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

Agency Approval of and Participation in the Port of Tacoma Clear Creek Multi-Resource Mitigation Bank

NMFS Consultation Number: WCRO-2020-00550

Action Agency: National Marine Fisheries Service

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?
Puget Sound steelhead (*Oncorhynchus mykiss*)	Threatened	Yes-No Take Exempted	No	No	No
Puget Sound Chinook salmon (*O. tshawytscha*)	Threatened	Yes-No Take Exempted	No	Yes	No

Fishery Management Plan That Identifies EFH in the Project Area	Does Action Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
Pacific Coast Salmon	No	No

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

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1.0 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 U.S.C. 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 Lacey, Washington.

1.2 Background and Consultation History

The Port of Tacoma (Port) owns approximately 41.35 acres of land in and around Clear Creek, a tributary of the Puyallup River. The Port refers to the property as the Upper Clear Creek Management Site (UCCMS). The UCCMS consists of a 12.59-acre Environmental Protection Agency (EPA) Mitigation Site (in support of a Consent Decree in United States v. Port of Tacoma, et al., No. 11-cv-05253 [W.D. Wa.]) and a 28.64-acre Mitigation Bank site ("Bank Site"). The Mitigation Bank was not required by the Consent Decree, and was always intended to be used to generate mitigation credits for future development projects. The Mitigation Banking Instrument (MBI, Port of Tacoma 2020) covers the Mitigation Bank and the 28.64-acre Bank Site.

The Bank Site is located in unincorporated Pierce County along Clear Creek, approximately 0.7 river mile (RM) upstream of the confluence with the lower Puyallup River. Appendix A to the MBI contains a map and detailed description of the location.

In July 2013, the Port submitted a Joint Aquatic Resources Permit Application to the COE seeking permits to begin restoration at the UCCMS. On August 29, 2013, the COE requested ESA section 7(a)(2) consultation with NMFS on the COE's proposed permit and submitted a Biological Evaluation (BE) and Memorandum for the Services. The COE sought NMFS's concurrence that the permit for the proposed restoration of the UCCMS was not likely to adversely affect Puget Sound (PS) Chinook salmon and PS steelhead. The COE also determined the action was not likely to adversely affect critical habitat designated for PS Chinook salmon and proposed (at the time) for PS steelhead.

Because of the separate purposes for the two sets of acreages within the UCCMS, and because the consent decree required adherence to a timeline set by the court, the agencies separated consultation on the consent decree acreage. NMFS concurred with the COE's effects determinations on the activities proposed for the 12.59 acre EPA Mitigation Site on November 26, 2013 (NMFS No. WCR-2013-10513) and the COE issued permit NWS-2008-781.

In December 2013, after coordination with the Washington Interagency Review Team (IRT), the Port and the IRT agreed to develop the 28.64 acre site as a mitigation bank. The Port requested NMFS participation so that the Bank could also include credits for restoring habitat used by ESA-listed species

On March 4, 2014, NMFS concurred with the COE's effects determinations on the activities proposed for the Bank Site (NMFS No. WCR 2013-101), after which the COE issued permit NWS-2011-763. NMFS also reviewed the proposed action for potential effects on essential fish habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation Act (MSA). NMFS determined the action would not affect EFH. We attach both letters of concurrence to this biological opinion for reference.

Port construction of the 28.64 acre restoration bank area began in July 2014.The COE issued a public notice of the availability of a bank prospectus in August 2014. Between September 2014 and July 2017 the parties collaborated to develop the MBI, which NMFS proposes to sign and administer as a party to the agreement (Port of Tacoma 2020).

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). For essential fish habitat (EFH) consultation, 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 NMFS proposes to sign the proposed MBI as a party to the agreement. Signing the MBI enables the sponsor to administer a multi-resource mitigation and conservation bank, with continuing involvement of the Interagency Review Team (IRT). We considered whether or not the proposed action would cause any other activities and determined that the proposed action would not cause other activities. Instead, the action would enable the Port of Tacoma to "bank" restored wetland and other habitat to be used as mitigation to offset the unavoidable adverse effects of certain other actions in a proposed service area.

In January 2020, the Port and IRT completed the proposed draft MBI. The MBI enables the Port of Tacoma to ledger credits for use as compensatory mitigation under both Clean Water Act section 404 (known as "universal credits") and the Endangered Species Act (known as "discounted service acre years" or "DSAYs") (Port of Tacoma 2020).

As indicated above, the restoration of the 28.64 acre bank site occurred together with the 12.56 acre restoration required by the consent decree, to take advantage of design and construction efficiencies and in anticipation of a banking instrument and process. The Port initiated work at

the EPA Mitigation Site in 2014 and completed work at the entire 41.35 acres in 2016. The primary ecological and construction goals were as follows:

- Restore ecological processes and structures including, stream, wetland, and floodplain connections.
- Realign stream channels, reestablish floodplain connectivity, and rehabilitate riverine wetlands and off-channel ponds.
- Establish diverse hydrogeomorphic conditions and vegetation zones, including emergent, scrub-shrub, and forested wetlands.
- Re-establish and rehabilitate wetland habitat to pre-impact conditions to the maximum extent possible.
- Maximize wetland area and functions.
- Establish multiple native wetland plant communities and functional native vegetated upland habitat.
- Protect existing upland forested areas to the extent possible and provide additional forested upland area.
- Restore fish and wildlife habitat, structure, and function.
- Manage invasive and non-native species.

DSAY Credit Evaluation

The NMFS and the IRT conducted Habitat Equivalency Analysis (HEA) using the NOAA HEA model (NOAA 1995, revised 2000, 2006) to assess the credit-value of habitat lift created by the restoration actions at the Bank Site, discounted for time to function. HEA outputs create a habitat currency in exchangeable units as credits for habitat lift and debits for adverse habitat changes, relative to the pre-project condition. In practice the total habitat value is typically assessed for each habitat type (within a habitat polygon) to be affected relative to the inherent value of each habitat category for the listed species.

Because the HEA model requires pre- and post-restoration habitat values as inputs, the Port conducted a habitat survey to evaluate the existing and projected habitat conditions. With NMFS' concurrence, the Port measured the extent of each habitat type and rated them for habitat functions such as hydrology, riparian vegetation, and overall habitat complexity. NMFS then referred to the Willamette River HEA Model for its similar riverine habitat types to calculate the DSAYs. Based on the reference conditions of the Willamette River, the initial calculation of the Upper Clear Creek Mitigation Site yielded 537.9 DSAYs, which NMFS reduced based on the following factors.

The NMFS reduced the total DSAYs by 50 percent to reflect differences between the Willamette River reference site and the Clear Creek restoration site, which had impaired fish access owing to

a tide gate and culvert. The 50 percent figure is the result of agreement between the Port of Tacoma and the IRT and represents a conservative estimation of the differences between the sites. Despite these drawbacks, the Clear Creek restoration has an excellent channel and planting design which would provide substantially improved channel and off channel habitats for emigrant juvenile Chinook produced from the upper Clear Creek habitat. In addition, the tide gate is an improved self-regulating tide-gate to enhance fish movements at many stages of water level in the Puyallup River. These factors diminish the overall value of the site so that with the reduction, the Bank Site will still provide a total of 268.95 DSAYs credits. Under the MBI, these credits can be used to offset debits created by the unavoidable adverse effects of other projects in the bank's service area (Port of Tacoma 2020).

If site conditions change (i.e. removal of tide gates, culverts) or that monitoring indicates that ESA salmon are using Clear Creek in far greater numbers than anticipated (i.e. young-of-year from the Puyallup River) that together they will discuss and revise credits based on greater ecological values.

