mounted on the exterior walls of the warehouse. The predicted average illumination at ground level in the drive and parking areas 2.04 foot candles (fc; 1 fc = 10.76 lumens).

In the absence of artificial illumination, juvenile Chinook salmon in lacustrine environments are typically active during the day and inactive at night. They tend to become increasingly active at dawn when light levels reach 0.8 to 2.1 lumens per square meter (Tabor and Piaskowski 2002). Nighttime artificial illumination of the water's surface attracts fish (positive phototaxis) in marine and freshwater environments, it shifts nocturnal behaviors toward more daylight-like behaviors, and it can affect light-mediated behaviors such as migration timing (Becker et al. 2013; Celedonia and Tabor 2015; Ina et al. 2017; Tabor and Piaskowski 2002; Tabor et al. 2017). Celedonia and Tabor (2015) found that juvenile Chinook salmon were attracted to artificially lit areas at 0.5 to 2.5 lumens per square meter, and that attraction to artificial lights can delay the onset of early morning migration of juvenile Chinook salmon by up to 25 minutes. Tabor et al. (2017) found that sub yearling Chinook, coho, and sockeye salmon exhibit strong nocturnal phototaxis when exposed to 5.0 to 50.0 lumens per square meter, with phototaxis positively correlated with light intensity.

The average predicted illumination at ground level in the drive and parking areas is 21.95 lumens, which far above the documented threshold for the onset of phototaxis in juvenile salmonids.

It is uncertain to what degree the new lights would be detectable above background levels, or what additive effects the new lighting would have when considered with the existing conditions and the other new development being done in the area. The 50-foot wide buffer and vegetation between the development site and the adjacent aquatic habitats would likely reduce direct lighting of the water, but is not likely to prevent it. Additionally, the increased lighting would also add to the nighttime ambient light and sky glow in area. Therefore, based on the best available information and on the need to be protective of listed fish, the NMFS estimates that any juvenile Chinook salmon that are within 100 feet adjacent to the project site may experience some level of nocturnal phototaxis, and may experience other altered behaviors, such as delayed departure from the area, which would prolong their exposure to adverse habitat conditions created by habitat quality in the inlet. The intensity of this effect would increase with proximity to the project site. Over the life of the new warehouse, it is likely that a small subset of the exposed individuals would experience reduced fitness and/or altered behaviors that could reduce their overall likelihood of survival.

The annual numbers of PS Chinook salmon that may be exposed to artificial lighting that would be attributable to the warehouse complex is unquantifiable with any degree of certainty, as is the intensity of any effects that an exposed individual may experience. However, for the same reasons expressed above for exposure to stormwater effects, the annual numbers of juvenile Chinook salmon that may be exposed to artificial lighting that would be attributable to the warehouse complex would represent extremely small subsets of their respective cohorts, and the numbers of exposed fish would be too low to cause detectable population-level effects.

### 2.5.2 Effects on Critical Habitat

This assessment considers the intensity of expected effects in terms of the change they would cause in affected Primary Biological Features (PBFs) from their baseline conditions, and the severity of each effect, considered in terms of the time required to recover from the effect. Ephemeral effects are those that are likely to last for hours or days, short-term effects would likely last for weeks, and long-term effects are likely to last for months, years or decades.

Critical Habitat for Puget Sound Chinook Salmon and Puget Sound Steelhead: The proposed action, including full application of the planned conservation measures and BMPs, is likely to adversely affect designated critical habitat for PS Chinook salmon and PS steelhead. The expected effects would be limited to the impacts on the PBFs of freshwater rearing, and freshwater migration corridors and estuarine areas free of obstruction and excessive predation as described below.

