UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
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Refer to NMFS No:
WCRO-2021-03158

March 9, 2023

Todd Tillinger
Chief, Regulatory Branch
U.S. Army Corps of Engineers, Seattle District
4735 East Marginal Way South, Bldg. 1202
Seattle, Washington 98134-2388

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for Installation of a New Bridge and Bank Stabilization on Fishtrap Creek, Benson Ditch and Adjacent Wetlands, City of Lynden, Whatcom County, Washington (NWS-2021-1028).

Dear Mr. Tillinger:

This letter responds to your December 10, 2021, request for initiation of formal consultation with the National Marine Fisheries Service (NMFS) pursuant to Section 7 of the Endangered Species Act (ESA) on the effects of the proposed action to install a new bridge and trail, and bank stabilization on Fishtrap Creek, Benson Ditch and Adjacent Wetlands as described in the above titled Biological Evaluation (BE) (GeoEngineers, 2021a).

Your request qualified for our expedited review and analysis because it met our screening criteria and contained all required information on, and analysis of, your proposed action and its potential effects to listed species and designated critical habitat.

We also reviewed the U.S. Army Corps of Engineers (Corps) consultation request and related initiation package (Corps, 2021), which is available on file at the NMFS Oregon Washington Coastal Office in Portland, Oregon. Where relevant, we have adopted the information in the BE and supplemental information provided in the Restoration and Mitigation Plan (RM) (GeoEngineers, 2021b), but only after our independent science-based evaluation confirmed they meet our regulatory and scientific standards.

NMFS also reviewed the likely effects of the proposed action on essential fish habitat (EFH), pursuant to section 305(b) of the Magnuson–Stevens Fishery Conservation and Management Act [16 U.S.C. 1855(b)], and concluded that the action would adversely affect the EFH of Pacific Salmon. Therefore, we have included the results of that review in Section 3 of this document. This opinion also documents our conclusion that the proposed action is not likely to adversely affect southern resident (SR) killer whales and their designated critical habitat.

The biological evaluation (BE), and supplemental information referenced below, provides a detailed discussion and comprehensive assessment of the effects of the proposed action in Section 3.1 of the initiation package, and is adopted here (50 CFR 402.14(h)(3)). NMFS has evaluated this section and after our independent, science-based evaluation determined it meets our regulatory and scientific standards.

We adopt by reference here the following sections of the *GeoEngineers Biological Evaluation* (2021a):

- Section 1.0 for Proposed Action, and Purpose and Need;
- Section 2.1 for Activities to be Conducted;
- Section 2.2 for Construction Timing for the Project;
- Section 2.4 for Interdependent or Interrelated Actions;
- Section 2.5 for Impact Avoidance and Minimization Measure;
- Section 3.0 for the Action Area and Construction-Related Impacts;
- Section 4.0 for the Environmental Baseline;
- Section 5.0 for Species and Habitat Information;
- Section 6.0 for Analysis of Effects;
- Section 7.3-7.6 for Effect Determinations;
- Section 8.0 for Conclusions; and
- Section 9.0 for Essential Fish Habitat (EFH) Analysis.
- Appendix A for stream habitat (bank stabilization elements) design project drawings
- Appendix B for NMFS and USFWS species lists

We also adopt by reference here from the following sections of the *Revised Restoration and Mitigation Plan* (RM). January 26, 2022 (GeoEngineers, 2021b).

- Section 2.0 for Anticipated Project Impacts;
- Section 3.0 for Proposed Restoration and Enhancement;
- Section 4.0 for Monitoring and Maintenance;
- Section 5.0 for Summary and Conclusions;
- Section VI (Corps, 2021), Rationale for Effects Determination; and,
- Floodplain Habitat Hydraulic Report. (Indicator Engineers/GeoEngineers Inc. 2018, and as revised, 2021).

Finally, NMFS examined the status of each species that would be adversely affected by the proposed action to inform the description of the species' "reproduction, numbers, or distribution" as described in 50 CFR 402.02. We also examined the condition of critical habitat throughout the designated area and discuss the function of the physical or biological features essential to the conservation of the species that create the conservation value of that habitat.

Consultation History

On July 5, 2022, the U.S. District Court for the Northern District of California issued an order vacating the 2019 regulations that were revised or added to 50 FR part 402 in 2019 ("2019 Regulations," see 84 FR 44976, August 27, 2019) without making a finding on the merits. On September 21, 2022, the U.S. Court of Appeals for the Ninth Circuit granted a temporary stay of the district court's July 5 order. As a result, the 2019 regulations are once again in effect, and we are applying the 2019 regulations here. For purposes of this consultation, we considered whether the substantive analysis and conclusions articulated in the biological opinion and incidental take statement would be any different under the pre-2019 regulations. We have determined that our analysis and conclusions would not be any different.