Future projects within the service area can use the HEA model developed for localized conditions and associated discounting factors to determine the amount of DSAYs required to offset impacts (Port of Tacoma 2020). The COE will track the credits and debits on a ledger that includes both DSAYs (for ESA mitigation transactions) and Universal Credits (for CWA mitigation transactions). The COE will provide an accounting each time a new permit is proposed. In addition, the Port will keep a dual accounting system of fish- habitat and conservation credits and any adjustments to credits and will be recorded each time a credit is used.

2.0 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 Incidental Take Statement ("ITS").

By itself, the proposed action does not cause take of listed species. Instead, the signed MBI provides the banker an expectation of the use of credits created by the bank for transactions that mitigate the adverse effects of future actions that cannot be analyzed at this time. Accordingly, while this document includes an ITS, the statement does not exempt take caused by those actions. Instead, NMFS and the IRT would review those actions, as they arise. Furthermore, each such future action causing take of listed species would be the subject of their own future ESA section 7 consultation, reviewing the effects, debit calculations, and credit-purchase amount. Therefore, the ITS does not include a take exemption. Nor does it provide the traditional reasonable and prudent measures (RPMs) and terms and conditions to minimize such impacts.

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).

The designation(s) of critical habitat for (species) use(s) the term primary constituent element (PCE) or essential features. The 2016 critical habitat regulations (50 CFR 424.12) replaced this term 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, PBFs, or essential features. In this biological opinion, we use the term PBF to mean PCE or essential feature, 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 rangewide 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 essential PBFs that help to form that conservation value.

One factor affecting the status of ESA-listed species considered in this opinion, and aquatic habitat at large, is climate change. Climate change is likely to play an increasingly important role in determining the abundance and distribution of ESA-listed species, and the conservation value of designated critical habitats, in the Pacific Northwest. Such changes will not be spatially homogeneous across the Pacific Northwest. The largest hydrologic responses are expected to occur in basins with significant snow accumulation, where warming decreases snow pack, increases winter flows, and advances the timing of spring melt (Mote *et al.* 2014; Mote *et al.* 2016). Rain-dominated watersheds and those with significant contributions from groundwater may be less sensitive to predicted changes in climate (Tague *et al*. 2013, Mote *et al.* 2014).

During the last century, average regional air temperatures in the Pacific Northwest increased by 1°F to 1.4°F as an annual average, and up to 2°F in some seasons (based on average linear increase per decade; Kunkel *et al.* 2013; Abatzoglou *et al.* 2014). Warming is likely to continue during the next century as average temperatures are projected to increase another 3 to 10°F, with the largest increases predicted to occur in the summer (Mote *et al.* 2014). Decreases in summer precipitation of as much as 30 percent 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; Mote *et al.* 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).

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 (Mantua *et al*. 2009; Isaak *et al.* 2012). 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 (Winder and Schindler 2004, Raymondi *et al*. 2013). Higher temperatures are likely to cause several species to become more susceptible to parasites, disease, and higher predation rates (Crozier *et al.* 2008; Wainwright and Weitkamp 2013; Raymondi *et al.* 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 (McMahon and Hartman 1989; Lawson *et al.* 2004).

In addition to changes in freshwater conditions, predicted changes for coastal waters in the Pacific Northwest as a result of climate change include increasing surface water temperature, increasing but highly variable acidity, and increasing storm frequency and magnitude (Mote *et al.* 2014). Elevated ocean temperatures already documented for the Pacific Northwest are highly likely to continue during the next century, with sea surface temperature projected to increase by 1.0°C to 3.7°C by the end of the century (IPCC 2014). Habitat loss, shifts in species' ranges and abundances, and altered marine food webs could have substantial consequences to anadromous, coastal, and marine species in the Pacific Northwest (Tillmann and Siemann 2011; Reeder *et al*. 2013).

Moreover, as atmospheric carbon emissions increase, increasing levels of carbon are absorbed by the oceans, changing the pH of the water. Acidification also impacts sensitive estuary habitats, where organic matter and nutrient inputs further reduce pH and produce conditions more corrosive than those in offshore waters (Feely *et al*. 2012; Sunda and Cai 2012).

Global sea levels are expected to continue rising throughout this century, reaching likely predicted increases of 10 to 32 inches by 2081 to 2100 (IPCC 2014). These changes will likely result in increased erosion and more frequent and severe coastal flooding, and shifts in the composition of nearshore habitats (Tillmann and Siemann 2011; Reeder *et al.* 2013). Estuarine-dependent salmonids such as chum and Chinook salmon are predicted to be impacted by significant reductions in rearing habitat in some Pacific Northwest coastal areas (Glick *et al.* 2007).

Historically, warm periods in the coastal Pacific Ocean have coincided with relatively low abundances of salmon and steelhead, while cooler ocean periods have coincided with relatively high abundances; therefore, these species are predicted to fare poorly in warming ocean conditions (Scheuerell and Williams 2005; Zabel *et al*. 2006). This trend is supported by the recent observation that anomalously warm sea surface temperatures off the coast of Washington from 2013 to 2016 resulted in poor coho and Chinook salmon body condition for juveniles caught in those waters (NWFSC 2015). Changes to estuarine and coastal conditions, as well as the timing of seasonal shifts in these habitats, have the potential to impact a wide range of listed aquatic species (Tillmann and Siemann 2011; Reeder *et al*. 2013).
The adaptive ability of threatened and endangered salmon and steelhead species is depressed due to reductions in population size, habitat quantity and diversity, and loss of behavioral and genetic variation. Without such 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 ESA-listed 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). Such conditions will possibly intensify the climate change stressors inhibiting recovery of ESA-listed species in the future.

Status of PS Chinook Salmon

The Puget Sound 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 (Shared Strategy for Puget Sound 2007) and a supplement by 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 (Table 6) 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 the viability criteria for all VSP parameters are sustained to provide ecological functions and preserve options for ESU recovery.

See Table 1 for a summary of the listing and recovery plan information for PS Chinook salmon.

Status of PS Steelhead

The PS Steelhead TRT produced viability criteria, including population viability analyses (PVAs), for 20 of 32 demographically independent populations (DIPs) and three major population groups (MPGs) in the DPS (Hard 2015). It also completed a report identifying historical populations of the DPS (Myers et al 2015). The DIPs are based on genetic, environmental, and life history characteristics. Populations display winter, summer, or summer/winter run timing (Myers et al 2015). The TRT concludes that the DPS is currently at "very low" viability, with most of the 32 DIPs and all three MPGs at "low" viability.

The designation of the DPS as "threatened" is based upon the extinction risk of the component populations. Hard 2015, identify several criteria for the viability of the DPS, including that a

minimum of 40 percent of summer-run and 40 percent of winter-run populations historically present within each of the MPGs must be considered viable using the VSP-based criteria. For a DIP to be considered viable, it must have at least an 85 percent probability of meeting the viability criteria, as calculated by Hard (2015).

On December 13, 2018, we published a proposed recovery plan for PS steelhead (83 FR 64110) (NMFS 2018a). The proposed plan indicates that within each of the three MPGs, at least fifty percent of the populations must achieve viability, *and* specific DIPs must also be viable:

Central and South Puget Sound MPG: Green River Winter-Run; Nisqually River Winter-Run; Puyallup/Carbon Rivers Winter-Run, or the White River Winter-Run; and at least one additional DIP from this MPG: Cedar River, North Lake Washington/Sammamish Tributaries, South Puget Sound Tributaries, or East Kitsap Peninsula Tributaries.