1. Freshwater spawning sites – None in the action area.

2. Freshwater rearing sites – None in the action area.

3. Freshwater migration corridors free of obstruction and excessive predation – None in the action area.

4. Estuarine areas free of obstruction and excessive predation:
   a. Free of obstruction and excessive predation – The proposed action would cause long-term minor adverse effects on this attribute. Over the life of the new warehouse site, there would be a slight increase in nighttime artificial illumination of nearshore waters within about 100 feet of the edge of the development. Phototaxis toward the light may draw juvenile Chinook salmon deeper into the inlet, and may delay the resumption of morning migration by up to 25 minutes. The action is expected to have no effect on predation.
   b. Water quality – The proposed action would cause long-term periodic minor adverse effects on this attribute. Over the life of the new development, treated stormwater from the complex would discharge residual levels of petroleum-based pollutants, metals, and other contaminants into the inlet on the south side of the property. The area of affect would likely be limited to the waters and substrates of the inlet within 1,450 feet of the stormwater outfall at the southeast end of the inlet. The action would cause no measurable changes in water temperature.
   c. Water quantity – No changes expected.
   d. Salinity – The proposed action would cause long-term minor effects on this attribute. Stormwater discharges would likely cause episodic periods of slightly reduced salinity within the inlet.
   e. Natural Cover – No changes expected.
   f. Forage – The proposed action would cause long-term minor adverse effects on this attribute. Over the life of the new development, treated stormwater would provide a persistent source of contaminants that could be taken up by benthic invertebrates that are forage resources for juvenile Chinook salmon. The area of affect would likely be limited to the waters and substrates of the inlet within 1,450 feet of the stormwater outfall at the southeast end of the inlet. The action would not affect forage fish spawning habitat.

5. Nearshore marine areas free of obstruction and excessive predation – None in the action area.

6. Offshore marine areas – None in the action area.

## 2.6 Cumulative Effects

"Cumulative effects" are those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02 and 402.17(a)). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

Some continuing non-Federal activities are reasonably certain to contribute to climate effects within the action area. However, it is difficult if not impossible to distinguish between the action area's future environmental conditions caused by global climate change that are properly part of the environmental baseline *vs.* cumulative effects. Therefore, all relevant future climate-related environmental conditions in the action area are described in the environmental baseline section. The current condition of ESA-listed species and designated critical habitat within the action area are described in the status of the species and critical habitat and the environmental baseline sections above. The non-federal activities that have contributed to those conditions include past and on-going bank armoring, vessel activities, upland urbanization and agricultural activities in and around the action area, as well as upstream forest management, agriculture, urbanization, road construction, water development, and restoration activities. Those actions were, and continue to be, driven by a combination of economic conditions that characterized traditional natural resource-based industries, general resource demands associated with settlement of local and regional population centers, and the efforts of conservation groups dedicated to restoration and use of natural amenities, such as cultural inspiration and recreational experiences.

With the exception of the future MTCA cleanup of the inlet and the Jeld-Wen industrial property to the south of the project site, the NMFS is unaware of any specific future non-federal activities that are reasonably certain to affect the action area. However, the NMFS is reasonably certain that future non-federal actions such as the previously mentioned activities are all likely to continue and increase in the future as the human population continues to grow across the region. Continued habitat loss and degradation of water quality from development and chronic low-level inputs of non-point source pollutants will likely continue into the future. Recreational and commercial use of the waters within the action area is also likely to increase as the human population grows.

The intensity of these influences depends on many social and economic factors, and therefore is difficult to predict. Further, the adoption of more environmentally acceptable practices and standards may gradually reduce some negative environmental impacts over time. Interest in restoration activities has increased as environmental awareness rises among the public. State, tribal, and local governments have developed plans and initiatives to benefit ESA-listed PS Chinook salmon within the watersheds that flow into the action area. However, the implementation of plans, initiatives, and specific restoration projects are often subject to political, legislative, and fiscal challenges that increase the uncertainty of their success.

## 2.7 Integration and Synthesis

The Integration and Synthesis section is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action (Section 2.5) to the environmental baseline (Section 2.4) and the cumulative effects (Section 2.6), taking into account the status of the species and critical habitat (Section 2.2), to formulate the agency's biological opinion as to whether the proposed action is likely to: (1) appreciably reduce the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) appreciably diminish the value of designated or proposed critical habitat as a whole for the conservation of the species.

As described in more detail above at Section 2.4, climate change is likely to increasingly affect the abundance and distribution of the ESA-listed species considered in this opinion. It is also likely to increasingly affect the PBFs of designated critical habitats. The exact effects of climate change are both uncertain, and unlikely to be spatially homogeneous. However, climate change is reasonably likely to cause reduced instream flows in some systems, and may impact water quality through elevated in-stream water temperatures and reduced dissolved oxygen, as well as by causing more frequent and more intense flooding events.