On May 3, 2022, NMFS identified information needs and provided a list of documents necessary for analysis and determination of effects from the project actions.

On July 6, 2022, NMFS requested consultation with the authors of the Biological Evaluation (Geoengineers, Inc.) and the consulting engineer firm (Reichard and Ebe) to discuss specific project actions relating to design and construction of the pedestrian bridge, bank stabilization, and mitigation plans.

On July 10, 2022, NMFS met with the applicant's biologist, wetland and design engineer and clarified bridge abutment, materials and spanning alignment, construction events, monitoring and mitigation. Following this meeting, NMFS conveyed to the Corps and applicant that the consultation met the criteria for expedited analysis.

On September 14 and October 27, 2022 NMFS provided the Corps and the applicant with status updates and conferred with GeoEngineers on the floodplain analysis elements referenced in the BE.

On December 29-30, 2022 NMFS met with GeoEngineers to finalize answers to a set of eight questions mainly dealing with use of agricultural lands adjacent to Fishtrap Creek, fish removal techniques, and corrected non-pollution generating impervious surface and shading area calculations for the pedestrian bridge over Fishtrap Creek.

Proposed Action

According to Section 2 of the BE, the Corps is proposing to permit construction of:

1. Approximately 2,800 feet of pedestrian trail to connect the existing portion of the Jim Kaemingk Sr. Trail in Lynden, WA.;
2. Approximately 220 x10 feet of boardwalk over an existing Class A wetland;
3. Construction of a 120 x10 pedestrian bridge over Fishtrap Creek, a perennial fish-bearing stream~100 ft south of the confluence with Benson Ditch; and
4. In-water bank stabilization and riparian area activities. including construction and placement of Large Woody Debris (LWD), buried rip rap, streambed gravel and riparian planting.

As described in Section 1.2, and based on our review of section 6.0 and 7.0 of the BE, NMFS concludes that the effects to listed fish and critical and essential habitat for the trail and wetland bridge (e.g., Project Actions 1 and 2) will be temporary or minor, and *are not likely to adversely affect listed species or their critical and essential habitat.*

NMFS further determined that project Actions 3 and 4 *are likely to adversely affect* listed fish species and critical or essential fish habitat, *but not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat* when the Reasonable and Prudent Measures, as detailed in the Incidental Take Statement and Terms and Conditions, are implemented.

The Project is located north of Main Street between Depot Road and North 8th Street in the City of Lynden, Washington. The new trail will connect to an existing system of informal trails near the entrance to the Lynden City Park on Depot Road and will extend west towards North 8th Street. The trail is located within residential areas north of the Lynden School District offices at 516 Main Street.

We used information in Section 2 of the BE to evaluate construction activities for the new overwater pedestrian bridge. Bridge abutments for the pedestrian bridge are designed to be completely above the OHWM of Fishtrap Creek. However, because some work will occur below the ordinary high-water mark (OHWM), a Nationwide Permit (NWP) from the Corps under their authority to administer Section 404 of the Clean Water Act (CWA) is required.

In-water work below the OHWM of Fishtrap Creek will consist of bioengineered bank stabilization, riparian planting, gravel placement, buried riprap, and temporary erosion and stormwater controls, actions and treatments in Fishtrap Creek. Additional bank stabilization treatments will occur in the lower section of Benson Ditch located ~100 feet upstream of the bridge. All in-water activities will occur during the combined Washington Department of Fish and Wildlife (WDFW) and Corps freshwater in-water work window for Fishtrap Creek (July 15 – September 15).

Pedestrian Bridge. As described in Section 2.0, in Appendix A of the BE, and Appendix B of the Mitigation Plan:

- The bridge will be supported by 8-inch-diameter steel piles; there will be eight pin piles on each bridge abutment for a total of 16 piles.
- The piles will be installed using a hydraulic hammer attached to a small excavator and will take approximately 4 to 8 days to install.
- The bridge will be approximately 2 feet above the creek modeled 100-year water surface elevation to allow for debris passage.
- Footings for the bridge will be placed outside of the FEMA mapped floodplain and floodway but will be installed within the modeled 100-year floodplain.
- The overwater suspension bridge and decking will be installed outside the in-water work window.
- Work for the bridge will be performed with cranes and from temporary work platforms above the OHWM. Containment devices will be deployed to prevent debris or materials falling into Fishtrap Creek.
- The pedestrian bridge decking will result in 1,200 ft^2 (.027 acres) of new overwater *non-polluting impervious surface* and shading over Fishtrap Creek.

Bank Stabilization. As described in Section 2.0, in Appendix A of the BE, and Appendix B of the Mitigation Plan:

Bank stabilization will occur within Fishtrap Creek and Benson Ditch, below the OHWM, in the form of large woody debris (approximately 63 logs with root wads), riprap and streambed gravel. In water work will occur during the WDFW fish window (July 15 to September 15).