Hood Canal and Strait of Juan de Fuca MPG: Elwha River Winter/Summer-Run; Skokomish River Winter-Run; One from the remaining Hood Canal populations: West Hood Canal Tributaries Winter Run, East Hood Canal Tributaries Winter-Run, or South Hood Canal Tributaries Winter Run; and One from the remaining Strait of Juan de Fuca populations:

Table 1, below provides a summary of listing and recovery plan information, status summaries and limiting factors for the species addressed in this opinion. More information can be found in recovery plans and status reviews for these species. Acronyms appearing in the table include DPS (Distinct Population Segment), ESU (Evolutionarily Significant Unit), ICTRT (Interior Columbia Technical Recovery Team), MPG (Multiple Population Grouping), NWFSC (Northwest Fisheries Science Center), TRT (Technical Recovery Team), and VSP (Viable Salmonid Population).

Table 1 Listing classification and date, recovery plan reference, most recent status review, status summary, and limiting factors for each species considered in this opinion.

Species	Listing Classification and Date	Recovery Plan Reference	Most Recent Status Review	Status Summary	Limiting Factors
Puget Sound Chinook salmon	Threatened 6/28/05	Shared Strategy for Puget Sound 2007 NMFS 2006	NWFSC 2015	This ESU comprises 22 populations distributed over five geographic areas. Most populations within the ESU have declined in abundance over the past 7 to 10 years, with widespread negative trends in natural-origin spawner abundance, and hatchery-origin spawners present in high fractions in most populations outside of the Skagit watershed. Escapement levels for all populations remain well below the TRT planning ranges for recovery, and most populations are consistently below the spawner-recruit levels identified by the TRT as consistent with recovery.	• Degraded floodplain and in-river channel structure • Degraded estuarine conditions and loss of estuarine habitat • Degraded riparian areas 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
Puget Sound Steelhead	Threatened 5/11/07	NMFS 2019	NWFSC 2015	This DPS comprises 32 populations. The DPS is currently at very low viability, with most of the 32 populations and all three population groups at low viability. Information considered during the most recent status review indicates that the biological risks faced by the Puget Sound Steelhead DPS have not substantively changed since the listing in 2007, or since the 2011 status review. Furthermore, the Puget Sound Steelhead TRT recently concluded that the DPS was at very low viability, as were all three of its constituent MPGs, and many of its 32 populations. In the near term, the outlook for environmental conditions affecting Puget Sound steelhead is not optimistic. While harvest and hatchery production of steelhead in Puget Sound are currently at low levels and are not likely to increase substantially in the foreseeable future, some recent environmental trends not favorable to Puget Sound steelhead survival and production are expected to continue.	• Continued destruction and modification of habitat • Widespread declines in adult abundance despite significant reductions in harvest • Threats to diversity posed by use of two hatchery steelhead stocks • Declining diversity in the DPS, including the uncertain but weak status of summer-run fish • A reduction in spatial structure • Reduced habitat quality • Urbanization • Dikes, hardening of banks with riprap, and channelization

Dungeness Winter-Run, Strait of Juan de Fuca Tributaries Winter-Run, or Sequim/Discovery Bay Tributaries Winter-Run.

North Cascades MPG: Of the eleven DIPs with winter or winter/summer runs, five must be viable: One from the Nooksack River Winter-Run; One from the Stillaguamish River Winter-Run; One from the Skagit River (either the Skagit River Summer-Run and Winter-Run or the Sauk River Summer-Run and Winter-Run); One from the Snohomish River watershed (Pilchuck, Snoqualmie, or Snohomish/Skykomish River Winter-Run); and One other winter or summer/winter run from the MPG at large.

Status of Critical Habitat

Table 2. Critical habitat, designation date, federal register citation, and status summary for critical habitat considered in this opinion

Species	Designation Date and Federal Register Citation	Critical Habitat Status Summary
Puget Sound Chinook salmon	9/02/05 70 FR 52630	Critical habitat for Puget Sound Chinook salmon includes 1,683 miles of streams, 41 square mile of lakes, and 2,182 miles of nearshore marine habitat in Puget Sounds. The Puget Sound Chinook salmon ESU has 61 freshwater and 19 marine areas within its range. Of the freshwater watersheds, 41 are rated high conservation value, 12 low conservation value, and eight received a medium rating. Of the marine areas, all 19 are ranked with high conservation value.
Puget Sound steelhead	2/24/16 81 FR 9252	Critical habitat for Puget Sound steelhead includes 2,031 stream miles. Nearshore and offshore marine waters were not designated for this species. There are 66 watersheds within the range of this DPS. Nine watersheds received a low conservation value rating, 16 received a medium rating, and 41 received a high rating to the DPS.

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 action area is co-extensive with the conservation credit (DSAY) service area for the proposed bank. The Bank's service area is the geographic area within which impacts of other projects can be mitigated at a specific mitigation bank or an in-lieu fee program, as designated in its instrument (33 CFR 332.2). The MBI describes the DSAY service area as portions of the Puyallup River Watershed (WRIA 10) and portions of Commencement Bay marine environment in WRIAs 10 and 12. The White River Basin and Muckleshoot Indian Tribe-owned lands are excluded from the service area unless specifically approved by the Muckleshoot Indian Tribe. The limits of the service area for ESA designated fish and non-listed fish habitat are described below.

The DSAY service area includes the Puyallup River and its tributaries up to the confluence with the Carbon River at approximately river mile (RM) 17.9. Specifically, the eastern limits of the

service area include subwatersheds of Fennel Creek – Puyallup River (HUC12 – 171100140501), and Puyallup River (HUC12 – 171100140502) due to similarities in fish stock utilization and fish habitat conditions among the Bank site and these subwatersheds (Port of Tacoma 2020).

By agreement with the Muckleshoot Indian Tribe (an IRT participant), the service area does not extend into subwatersheds of the White River (HUC12 – 171100140404), Boise Creek – White River (HUC12 – 171100140403), South Prairie Creek (HUC12 – 171100140104), Lower Carbon River (HUC12 – 171100140106), or Fiske Creek – Puyallup River (HUC12 – 171100140205). As a result, the proposed Upper Clear Creek Mitigation Bank will not sell DSAYs to project sponsors proposing actions in those subbasins.

The NMFS agreed with this limitation of the extent of the service area as these areas provide habitat for a population spring Chinook in the White River and its tributaries. There are no extant populations of spring run PS Chinook in Puget Sound south of the Puyallup/White Rivers. Excluding these areas prevents the Banker and credit purchases from "exporting" the compensation for adverse effects there outside of the primary habitat used by this local salmonid population.

Since the bank includes compensating for marine impacts within the DSAY service area, the action area includes nearshore marine area up to 0.25 miles (1,320 feet) from the shoreline. Marine habitat within the service area includes the northeastern portion of Commencement Bay up to and including Tyee Marina (near the intersection of Marine View Drive and Slayden Road), the southeastern portion of Commencement Bay along the Port of Tacoma, and the southwestern shoreline of Commencement Bay up to Jack Hyde Park (near the intersection of Ruston Way and McCarver Street) (see, MBI Appendix A, Figures).

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).

Critical Habitat in the Action Area

The action area includes critical habitat designate by NMFS. Specifically, the action area includes the PBFs for Freshwater rearing and Migration, Estuarine area, and Nearshore Marine area. The information in this section was developed with the use of information in Port of Tacoma 2020 (internal citations omitted here).

Water Quality—Temperature. The lack of riparian vegetation in the lower reaches of Clear Creek, along with multiple inputs of storm water from urbanized areas, contributes to temperatures outside the range best suited for salmon for at least part of the year, though Clear Creek is not on Ecology's Clean Water Act Section 303(d) list for high temperatures. Stream temperature was recorded at 14°C during site visit on March 1, 2013, prior to conducting habitat restoration at the Bank. This temperature is a risk for bull trout rearing habitat (13°C to 15°C) and Chinook salmon migration and rearing habitat (14°C to 18°C). Stream temperatures are degraded and poorly functioning for most the year, and probably not functioning during the summer months, when temperatures likely increase.