Climate change may also impact coastal waters through elevated surface water temperature, increased and variable acidity, increasing storm frequency and magnitude, and rising sea levels. The adaptive ability of listed-species is uncertain, but is likely reduced due to reductions in population size, habitat quantity and diversity, and loss of behavioral and genetic variation. The proposed action will cause direct and indirect effects on the ESA-listed species and critical habitats considered in the opinion well into the foreseeable future. However, the action's effects on water quality, substrate, and the biological environment are expected to be of such a small scale that no detectable effects on ESA-listed species or critical habitat through synergistic interactions with the impacts of climate change are expected.

### 2.7.1 ESA-listed Species

PS Chinook salmon are listed as threatened, based on declines from historic levels of abundance and productivity, loss of spatial structure and diversity, and an array of limiting factors as a baseline habitat condition. PS Chinook salmon will be affected over time by cumulative effects, some positive – as recovery plan implementation and regulatory revisions increase habitat protections and restoration, and some negative – as climate change and unregulated or difficult to regulate sources of environmental degradation persist or increase. Overall, to the degree that habitat trends are negative, the effects on viability parameters of PS Chinook salmon are also likely to be negative. In this context we consider how the proposed action's impacts on individuals would affect the listed species at the population and ESU/DPS scales.

The long-term abundance trend of the PS Chinook salmon ESU is slightly negative. Reduced or eliminated accessibility to historically important habitat, combined with degraded conditions in available habitat due to land use activities appear to be the greatest threats to the recovery of PS Chinook salmon. Commercial and recreational fisheries also continue to impact this species. The PS Chinook salmon most likely to occur in the action area would be summer run fish from the Skykomish River population, and fall run fish from the Skykomish and Snoqualmie River populations. The total abundance trends in both basins is slightly negative, with natural productivity in the Skykomish basin considered below replacement since the mid-1980s.

The action area for fish is limited to a narrow inlet about 1,450 deep along the east side of the Port Gardner waterway. The environmental baseline within the inlet has been degraded by the effects of past and ongoing industry, bank armoring, and urbanization.

Project-related impacts are likely to cause a range of effects that both individually and collectively would cause altered behaviors, reduced fitness, and possible mortality in some juveniles. However, the annual numbers of individuals that are likely to be impacted by action-related stressors would be extremely low.

Based on the best available information, the scale of the direct and indirect effects of the proposed action, when considered in combination with the degraded baseline, cumulative effects, and the impacts of climate change, would be too small to cause detectable effects on any of the characteristics of a viable salmon population (abundance, productivity, distribution, or genetic diversity) for the affected PS Chinook salmon populations. Therefore, the proposed action would not appreciably reduce the likelihood of survival and recovery of this listed species.

### 2.7.2 Critical Habitat

Critical habitat was designated for PS Chinook salmon to ensure that specific areas with PBFs that are essential to the conservation of that listed species are appropriately managed or protected. PS Chinook salmon critical habitat will be affected over time by cumulative effects, some positive – as restoration efforts and regulatory revisions increase habitat protections and restoration, and some negative – as climate change and unregulated or difficult to regulate sources of environmental degradation persist or increase. Overall, to the degree that trends are negative, the effects on the PBFs of critical habitat for PS Chinook salmon are also likely to be negative. In this context we consider how the proposed action's impacts on the attributes of the action area's PBFs would affect the designated critical habitat's ability to support the conservation of the PS Chinook salmon ESU as a whole.

Past and ongoing land and water use practices have degraded salmonid critical habitat throughout the Puget Sound basin. Hydropower and water management activities have reduced or eliminated access to significant portions of historic spawning habitat. Timber harvests, agriculture, industry, urbanization, and shoreline development have adversely altered floodplain and stream morphology in many watersheds, diminished the availability and quality of estuarine and nearshore marine habitats, and reduced water quality across the region.

Global climate change is expected to increase in-stream water temperatures and alter stream flows, possibly exacerbating impacts on baseline conditions in freshwater habitats across the region. Rising sea levels are expected to increase coastal erosion and alter the composition of nearshore habitats, which could further reduce the availability and quality of estuarine habitats. Increased ocean acidification may also reduce the quality of estuarine habitats.
In the future, non-federal land and water use practices and climate change are likely to increase. The intensity of those influences on salmonid critical habitats is uncertain, as is the degree to which those impacts may be tempered by adoption of more environmentally acceptable land use practices, by the implementation of non-federal plans that are intended to benefit salmonids, and by efforts to address the effects of climate change.