Water Quality--Sediment/Turbidity. Fine sediment comprises much of the substrate in the action area. Fine sediment is a limiting factor throughout the Clear Creek subbasin where fish have access (Port of Tacoma 2020). Silt is the predominant substrate material observed within the channel during stream surveys. Based on the available data and the extensive alteration of Clear Creek caused the adverse effects of human development and agricultural practices, suspended sediment (greater than 17 percent fine sediment), renders conditions low utility for PS Chinook salmon and steelhead populations in the action area.

Water Quality--Chemical Contamination/Nutrients. Clear Creek receives runoff from single-family residential areas. Storm water runoff is a limiting factor identified by the Puyallup Tribe (Port of Tacoma 2020). In addition, Clear Creek receives runoff from agricultural areas. Clear Creek is on Ecology's Clean Water Act Section 303(d) list of impaired waterways because of the observed concentrations of fecal coliform bacteria. Degradation from chemical contamination/nutrients is significant enough for PS Chinook salmon and steelhead populations in the action area that more than one reach of the creek is listed on Ecology's 303(d) list.

Freedom from Obstruction—Access. Habitat access in the Clear Creek watershed is *not properly functioning* because a cement diversion dam located at RM 1.9 blocks passage. The purpose of the diversion is to ensure a pathogen-free water source for hatchery-raised rainbow trout at a private trout farm.

In addition to migration and rearing within the project footprint, the action area includes the estuarine and nearshore marine PBFs of critical habitat, both of which require freedom from obstructions to function and fulfill their role in the conservation of listed species for which critical habitat is designated. The lower Puyallup River, the estuarine areas, and the nearshore marine portions of the action area are beset by many environmental issues, the most prominent of which is human development and land uses in the form of agriculture, residences, businesses, and the Port of Tacoma. Each of these factors creates a set of conditions that interfere with the functional conditions needed to create and maintain areas free from obstruction. Hardened banks (bulkheads and rip-rap) and overwater structures (port dock, public and private marinas, businesses and restaurant structures, and resident piers) dominate the shoreline. These structures form a gauntlet of infrastructure that increases the time and energy salmonids expend while adjusting to salt water and migrating away from their natal grounds in the Puyallup River Basin.

Substrate. Because sand and silt dominate sediment in the action area, substrate is degraded to the extent that spawning habitat is limited. While most of the action area contains no spawning

habitat, there is limited spawning between approximately RM 1.7 and RM 1.9 (Port of Tacoma 2020).

Large Woody Material. The LWM indicator is a limiting factor in Clear Creek, and there is limited opportunity for potential recruitment throughout the system due to the overall lack of large riparian trees. During field visits to Clear Creek within the project limits, it was observed that LWM is rare. Only 11 pieces were identified during stream surveys.

The right (west) bank of Clear Creek on the Bank lacks woody vegetation and showed signs of erosion on 10 to 20 percent of the bank. The Clear Creek subbasin is subject to urban stream flooding that "…occurs when runoff exceeds the conveyance capacity of natural and manmade drainage systems, and typically occurs with moderate- to high-intensity storms that can last for several days or occur in succession over a period of weeks" (Port of Tacoma 2020). During periods of low flow and low-intensity storms, Clear Creek flows are confined within the channel. Channel confinement is identified as a limiting factor for Clear Creek. Surrounding agricultural practices, including the side-cast berm levee, and urban development have largely eliminated high functioning floodplain habitat.

Status of Listed Species in the Action Area

Puyallup/White River Chinook. The ESU populations present in the action area are White (Puyallup) River early, White River late returns, and Puyallup River Chinook. Within the Puyallup basin, virtually all salmon spawn in the Puyallup River, outside of Commencement Bay. Artificial propagation programs likely provide most of the numbers of Chinook in the Puyallup River. The White River Chinook spring-run population is at high risk of extinction while the Puyallup river mean spawner abundance is significantly below the planning targets and ranges for recovery.

The numbers of Puyallup Chinook compiled between 2010 and 2014 indicate average spawner returns were 1,186 (NWFSC 2015). Under properly functioning conditions, minimum viability spawning abundance has been determined to be 5,300 spawners (NWFSC 2015).

The numbers of White River Chinook compiled for the years 2010-2014 indicate average spawner returns were 1,186. Under properly functioning conditions, minimum viability spawning abundance has been determined to be 3,200 spawners (Ford 2010).

Field observations of PS Chinook in the action area revealed that habitat use differs between the mouth and the head of waterways and also between the locations of the waterways in relation to the Puyallup River. The Puyallup Tribe of Indians conducted beach seine sampling between 1980 and 1995 (note: no data were available in 1988, 1989, and 1990). In addition, sampling of salmonid distribution has been conducted at a number of sites during a course of impact assessment and/or mitigation site planning. Some general conclusions from these studies indicated that: juvenile Chinook are present in low numbers in March, peak in late May or early June and drop to low numbers again by July 1; the progeny of naturally spawned Chinook arrive in the estuary throughout this period at a variety of lengths; offshore catches of Chinook peak about two weeks later than shoreline catches; and all shorelines are used but catches are typically higher near the mouths of the waterways than near the heads (Kerwin 1999, Grette Associates

2004). Hooper (NMFS 2001) compiled catch per unit effort of Chinook salmon at sites close to and further away from the Puyallup River. This data found that the catch per unit effort averaged 20.4 in the Milwaukee Waterway, 2.93 in the Blair Waterway and 1.99 in the Hylebos Waterway. The catch per unit was higher in the waterways closest to the river (NMFS 2001). Recovery actions identified as necessary to address limiting factors include restoring estuarine vegetation, preserving intact bluffs, beaches and embayments, and restoring highly developed shorelines as opportunities arise. Opening of floodplain habitat in the lower mainstem rivers and increasing habitat diversity and types in the estuary would provide the greatest restoration benefit to Puyallup/White River Chinook abundance (Pierce County 2012).

Puyallup/White River Steelhead. Abundance of adult steelhead returning to the Puyallup and White rivers has fallen substantially since estimates began for many populations in the late 1970s and early 1980s (NWFSC 2015). The five-year geometric mean in the Puyallup River has declined from a high of 1,954 returning spawners (1990-1994) to a low of 277 spawners (2010-2014). The five-year geometric mean in the White River has declined slightly from a high of 696 returning spawners (1990-1994) to a low of 531 spawners (2010-2014) (NWFSC 2015). Steelhead are rarely seen foraging in Commencement Bay as they are either migrating to the ocean or returning to the Puyallup/White Rivers. COE (2015) reported that data on foraging habitats and prey base of steelhead while in Puget Sound could not be found by a search of the literature.

Status of Actions Undertaken by the Mitigation Bank

As discussed in section 1.3, the 28.64 acre bank site has already undergone restoration. However, as part of the structure of the Bank, the effects of that restoration are not attributed to the environmental baseline.

Conservation banks present a unique factual situation, and this warrants a particular approach to how they are addressed. Specifically, when NMFS is consulting on a proposed action that includes conservation bank credit purchases, it is likely that physical restoration work at the bank site has already occurred and/or that a section 7 consultation occurred at the time of bank establishment.

A traditional reading of "environmental baseline," might suggest that the overall ecological benefits of the conservation bank actions therefore belong in the environmental baseline. However, under this reading, all proposed actions, whether or not they included proposed credit purchases, would benefit from the environmental 'lift' of the entire conservation bank because it would be factored into the environmental baseline. In addition, where proposed actions did include credit purchases, it would not be possible to attribute their benefits to the proposed action, without double counting.

These consequences undermine the purposes of conservation banks and also do not reflect their unique circumstances. Specifically, conservation banks are established based on the expectation of future credit purchases. In addition, credit purchases as part of a proposed action will also be the subject of a future section 7 consultation. It is therefore appropriate to treat the beneficial effects of the bank as accruing incrementally at the time of specific credit purchases, not at the

time of bank establishment or at the time of bank restoration work. Thus, for all projects within the service area of a conservation bank, only the benefits attributable to credits sold are relevant to the environmental baseline. Where a proposed action includes credit purchases, the benefits attributable to those credit purchases are considered effects of the action.

2.5 Effects of the Action on Listed Species and Designated Critical Habitat

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).

The effects of the action fall into two categories. The first is the continuing establishment and improvement of ecological and habitat function at the bank site. The other category is the effects of mitigation transactions in the bank as offsets for adverse effects in the bank's Service Area. At the time of consultation, NMFS cannot identify the precise location and effects of projects using Bank credits as compensatory mitigation. Based on the pattern of compensatory mitigation within a few river miles of the Bank site and the Banker's need for a source of compensatory mitigation for its own operational and maintenance needs, most actions using credits from the Bank will be clustered near the Bank site and in, or near the Port's property in Commencement Bay.

2.5.1 Effects on Listed Species

Establishment and Restoration of Wetland and Habitat Function at the Bank Site

Prior to construction of the bank, baseline environmental conditions in the action area reflected the adverse effects of more than a century of land use change and development. Restoration actions completed at the Bank have already established or improved high quality riverine wetlands and habitat and create a mosaic of forested, scrub-shrub, emergent and riverine wetland conditions as described below. Areas established by Bank design and construction will continue to improve though the rest of the establishment period (approximately the next 10 years), and provide an area of high function for the life of the bank.

Generally, the habitat benefits of the bank design and construction include creating a diverse wetland system that scores high for water quality, hydrologic and habitat functions. In addition, the construction will enable improved riparian habitat along Clear Creek, restored and expanded stream channels, expanded and enhanced wetland and buffer conditions, rehabilitated riverine wetland habitat, new off-channel refuge and rearing habitat for fish species, and increased floodplain storage.

The long term benefits of habitat restoration include enlarged and enhanced channel and off-channel habitat and riparian areas as the first generation of planted native veg grows and meets performance criteria. Adjacent wetland areas have been rehabilitated and enlarged after

removing at berm levee, drainage ditches, and drain tiles. In addition, the port included large wood pieces and standing snags placed in the floodplain wetland, which are improving wildlife habitat quality and quantity.

The Bank will mature into a diverse complex of riparian forested, scrub-shrub, and emergent wetland areas, structurally complex in-stream habitat for salmonids, and enhanced buffers to provide additional protection and functions.

The Port assessed site conditions before and after construction to ensure compliance with the Bank design and to discern the trajectory toward expected functional lift of the newly established or restored wetland and habitat elements of the Bank's design. The Bank site design used an ecosystem restoration approach to improve hydrologic, water quality and habitat functions across 28.64 acres of riverine wetland, stream and buffer habitat. This section tracks those ecosystem elements in the subsections below.

Before construction, the Port's contractor assessed pre-construction conditions of the wetland were according to the Ecology 2014 wetland rating system. According to the 2014 rating, the existing conditions rated as a Category II system. Restoration, rehabilitation, and enhancement activities will contribute to raising the wetland to Category I by conserving water quality functions through the addition of emergent vegetation, woody-stemmed shrubs, downed wood (LWM structures), and other surface roughening features that remove pollutants, slow flow rate, and decrease sediment, nutrients, and toxins from surface flows. In addition, the wetland is now larger and remedies the historic degradation from agricultural activities previously conducted on the landscape will be removed from the wetland. Installing dense native vegetation communities and surface roughening structures and removing past agricultural activities will improve water quality functions of Wetland A.

Clear Creek is situated in a straightened channel and is cut off from historic floodplain habitat by the side-cast berm levee at low to moderate flood flows. The project will re-route the stream and connect the wetland to historic floodplain areas and re-engage Clear Creek with the wetland floodplain during all flood flows. In addition, wetlands play a role in moderating water level fluctuations. Vegetation impedes the flow of runoff and allows it to infiltrate into the ground. Woody vegetation, such as shrubs and trees, slow surface water flow and help control runoff that eventually drains into streams or other wetlands. The proposed surface roughening structures such as LWM and hummocks will also serve to slow flows and encourage infiltration of surface waters. Clear Creek has been identified as a stream that regularly floods and Pierce County has identified the project area for floodplain reconnection to prevent additional flooding. The project will remove the side-cast berm levee, re-meander stream channels through the floodplain wetland, install shrub and forested habitats, LWM structures, pools and off-channel habitat that will help increase hydrologic functions.

The restoration actions will reduce the amount of invasive plants, increase habitat diversity with a diverse assemblage of native trees, shrubs and emergent species, provide standing snags and LWM structures, re-meander the stream channel, add off channel habitat, and provide hummocks for additional habitat interspersion. Therefore, the post-restoration wetland scores higher for habitat functions points than the baseline conditions wetland. Habitat functions further increased because human activities (historic agricultural use) will be removed from the site and the stream

channel will be rerouted from the straightened channel to meander throughout the Bank. Habitat functions will greatly improve at the Bank because native vegetation will be added to Wetland A and buffer, pools and off-channel habitat will be created, and LWM will be added to the stream channels, hummocks and throughout Wetland A.

Effects from Future Debit Projects

In contrast to the effects of restoring the Bank site, analyzing the effects of future actions that buy Bank credits for compensatory mitigation is difficult if not impossible at this time. The Bank derives the value of bank credits by establishing and improving wetland and habitat function. The number of credits that compensatory mitigation credit buyers need (referred to as "debits") is the same process used to assess the total number of credits in the bank for each habitat type affected. But instead of assessing the "lift" created by restoration and considering the time until full function, the model operator assesses the extent of habitat degradation with HEA providing an output in negative DSAYs indicating a "debit."

Habitat Equivalency Analysis provide debit outputs when the "condition before project" exceeds the "condition after project" reflecting the loss of habitat functional value before and after that action. Although NMFS cannot predict the values for individual future actions, we can make reasonable assumptions about the extent of those effects based on the habitat equivalency analysis NMFS conducted to evaluate the amount of conservation credits attributable to the habitat lift summarized above.

The NMFS used four components within HEA to generate DSAY values at the Bank: 1) a valuation of all habitat types relevant to anadromous fish within the floodplain portion of the project area before and after restoration occurs; 2) estimates of the time needed for each restored habitat to achieve its full ecological function value for anadromous fish; 3) the duration that the restored habitat will continue to fully function; and a 4) discounting factor that accounts for the time required for restored habitat to reach the highest function it can achieve over time.

To evaluate the Bank site, the parties identified eight distinct habitat types within the floodplain that are beneficial to anadromous fish, based upon the definitions in the Lower Willamette River HEA Model (US Fish and Wildlife Service [FWS], 2012) and as modified by NOAA for this Bank. Each distinct habitat type is given an incremental value between 0 and 1 (0 denoting "not functioning" and 1 denoting "fully functioning") and an expected time for that habitat type to reach full function and maturity. The total habitat gain/loss equation is shown below and total DSAYs derived from each habitat type found within the Bank are documented in Table D2 in Section D2 of this appendix. DSAY Credits have a discounted present value based upon the time needed for restoration activities to reach full function. In Years 5 and 10 the Sponsor may request to reevaluate the existing habitat types to determine whether the unused DSAY Credit values have reached full maturity and function more quickly than originally anticipated.

Table 3 describes the number of DSAY Credits generated at the Bank. The habitat values used in the model runs are based on but modified from the Lower Willamette River HEA Model (presently used for compensatory mitigation for Portland Harbor). The Port, IRT, and NMFS agreed to reduce total DSAY Credits generated by the Bank by 50 percent (273.15 DSAYs) because existing conditions reduce access by juvenile fall Chinook from the Puyallup River. NMFS and the IRT have agreed that if conditions change in relation to upstream fish passage

between the Bank and the Puyallup River, the parties will adjust the DSAY ledger to reflect the full value of DSAYs generated at the site as described in MBI Appendix D.