The PBF of salmonid critical habitat that would be affected by the proposed action is estuarine areas free of obstruction and excessive predation. The site attributes of that PBF that would be affected by the action are freedom from obstruction and excessive predation, water quality, salinity, and forage. As described above, the proposed action would cause long-term minor adverse effects on all of those attributes within about 1,450 feet of the new stormwater outfall.

Based on the best available information, the scale of the proposed action's effects, when considered in combination with the degraded baseline, cumulative effects, and the impacts of climate change, would be too small to cause any detectable long-term negative changes in the quality or functionality of the affected PBF in the action area. Therefore, this critical habitat will maintain its current level of functionality, and retain its current ability for PBFs to become functionally established, to serve the intended conservation role for PS Chinook salmon.

## 2.8 Conclusion

After reviewing and analyzing the current status of the listed species and critical habitat, the environmental baseline within the action area, the effects of the proposed action, the effects of other activities caused by the proposed action, and cumulative effects, it is the NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of PS Chinook salmon, or to destroy or adversely modify their designated critical habitat.

## 2.9 Incidental Take Statement

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined by regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). "Incidental take" is defined by regulation as takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant (50 CFR 402.02). Section 7(b)(4) and section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this incidental take statement (ITS).

As described in the opinion above, no take is anticipated for the proposed action components that the COE has jurisdiction over. Instead, the only sources of expected take would result from the applicant's upland development project, which the COE has no jurisdiction over. Therefore, this ITS provides a take exemption to Latitude Development LLC for the anticipated take that would be caused by their development project.

### 2.9.1 Amount or Extent of Take

In the opinion, the NMFS determined that incidental take is reasonably certain to occur as follows:

Harm of juvenile Puget Sound Chinook salmon from exposure to:

- Stormwater and
- Artificial lighting.

The NMFS cannot predict with meaningful accuracy the number of PS Chinook salmon that are reasonably certain to be injured or killed annually by exposure to either of these stressors. The distribution and abundance of the fish that occur within an action area are affected by habitat quality, competition, predation, and the interaction of processes that influence genetic, population, and environmental characteristics. These biotic and environmental processes interact in ways that may be random or directional, and may operate across far broader temporal and spatial scales than are affected by the proposed action. Thus, the distribution and abundance of fish within the action area cannot be attributed entirely to habitat conditions, nor can the NMFS precisely predict the number of fish that are reasonably certain to be injured or killed if their habitat is modified or degraded by the proposed action. Additionally, the NMFS knows of no device or practicable technique that would yield reliable counts of individuals that may experience these impacts.

In such circumstances, the NMFS uses the causal link established between the activity and the likely extent and duration of changes in habitat conditions as surrogates to describe the extent of take as a numerical level of habitat disturbance. The most appropriate surrogates for take are action-related parameters that are directly related to the magnitude of the expected take.

For this action, the areal extent of the development's impervious surfaces and the design of the stormwater treatment system are best available surrogates for the extent of take of juvenile PS Chinook salmon from exposure to stormwater. Areal extent is appropriate because the volume of stormwater would be directly related to the amount of impervious surface area (i.e. roadways, parking lots, and rooftops). Also, the type and amount of contaminants in the stormwater would be directly related to the types of impervious surfaces. Any increase in the size of the roadways and parking lots would increase the amount of vehicle-related pollutants and the volume of contaminated stormwater coming from that type of surface. Similarly, any increase in the size of the roof would increase the amount of roof-related pollutants and the volume of contaminated stormwater coming from that type of surface. Any increase in the stormwater volume from these surfaces would increase the amount of contaminants that enter the inlet. The design of the stormwater treatment system is an appropriate surrogate because the concentration of contaminants that would remain in post-treatment stormwater is directly related to the system's level of contaminant removal, and to the system's ability to manage flows before bypass of treatment occurs. Lower levels of contaminant removal and/or bypass of the filter system at lower flow levels would also increase the amount of contaminants that enter the inlet. Any increase in the volume of stormwater and/or the amount of contaminants in the stormwater that enters the inlet would increase the intensity of the impacts in the fish that are exposed to that stormwater (directly or through the trophic web).

The number, location, and bulb brightness of the development's external lighting systems are the best available surrogates for the extent of take of juvenile PS Chinook salmon from exposure to artificial illumination. Any increase in any of those parameters is likely to increase the distance and intensity of the nighttime overwater illumination around the project site, which would increase the likelihood of exposure, and increase the intensity of phototaxis and over light-driven behaviors in exposed individuals.