Table 3. Habitat Types and Values for Habitat Equivalency Analysis

Existing Habitat and Type	Habitat Value (Before)	Acres	Proposed Habitat and Type	Habitat Value (After)	Years Until Full Function	DSAYs[a] Value/ Acre	DSAYs[a] for Habitat
Upland: invasive vegetation	0.1	1.61	Upland: native forest in floodplain (enhancement)	0.65	40 (80% in 10 years)	15.458	24.89
Upland: invasive vegetation	0.1	0.06	Off Channel: tributary – cold (main channel)	1	1	29.996	1.80
Riparian Wetland: invasive vegetation	0.3	0.11	Off Channel: tributary – cold (main channel)	1	1	23.330	2.57
Upland: invasive vegetation	0.1	0.07	Alcoves on side channel (along baseline Clear Creek)	0.8	1	23.330	1.63
Upland: invasive vegetation	0.1	4.07	Active Channel Margin: unarmored native vegetation, low angle (wetland re-establishment)	1	3	29.130	118.56
Riparian Wetland: invasive vegetation	0.3	12.47	Active Channel Margin: unarmored native vegetation, low angle (wetland rehabilitation)	1	3	22.657	282.53
Riparian Wetland: invasive vegetation	0.3	1.1	PAB Ponds and PAB Pond Outlet Channels	0.8	1	16.664	18.33
Riparian Wetland: native forest, in historic floodplain	0.65	0.06	Off Channel: tributary – cold (main channel)	1	1	11.665	0.70
Riparian Wetland: native forest, in historic floodplain	0.65	8.17	Active Channel Margin: unarmored native vegetation, low angle (wetland rehabilitation)	1	1	11.665	95.30

Existing Habitat and Type	Habitat Value (Before)	Acres	Proposed Habitat and Type	Habitat Value (After)	Years Until Full Function	DSAYs[a] Value/ Acre	DSAYs[a] for Habitat
Total DSAYs Generated by the Bank:							**546.31**
NMFS/IRT 50% Reduction:[b]							**-273.15**
Total DSAYs Initially Available:[b]							**273.16**

Notes:
(a) DSAY = Discounted Service Acre Year; (b) NMFS and the IRT have reduced the number of DSAYs generated at the Bank by 50 percent to reflect the Bank location above a tide gate (albeit a highly improved one), the River Road culverts, and the Gay Road culverts. However, NMFS and the IRT have agreed that if conditions change in relation to upstream fish passage between the Bank and the Puyallup River, the reduced DSAYs will be reinstated as described in Section D.2.0.D of this Instrument.

Based on the foregoing, the one thing we can predict about the extent of the effects of future actions is that, for each action, the action proponent will have to purchase credits in the exact amount needed to offset the debits incurred by their projects, after minimizing them as required by law. The banking framework ensures this outcome whether one project buys all 273.16 DSAYs in the bank, or 273.16 projects buying one DSAY each. Furthermore, the Banker remains responsible for ensuring the habitat function at the Bank site remains at predicted levels of full function, in perpetuity. Thus, while individual debit projects can be expected to injure or kill listed fish, the number of fish injured or killed by future habitat-modifying actions are expected to be fully offset by the habitat lift at the Bank site.

2.5.2 Effects on Designated Critical Habitat

The NMFS designated CH for Puget Sound Chinook salmon on September 2, 2005 (70 FR 52630). The 2005 designation uses the term "Primary Constituent Elements (PCEs)" to describe the physical and biological features of critical habitat in 70 FR 52630. Therefore, we use those terms interchangeably in this document. The PBFs for Puget Sound Chinook include:

1. Freshwater spawning sites with water quantity and quality conditions and substrate that support spawning, incubation, and larval development;

2. Freshwater rearing sites with water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility, water quality and forage that support juvenile development, and natural cover such as shade, submerged and overhanging large wood, logjams 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 that support juvenile and adult mobility and survival;

4. Estuarine areas free of obstruction and excessive predation with water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions

between fresh- and saltwater; natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels; and juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation;

5. Nearshore marine areas free of obstruction and excessive predation with water quality and quantity conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation; and 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 PBFs for steelhead are identical in freshwater systems. Steelhead do not have critical habitat in estuarine, nearshore, or marine environments.

The PBFs of critical habitat in the action area include freshwater rearing and migration in and through the Bank site, and estuarine and nearshore marine areas in the Port of Tacoma and the south and north shorelines of Commencement Bay, outside of the Port of Tacoma. The elements of the function of the PBFs affected by the proposed action include water quality, pools and other structural habitat elements, large woody material, stream bank condition, riparian habitat and vegetation, and habitat and floodplain access free from obstruction.

Water Quality

Water quality is an essential elements of the physical and biological features of critical habitat in the action area. Furthermore, water quality is both a necessary component of wetland and habitat function in the action area and an outcome of the restoration actions required to establish the bank. The proposed action will cause short and long term effects on temperature and contaminants, but will have a negligible effect on sediment transport and turbidity.

The creation of channels and PAB ponds in the wetland floodplain will improve conditions for rearing by increasing forage for migrating and rearing fish. They will increase the extent and quality of refugia habitat off of the mainstem Puyallup River for migration. The installation of large wood structures, including downed LWM and standing snags, will improve habitat functions by providing habitat for fish species. Overall, the project will improve water quality from the 28 acres comprising the Bank site.

Water temperature in the action area is affected by the glacial water source in the Puyallup Basin, by riparian vegetation up-river of the action area, and by other conditions caused by human land-uses and development in the watershed. Improvement of the condition and extent of wetland and riparian function ensure the Bank site functions to maintain temperature as that water reaches the site. As the vegetation planted at the bank ages and matures, the shade, cover, and structure function they provide increases. Bank restoration included a significant vegetation restoration element in the wetlands and the surrounding riparian vegetation in the Clear Creek basin, providing the benefits described below.

As riparian vegetation matures, shade from solar radiation increases, and likely improves water temperature by decreasing sun exposure. Furthermore, considering that groundwater discharge at

the site are already cool and clean, improved riparian protection and function at the site will have a mild, positive influence on overall water temperature from other activities outside of the action area and ensures the action will have a beneficial effects on temperature.

Herbicide use is the only potential project-related chemical release that could affect aquatic organisms. Potential herbicide use for vegetation management activities poses a moderate risk to aquatic organisms, based on effects identified in a risk assessment completed to determine the potential of herbicide use to adversely affect aquatic biota (WSDOT 2005).

Appropriate use and application of herbicides as a last resort in vegetation management should not result in an increase in contamination above background levels. Regular flooding events mobilize herbicides, pesticides, petroleum products and other contaminants from throughout the Clear Creek basin, all of which flow through Clear Creek. So while the vegetation management elements of the Bank will increase shade, cover, and structure, the potential for overspray of management chemicals will occasionally, incidentally and adversely increase water contaminant content.

Habitat Access

Floodplain connectivity is an element of the freshwater rearing PBF of critical habitat. The Port increased off channel habitat extent and quality. By building the Bank, the Port substantially improved floodplain connectivity within this section of Clear Creek. The project creates and restores a network of channels, removes the side-cast berm levee adjacent to Clear Creek, and increases floodplain storage capacity. All of these features will provide enhanced floodplain connectivity.