In summary, the extent of PS Chinook salmon take for this action is defined as:

- Construction of 5.97 acres of vehicle-supporting pavement, and 5.38 acres of rooftop as described in the proposed action section of this biological opinion;
- Installation of a stormwater treatment system that consists of 2 Modular Wetland Linear System units that are designed to accommodate flows from storms up to 100-year events for the vehicle-supporting areas as described in the proposed action section of this biological opinion; and
- Installation of 3 30-foot tall pole-mounted 240-Watt lights, and 21 120-Watt and 13 240-Watt exterior wall-mounted lights as described in the proposed action section of this biological opinion.

Exceedance of any of the exposure limits described above would constitute an exceedance of authorized take that would trigger the need to reinitiate consultation.

### 2.9.2 Effect of the Take

In the opinion, the NMFS determined that the amount or extent of anticipated take, coupled with other effects of the proposed action, is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

### 2.9.3 Reasonable and Prudent Measures

"Reasonable and prudent measures" (RPMs) are nondiscretionary measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02).

The applicant is required to:

1. Ensure the implementation of monitoring and reporting to confirm that the take exemption for the proposed action is not exceeded.

### 2.9.4 Terms and Conditions

The terms and conditions described below are non-discretionary. The applicant must comply with them in order to implement the RPMs (50 CFR 402.14). The applicant has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this ITS (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

1. The following terms and conditions implement reasonable and prudent measure 1:
    a. The applicant shall develop and implement plans to collect and report details about the take of listed fish. That plan shall:
        i. Require the applicant and/or their contractors to maintain and submit construction records and photographs to verify that all take indicators are monitored and reported. Minimally, the records should include:

1. Documentation of the timing and duration of work below OHW to ensure that it is accomplished between July 16 and February 15; and
2. Documentation of the outfall and conveyance construction to identify the BMPs that were applied, and to confirm that the structures do not exceed the dimensions and/or characteristics described in this opinion;
3. Documentation of the size and configuration of vehicle-supporting pavement, the building rooftop, and the stormwater treatment system to confirm that the new structures comport with the dimensions and/or characteristics described in this opinion; and
4. Documentation of the exterior lighting systems to confirm that they comport with the characteristics described in this opinion.

ii. Require the applicant to establish procedures for the submission of a post-construction report that includes the information required above to the appropriate COE office, and to submit an electronic post-construction report, including the information required above, to the NMFS within six months of the end of the construction. For submitting to the NMFS, send the report to: projectreports.wcr@noaa.gov. Be sure to include 'Attn: WCRO-2020-02919' in the subject line.

### 2.10 Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02).

1. The COE should encourage the applicant to include enhanced treatment for rooftop stormwater runoff.

2. The COE should encourage the applicant to develop and implement a long-term source-control plan for the warehouse complex to reduce the amount of contaminants in stormwater. Suggested measures include, but are not be limited to:
   a. The required painting or coating of all exterior galvanized metal with non-toxic paint or sealant;
   b. The prohibition of automobile maintenance activities in the parking lots;
   c. The provision and regular emptying of trash receptacles in the parking lots;
   d. The periodic inspection cleaning of the driveways and parking lots to reduce the accumulation of spilled oils, sediments, and trash; and

3. The COE should encourage the applicant to install lighting systems that are designed to meet safety needs while minimizing nighttime illumination of the adjacent nearshore waters. Suggested measures include:
   a. Install the lowest intensity external lights that would meet safety needs;
   b. Install shielding and aiming that would prevent over-water illumination.

## 2.11 Reinitiation of Consultation

This concludes formal consultation for the U.S. Army Corps of Engineers' authorization of Latitude Development LLC's Baywood Stormwater Outfall project in Everett, Washington.

As 50 CFR 402.16 states, reinitiation of consultation is required and shall be requested by the Federal agency or by the Service where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental taking specified in the ITS is exceeded, (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action.

## 2.12 "Not Likely to Adversely Affect" Determinations

This assessment was prepared pursuant to section 7(a)(2) of the ESA, implementing regulations at 50 CFR 402 and agency guidance for preparation of letters of concurrence.

As described in section 2 and below, the NMFS concurs with the COE's determination that the proposed action is not likely to adversely affect PS steelhead, PS/GB bocaccio and their designated critical habitat, PS/GB yelloweye rockfish and their designated critical habitat, and southern resident (SR) killer whales and their designated critical habitat. Detailed information about the biology, habitat, and conservation status and trends of these species and critical habitats can be found in the listing regulations and critical habitat designations published in the Federal Register, as well as in the recovery plans and other sources at: https://www.fisheries.noaa.gov/species-directory/threatened-endangered /fish/, and are incorporated here by reference.

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 discountable, insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or critical habitat. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those that are extremely unlikely to occur. The effects analysis in this section relies heavily on the descriptions of the proposed action and project site conditions discussed in Sections 1.3 and 2.4, and on the effects analyses presented in Section 2.5.

### 2.12.1 Effects on Listed Species

Given the location of the project site and the resulting action area for fish (i.e. the inlet shown in Figures 3 & 4) as compared to the habitats likely to be occupied by PS/GB bocaccio, PS/GB yelloweye rockfish, and SR killer whales, it is extremely unlikely that any individuals of those species would be present within the action area where they could be exposed to water quality and artificial lighting impacts.

Although PS steelhead migrate through the Port Gardner Channel, juvenile steelhead tend to be relatively large and independent of shallow nearshore areas when they leave their natal rivers (Bax et al. 1978, Brennan et al. 2004, Schreiner et al. 1977), and they typically migrate to the Strait of Juan de Fuca very quickly (Moore et al. 2010). Similarly, returning adult steelhead are most likely to migrate past the inlet very quickly and near the center of the channel. Therefore, both life stages are very unlikely to enter the inlet where they could be exposed to the effects of the action.

Therefore, the action's post-construction stormwater runoff and artificial illumination are not likely to adversely affect any of these species. Further, as described in section 2.5, the proposed action would cause no population-level effects on Chinook salmon, which is the main prey resource for SR killer whales. Therefore, the project is not likely to cause measurable trophic effects on those whales.

### 2.12.2 Effects on Critical Habitat

This assessment considers the intensity of expected effects in terms of the change they would cause in affected PBFs from their baseline conditions, and the severity of each effect, considered in terms of the time required to recover from the effect. Ephemeral effects are those that are likely to last for hours or days, short-term effects would likely to last for weeks, and long-term effects are likely to last for months, years or decades.

SR killer whale Critical Habitat: The proposed action, including full application of the planned conservation measures and BMPs, is not likely to adversely affect designated critical habitat for SR killer whales. Designated critical habitat for SR killer whales is limited marine waters of the Puget Sound that are at least 20 feet deep. The expected effects on SR killer whale critical habitat from completion of the proposed action, including full application of the conservation measures and BMPs, would be limited to the impacts on the PBFs of SR killer whale critical habitat as described below.

1. Water quality to support growth and development:
   The proposed action would cause no detectable effects on this attribute.

2. Prey species of sufficient quantity, quality, and availability to support individual growth, reproduction, and development, as well as overall population growth:
   The proposed action would cause long-term undetectable effects on prey availability. Action-related impacts would annually injure or kill extremely low numbers of juvenile Chinook salmon (primary prey). However, the annual numbers of lost individuals would be too small to cause detectable effects on prey availability for SR killer whales.

3. Passage conditions to allow for migration, resting, and foraging:
   The proposed action would cause no detectable effects on this attribute.

Therefore, the proposed action is not likely to adversely affect SR killer whale critical habitat.

For the reasons expressed immediately above, the NMFS concurs with the COE's determination that the proposed action is not likely to adversely affect PS steelhead, PS/GB bocaccio and their designated critical habitat, PS/GB yelloweye rockfish and their designated critical habitat, and southern resident (SR) killer whales and their designated critical habitat.

# 3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT ESSENTIAL FISH HABITAT RESPONSE

Section 305(b) of the MSA directs Federal agencies to consult with the NMFS on all actions or proposed actions that may adversely affect EFH. Under the MSA, this consultation is intended to promote the conservation of EFH as necessary to support sustainable fisheries and the managed species' contribution to a healthy ecosystem. For the purposes of the MSA, EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity", and includes the physical, biological, and chemical properties that are used by fish (50 CFR 600.10). Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects on EFH may result from actions occurring within EFH or outside of it and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) of the MSA also requires the NMFS to recommend measures that can be taken by the action agency to conserve EFH. Such recommendations may include measures to avoid, minimize, mitigate, or otherwise offset the adverse effects of the action on EFH [CFR 600.905(b)].