By improving connectivity, the Bank improves the accessibility to newly higher functioning off-channel habitat in the action area. Furthermore, addressing hydrology in the Bank design will ensure against fish stranding in the Bank site itself. As such, the Bank improves access to floodplain habitat without increasing the risk of injury or death by stranding. Therefore, the Bank is increasing the extent and quality of habitat access, better supporting the conservation role of freshwater rearing PBF in the action area.

Large Woody Material

Large wood inputs are important elements of the freshwater rearing and freshwater migration PBFs. Specifically, Bank construction enables development of the extent and quality of natural cover, shade, submerged and overhanging large wood, logjams, and other features that improve the function of the site for the rearing and migration PBFs.

In addition to planting native vegetation, some of which will directly contribute to LWM at the site and downriver over time, the Bank includes a substantial engineered habitat enhancement element. Habitat enhancement at the Bank included adding approximately 118 LWM structures, each consisting of several logs. Therefore, the construction of the Bank improved this element of the freshwater rearing and migration PBFs in the action area.

Pool Frequency and Quality

The presence of increased habitat structure (from the inclusion of planted and installed LWM), will increase pool frequency and quality in the action area. By installing two structures specifically designed to form pools, the Bank ensures that the action will improve the extent and function of the freshwater rearing and migration PBF in the action area.

Off-channel Habitat and Refugia

Floodplain connectivity provides access to refugia habitat essential to the growth and development of juvenile rearing and migrating life histories of both PS Chinook salmon and steelhead. Each also contributes to the conservation role served by the freshwater rearing and migration PBFs of critical habitat in the action area.

Constructing the Bank started the process of establishing riparian forest, restoring stream channels, increasing off-channel habitat and PAB ponds, and increase floodplain storage capacity. These features, and the proposed habitat structures within these areas (downed logs, native vegetation), will increase the quality and extent of off-channel habitat and refugia in the action area.

Stream Bank Condition

Stream bank condition is an element of the freshwater migration PBF of critical habitat. Undercut banks are the product of functional structure added to streams, such as large wood and boulders. Undercut banks provide cover and enhance conditions for downstream juvenile mobility while migrating downstream to Commencement Bay.

The Bank improves the stream bank condition along both banks of restored floodplain channels and Clear Creek at the Bank by removing invasive vegetation, installing LWM structures, submerged vegetated benches, and alcoves along the stream banks, and planting native vegetation, including trees and shrubs.

Hydrology

The project creates features (floodplain storage, expression of groundwater in excavated areas) that may modestly reduce peak flows or increase base flows. Although reducing peak and increasing base flows are desirable, the beneficial effects attributable to the Bank site will not substantially change hydrologic conditions in the larger basin of which Clear Creek is a part. There will be a similarly small (beneficial) increase in the extent of drainage network, but not to an extent that matters outside of the Bank site footprint or in the basin at large. (Cite MBI analysis).

Riparian Reserves

The project established new riparian plantation that will preserve vegetation as-planted in perpetuity within the Bank footprint. In addition to riparian areas, the Bank increased surrounding upland riparian planting that will mature to upland forest. Intentional design elements ensure that areas of created off-channel habitat (including new channels and PAB

ponds) will benefit from increased riparian process function over time. Increased riparian function will promote cooler and cleaner water, increased allocthonous input supporting the salmonid food chain, and cover.

I'd probably put a summary paragraph that states the detriments associated with the construction and herbicide elements are transitory, but the remainder of effects are beneficial with long term gain in conservation potential.

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 2.4).

Among other non-federal activities reasonably likely to occur, Pierce County identifies the Clear Creek Stream Corridor Restoration as a high-priority capital improvement project (CIP) that involves restoring a 3,000-foot reach between Pioneer Way East and Gay Road. Pierce County recognizes the Port's overall UCCMS Project as a component of this CIP. The project addresses riparian and aquatic habitat degradation. In addition, in support of improving water quality conditions, acquisition of the Bank by the Port is consistent with a programmatic recommendation of Pierce County that prioritizes acquisition of riparian corridors through purchase or conservation easements. Acquisition of the site is also consistent with Pierce County's floodway buyback program which aims to purchase property within the Clear Creek/Puyallup River floodway (Port of Tacoma, MBI Appendix A, Figure A5 and A7) from willing landowners to relieve flooding over approximately 400 acres. The county plan includes the purchase of properties, the removal of structures, and the creation of a ring levee for flood storage.

Pierce County is also completing a Habitat Conservation Plan (HCP) covering maintenance and repair of flood prevention structures, especially levees. The HCP covers about 55 miles of levees and similar structures on certain reaches in the Carbon and Puyallup Rivers in Pierce County. A small segment of the Bank service area overlaps the Pierce County HCP's covered area.

Pierce County developed the draft HCP to minimize and mitigate the adverse effects of certain maintenance and repair practices by requiring acquisition of four mitigation sites, where Pierce County will construct levee setbacks for two, and use an engineered solution to reconnect the rivers with a portion of historic floodplain area. NMFS, USFWS, and Pierce County are coordinating the development process with the intent of publishing the HCP in 2020.

Although Habitat Conservation Plans prepared under ESA section 10 support issuance of section 10 incidental take permits, the underlying activities and requirements are applicant-driven. Being applicant driven plans, NMFS views the future effects of HCP implementation as those of non-federal activities, and therefore reviews them here with the cumulative effects to the proposed action.

Under the HCP, Pierce County proposes to use a variety of strategies to minimize and mitigate the effects of Pierce County's levee management and repair activities. The HCp will require Pierce County Public Works to adhere to the prescriptive requirements of the Washington State Regional Road Maintenance Program (Washington State Regional Forum, 2002 (RRMP)). That program, which Pierce County adopted in 2003 for its road Maintenance Program has a set process for incorporating construction and maintenance best management practices for construction. NMFS's willingness to include this structure for some construction practices is premised on the effectiveness of the underlying measures to constrain the effects of certain construction activities and is not a catchall for levee maintenance activities with limited actual relationship to levee maintenance. In addition, Pierce County will manage levee vegetation according to the template established in the Pierce County System Wide Improvement Framework (Pierce County et al. 2017, in draft (SWIF)). Finally, Pierce County will manage streambank erosion and protection according to the process and requirements of Washington State's Integrated Streambank Protection Guidelines (Washington Department of Fish and Wildlife, 2002). Furthermore, the HCP includes floodplain property acquisition, restoration, and levee removal and setback to increase flood storage, fish habitat access, and improve ecological function.

Pierce County also proposes to acquire, restore, and setback levees in two of three mitigation sites, redirect river thalweg into relict floodplain habitat in a third site, and acquisition of a fourth site to prevent change of land-use there and enable future restoration. Levee setbacks and floodplain reconnection will provide habitat for rearing and migrating juvenile Puget Sound Chinook salmon life history by restoring habitat features in the acquired parcels, demolishing structures, and removing unneeded levees; constructing setback levees and restoration projects that provide floodplain connectivity, activate side channels or provide other important habitat features. Both the Puyallup River Flood Plan (Pierce County, et al, 2014) and the Puget Sound Chinook Salmon Recovery Plan (NMFS et al, 2007) identify these actions as important to ecosystem function supporting salmon recovery.

Other than the Pierce County Flood Structures Maintenance HCP, NMFS is unable to identify other specific forthcoming actions in the action area that meet the definition of cumulative effects.

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) Reduce appreciably 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.

Both Puget Sound Chinook salmon and steelhead are threatened by the risk of extinction. Populations exhibit reduced abundance, productivity, spatial structure, and diversity cause by a variety of factors, including historical over-exploitation. Critical habitat for these species include both factors for decline and limiting factors, as habitat, especially freshwater and estuarine areas, have been systemically degraded by anthropogenic modifications. The specific populations affected by the proposed action experience a number of baseline conditions in their habitat that constrain juvenile to adult survival, and functioning as a limit on carrying capacity.