This analysis is based, in part, on the EFH assessment provided by the COE and the descriptions of EFH for Pacific Coast Salmon (Pacific Fishery Management Council [PFMC] 2014), Pacific Coast Groundfish (PFMC 2005), and Coastal Pelagic Species (PFMC 1998) contained in the fishery management plans developed by the PFMC and approved by the Secretary of Commerce, and in the Effects of the Action section of the biological opinion above (Section 2.5).

## 3.1 Essential Fish Habitat Affected by the Project

The project site is situated at the landward (southeast) end of a relatively narrow 1,450-foot long inlet at the north end of Port Gardner, Everett, Washington (Figures 1 & 3). The waters and substrates of the action area are designated as marine EFH for various life-history stages of Pacific Coast Salmon, Pacific Coast Groundfish, and Coastal Pelagic Species.

Marine EFH for Pacific Coast Salmon is identified and described in Appendix A to the Pacific Coast salmon fishery management plan (PFMC 2014). The major components of marine EFH are: Estuarine rearing; Ocean rearing; and juvenile and adult migration. The important features of this EFH are: (1) Water quality (e.g., DO, nutrients, temperature, etc.); (2) Water quantity, depth, and velocity; (3) Riparian-stream-marine energy exchanges; (4) Channel gradient and stability; (5) Prey availability; (6) Cover and habitat complexity (e.g., LWD, pools, aquatic and terrestrial vegetation, etc.); (7) Space; (8) Habitat connectivity from headwaters to the ocean (e.g., dispersal corridors); (9) Groundwater-stream interactions; (10) Connectivity with terrestrial ecosystems; and (11) Substrate composition.

As part of Pacific Coast Salmon EFH, five Habitat Areas of Particular Concern (HAPCs) have been defined: 1) complex channels and floodplain habitats; 2) thermal refugia; 3) spawning habitat; 4) estuaries; and 5) marine and estuarine submerged aquatic vegetation.

Pacific Coast Groundfish EFH is identified as: All marine waters and substrate from mean higher high water (MHHW) or the upriver extent of saltwater intrusion out to depths less than or equal to 11,484 feet (3,500 m); Certain specifically identified seamounts in depths greater than 11,484 feet; and Areas designated as HAPCs not already identified by the above criteria (PFMC 2005). Pacific Coast Groundfish HAPC includes: Estuaries; Canopy Kelp; Seagrass; Rocky Reefs; and Areas of interest. For Coastal Pelagic Species, EFH is identified as all marine and estuarine waters from the shoreline to the offshore limits of the exclusive economic zone (EEZ) and above the thermocline where sea surface temperatures range between 10°C to 26°C (PFMC 1998).

The action area includes the estuary HAPC habitat feature identified for salmon and groundfish.

Succinct identification of specific habitat features that are necessary to support the full life cycles of Groundfish and Pelagic Species are absent from their respective EFH descriptions. This is likely due to the large number of species, and the wide range of habitats that are considered in the associated fishery management plans (FMPs). However, the important features identified for Salmon EFH effectively address the habitat features that are necessary to support the full life cycle for all three species groups that may be affected by the proposed action. Therefore, the important features of Salmon EFH are used below to assess the impacts on EFH for all three species groups.

### 3.2 Adverse Effects on Essential Fish Habitat

The ESA portion of this document (Sections 1 and 2) describes the proposed action and its adverse effects on ESA-listed species and critical habitat, and is relevant to the effects on EFH. Based on the analysis of effects presented in Section 2.5 the proposed action will cause long-term moderate adverse effects on EFH for Pacific Coast Salmon as summarized below.

1. Water quality: – The proposed action would cause long-term periodic minor adverse effects on this attribute. Over the life of the new development, treated stormwater from the complex would discharge residual levels of petroleum-based pollutants, metals, and other contaminants into the inlet on the south side of the property. The area of affect would likely be limited to the waters and substrates of the inlet within 1,450 feet of the stormwater outfall at the southeast end of the inlet. The action would cause no measurable changes in water temperature, but would cause episodic periods of slightly reduced salinity within the inlet.

2. Water quantity, depth, and velocity: – No changes expected.

3. Riparian-stream-marine energy exchanges: – No changes expected.

4. Channel gradient and stability: – No changes expected.

5. Prey availability: – The proposed action would cause long-term minor adverse effects on this attribute. Over the life of the new development, treated stormwater would provide a persistent source of contaminants that could be taken up by benthic invertebrates that are forage resources for juvenile Chinook salmon. The area of affect would likely be limited to the waters and substrates of the inlet within 1,450 feet of the stormwater outfall at the southeast end of the inlet. The action would not affect forage fish spawning habitat.

6. Cover and habitat complexity: – No changes expected.

7. Water quantity: – No changes expected.

8. Space: – No changes expected.

9. Habitat connectivity from headwaters to the ocean: – No changes expected.

10. Groundwater-stream interactions: – No changes expected.

11. Connectivity with terrestrial ecosystems: – No changes expected.

12. Substrate composition: – No changes expected.

All effects on the estuary HAPCs for Pacific Coast Salmon and groundfish are identified above.

### 3.3 Essential Fish Habitat Conservation Recommendations

The NMFS determined that the following conservation recommendations are necessary to avoid, minimize, mitigate, or otherwise offset the impact of the proposed action on EFH.

To reduce the proposed action's impacts on the water quality and prey availability attributes of EFH for Pacific Coast Salmon, Pacific Coast Groundfish, and Coastal Pelagic Species, the NMFS recommends the following conservation recommendations:

1. The COE should encourage the applicant to include enhanced treatment for rooftop stormwater runoff; and

2. The COE should encourage the applicant to develop and implement a long-term source-control plan for the warehouse complex to reduce the amount of contaminants in stormwater. Suggested measures include, but are not be limited to:
   a. The required painting or coating of all exterior galvanized metal with non-toxic paint or sealant;
   b. The prohibition of vehicle maintenance activities in the parking lots;
   c. The periodic inspection and cleaning of the driveways and parking lots to reduce the accumulation of spilled oils, sediments, and trash; and
   d. The provision and regular emptying of trash receptacles in the parking lots.

### 3.4 Statutory Response Requirement

As required by section 305(b)(4)(B) of the MSA, the COE must provide a detailed written response in to the NMFS within 30 days after receiving an EFH Conservation Recommendation. Such a response must be provided at least 10 days prior to final approval of the action if the response is inconsistent with any of the NMFS' EFH Conservation Recommendations unless the NMFS and the Federal agency have agreed to use alternative time frames for the Federal agency response. The response must include a description of measures proposed by the agency for avoiding, minimizing, mitigating, or otherwise offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the Conservation Recommendations, the Federal agency must explain its reasons for not following the recommendations, including the scientific justification for any disagreements with the NMFS over the anticipated effects of the action and the measures needed to avoid, minimize, mitigate, or offset such effects (50 CFR 600.920(k)(1)).

In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, the NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, we ask that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted.

### 3.5 Supplemental Consultation

The COE must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH Conservation Recommendations (50 CFR 600.920(l)).

## 4. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

The Data Quality Act (DQA) specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the opinion addresses these DQA components, documents compliance with the DQA, and certifies that this opinion has undergone pre-dissemination review.

### 4.1 Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended user of this opinion is the COE. Other users could include Snohomish County, Buse Timber, WDFW, the government and citizens of the City of Everett, and Native American tribes. Individual copies of this opinion were provided to the COE. The document will be available within two weeks at the NOAA Library Institutional Repository [https://repository.library.noaa.gov/welcome]. The format and naming adheres to conventional standards for style.

## 4.2 Integrity

This consultation was completed on a computer system managed by NMFS in accordance with relevant information technology security policies and standards set out in Appendix III, 'Security of Automated Information Resources,' Office of Management and Budget Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

## 4.3 Objectivity

***Information Product Category:*** Natural Resource Plan

***Standards:*** This consultation and supporting documents are clear, concise, complete, and unbiased; and were developed using commonly accepted scientific research methods. They adhere to published standards including the NMFS ESA Consultation Handbook, ESA regulations, 50 CFR 402.01 et seq., and the MSA implementing regulations regarding EFH, 50 CFR 600.

***Best Available Information:*** This consultation and supporting documents use the best available information, as referenced in the References section. The analyses in this opinion and EFH consultation contain more background on information sources and quality.

***Referencing:*** All supporting materials, information, data and analyses are properly referenced, consistent with standard scientific referencing style.

***Review Process:*** This consultation was drafted by NMFS staff with training in ESA and MSA implementation, and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

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