Specifically, the baseline wetland habitat and ecological floodplain functions at the Bank are severely impacted by nearly a century of human alterations. Straightening and channelizing the naturally meandering creek along the railroad grade and constructing the side-cast berm levee isolates Clear Creek from the adjacent floodplain and wetlands during most flows and creates fish stranding. Agricultural activities degraded wetland and fish habitat by removing native riparian vegetation, repetitive tilling, mowing and harvesting, altering wetland hydrology through drainage tiling and ditching, and allowing colonization of the site by invasive weeds such as reed canary grass.

When we add the effects of the proposed action to the baseline we can identify that restoration and re-establishment activities at the Bank are presently improving wetland, fish, and wildlife habitat functions within the Bank. Functional improvements from realigning and meandering Clear Creek, re-establishing floodplain connectivity, and re-establishing and rehabilitating a diversity of floodplain wetlands and associated fish and wildlife habitat including instream and terrestrial LWM structures, shallow vegetated benches, alcoves, hummocks, and improved off-channel habitat will continue for at least the next 7 years per the “establishment” period designated in the MBI.

In addition, the Bank will also improve flood storage during floods and return flow after floods, water quality, recruitment of large wood, stream bank conditions, downstream erosion, water temperatures and riparian reserves. The Bank will consist of forested, scrub-shrub, and emergent wetlands that contain fish-bearing streams and off-channel habitat. This variety of complex, interconnected habitats are largely absent in the lower Puyallup River watershed. The Bank will provide significant and long lasting ecological and hydrologic benefit to the local environment and throughout a large portion of the lower Puyallup River watershed. As ecological and habitat function improve, the Port will receive credits it will be able to use or sell to others needing to offset unavoidable adverse effects of actions that will eventually undergo ESA section 7 consultation as well.

Generally, credits sold to mitigate adverse unavoidable effects will completely offset those adverse effects per use of the Habitat Equivalency Analytic model. In some cases, credit sales to offset adverse effects will offset unavoidable adverse effects yet make positive contribution to the overall conservation value of critical habitat. This situation can arise when adverse effects

matter less to the conservation of species than the habitat lift created in the bank (such as when the adversely affected habitat is already poorly functioning with low conservation value relative to the habitat in the Bank.) This situation would be rare and NMFS expects complete or nearly complete offset rather than adding to overall conservation value. However, within the action area, PBFs of critical habitat will improve, and will not be offset by future actions associated with credit purchases since the bank would not allow credits to be purchased for such effects. When the cumulative effects are also considered, we anticipate multiple PBFs will be re-established, enhancing conservation values in the action area.

Because mitigation bank transactions must be done in a manner where they are expected to result in completely offseting the adverse effects of a credit-buyer's action, the effects of future transactions in the Bank are not affect the existing status of the species, though the specific populations could eventually see some positive trend in juvenile to adult survival. The benefit of offsetting small, geographically scattered, adverse effects by purchasing credits derived from habitat lift accruing at the Bank site ensures the proposed action will reduce the risk of adverse changes in species status. At a minimum, risk reduction accrues to each population of Puget Sound Chinook salmon and steelhead that use the bank site for rearing and migration to Commencement Bay.

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 NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of Puget Sound Chinook Salmon or Puget Sound steelhead and will not destroy or adversely modify its designated critical habitat.

2.9 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).

The NMFS makes no ESA section 7(a)(1) recommendations in this opinion.

2.10 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 ITS.

Signing the MBI and approving the use of the Bank as a conservation bank creates an expectation of habitat value that can be evaluated and unitized as a currency in the form of credits and DSAYs. The Port can use or sell its Credits and DSAYs to buyers needing to offset the adverse unavoidable effects of their actions on resources protected by the Clean Water Act and Endangered Species Act. The Port can conduct credit sale transactions until the value of resource lift in the bank (that was the basis for the original valuation) is exhausted and all credits are sold. Thereafter, the Port retains responsibility for the functional lift in the bank, in perpetuity. Each of these transactions will be parts of actions that will be 1) reviewed by the IRT to ensure an appropriate exchange of value, and 2) be included in actions that themselves will be the subject of future ESA section 7 consultations.

The NMFS exempts no incidental take in this statement. Take assessments will accrue to individual future actions requiring their own ESA s 7 consultations and review and concurrence by the IRT, as they arise. As such, there is no take caused by “approval” of the bank until the banker proposes to sell credits to offset debits incurred by their own projects in the service area. Moreover, these actions will be expected to undergo further consultation, so that any incidental take associated with them may be addressed in the resulting biological opinion..

2.11 Reinitiation of Consultation

The NMFS will reinitiate consultation where NMFS retains discretionary involvement or control over the action. Circumstances that might trigger reinitiation include:

(1) New information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered.

(2) Any party modifies the action in a manner that causes an effect to the listed species or critical habitat that NMFS did not consider in this concurrence memo.

(3) A new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16). This concludes the ESA portion of this consultation.

An example of potential causes to reinitiate consultation will include failure of the Bank site to re-establish as analyzed herein, IF failure to reestablish wetland and habitat function reduces the mitigation or conservation credit content of the bank itself.

2.12 Not Likely to Adversely Affect Determinations

The proposed action will have no adverse effect on any other listed species or their critical habitats. NMFS considered the potential for effects of the proposed action on Southern Resident killer whale (*orcinus orca*), yelloweye rockfish (*Sebastes rubirremus*), or bocaccio rockfish (*Sebastes paustispinis*). With bank construction completed, the remaining elements of the action of the action that might affect the environment in ways that concern each of these species, occur in water and habitat that is upstream from the species and the designated areas identified in this subsection. The action area does not support a single life history of any of these species. Any upstream effects on water quality, prey communities or on PS Chinook salmon or steelhead are expected entirely beneficial on the downstream critical habitat features for these species.

Furthermore, any single future action making use of mitigation or conservation credits from the bank that may affect these species would be addressed in individual consultation on that action, including an assessment of the mitigation transaction considered part of that proposed action. Therefore, NMFS finds that signing the MBI, and the operation of the bank, will not adversely affects the species listed in this subsection, or their designated critical habitats.

3.0 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

For purposes of the MSA, EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity," and includes the associated physical, chemical, and biological properties that are used by fish (50 CFR 600.10), and "adverse effect" means any impact which reduces either the quality or quantity of EFH (50 CFR 600.910(a). Adverse effects may include direct, indirect, site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. This consultation is based, in part, on the information provided by the Federal agency and descriptions of EFH for Pacific coast groundfish, coastal pelagic species, and Pacific salmon contained in the Fishery Management Plans developed by the Pacific Fishery Management Council (PMFC) and approved by the Secretary of Commerce.

The project action and action area are described in the BE and additional information. The action area includes areas designated as EFH for various life-history stages of coho and Chinook salmon (PFMC 1999).

Effects of the Action on Essential Fish Habitat

As stated above, the action of approving the bank and signing the MBI is not an action to which NMFS is attributing effects on ESA-listed species or their habitat, and our approach to EFH is similar. . Considering NMFS already consulted on the restoration of the bank property, and given the standard by which an adverse effect is determined under the MSA, NMFS finds the proposed action would not affect the quality of designated EFH for Pacific Salmon. When NMFS signs the MBI, the Port will be able to sell credits in the bank to permittees whose actions require compensatory mitigation. Those future actions for which the Port sells DSAYs to permittees will themselves be the subject of future EFH consultations, if those actions adversely affect EFH.

When conducting those consultations, NMFS will analyze the effects of the underlying action, including the DSAY transaction.

Supplemental Consultation

The NMFS will reinitiate EFH consultation 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).

4.0 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 users of this opinion are the COE. Other interested users could include Mr. Hubbard. Individual copies of this opinion were provided to the COE, and Jack Loranger. 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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