Section 2.1 describes the proposed bank stabilization will consist of the following primary treatment types:

1. Buried rock riprap is designed in select locations to prevent channel migration into the bridge
2. foundations. The native bank material is erodible, and Fishtrap Creek has historically migrated as much as 45 to 50 feet within a 2-year period in this reach. The rock riprap is designed to maintain the toe and lower slope location in key migration areas.
3. Large woody debris will be constructed within the riprap layer to provide bank roughening and flow diversity when the riprap is exposed. The majority of the bank treatment will feature embedded roughening logs with exposed root wads and footer logs to protect the bank toe. Upper banks will be sloped back at 3H:1V using native soil, covered in natural fiber fabric (coir/jute) and planted. Streambed gravels will be placed in areas to embed the large woody debris and grade the lower bank.
4. Log toes will be used throughout the reach in areas that are less susceptible to migration into the bridge foundation, but where bank stability is still desired to prevent alternate channel alignments from developing through the crossing reach.
5. At the northeast corner of the bridge (upstream left bank of Fishtrap Creek), a riprap layer will be constructed and setback outside of OHW. Seven additional pieces of large woody debris will be incorporated into this riprap layer.
6. Along the west (right) bank of Fishtrap Creek through the bridge corridor, riprap will be placed with logs embedded in the riprap. The riprap will be covered in streambed gravel at a 3H:1V slope to maintain the existing channel location. The riprap will be installed with the toe to scour depth and the top mid-bank. The upper bank will be covered in natural fiber fabric and planted above the logs. The riprap is designed to prevent migration of the channel to the bridge foundations at an existing channel bend.
7. Large woody debris will be placed along Benson Ditch and backfilled with streambed gravel, with 20 cubic yards below OHWM. This location is an existing eroding bend, and the log jam will provide habitat cover while preventing Benson Ditch from migration south into the trail.

Section 2.1 further describes additional in-water activities and mitigation treatments:

1. Within the Fishtrap Creek shoreline buffer habitat areas, native plants will be installed in areas currently dominated by grasses and in areas with exposed bare soils. The plant species to be installed will be consistent with existing native species found adjacent to the stream.
2. As detailed in Table 2 of the Mitigation Plan, plant species and quantities will be installed.
3. As described in Section 6.1.3 of the BE, during construction, stormwater will be dealt with through a Stormwater Pollution Prevention Plan (SWPPP) to ensure stormwater runoff will not directly enter the wetland or Fishtrap Creek. Post construction, stormwater will be infiltrated and dispersed according to appropriate City regulations and the 2019 Stormwater Management Manual for Western Washington. A set of BMPs, described in Section 2.1 and 6.1.3, and temporary erosion and sediment control materials will be placed on site to respond to unanticipated weather conditions or accidental released of construction materials. Measures will be removed when construction ends and it has been identified that soil conditions are stable and the new structures are functioning properly.

4. As described in Section 2.1, prior to construction activities, the work area below the OHWM with both Benson Ditch and Fishtrap Creek will be isolated from perennial stream flows.
5. Dewatering and fish exclusion or removal actions will be overseen by a qualified biologist and follow methods outlined in the Incidental Take Statement, it's Reasonable and Prudent Measures, and in this opinion's Terms and Conditions.

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, therefore, includes the spatial extent of all direct and indirect effects, as well as effects of actions interrelated to and/or interdependent of the project.

The overall action area is the geographic extent of all Project effects, which is the combination of all zones of influence. NMFS concurs with the BE's description of the action area.

As described in Section 4.1 of the BE, the project is located in the Water Resource Inventory Area (WRIA) 1 (Nooksack). The watershed is mainly rural and dominated by forestlands and agriculture with small towns (Smith 2002).

There are two streams within the Project Area: Fishtrap Creek and Benson Ditch. Riparian and aquatic habitat is limited within the Project Area due to human development and impacts to the stream channel. Both of these streams are considered Type F (fish-bearing) streams (DNR 2021). Fishtrap Creek is a perennial stream and Benson Ditch is a seasonal, or ephemeral, stream.

1. Fishtrap Creek is a tributary to the Nooksack River, and more than half of the watershed drains urban areas within Canada (Smith 2002). Within the project area, the trail is located within residential areas and is adjacent to Lynden School District Administration buildings. In general, north of the trail are single-family residential homes and some fields used for grazing and to the south are the soccer fields for the middle school, businesses and agricultural grass fields. East of Depot Road is Lynden City Park and to the west of North 8th Street are residential homes.
2. Benson Ditch is a small ephemeral tributary to Fishtrap Creek, but within the bank stabilization action area. Benson Ditch will have a minor amount of instream impacts from construction along approximately 48 linear feet of channel.

We used information in Section 3 of the BE to categorize actions that will occur within discrete zones of influence.

Zones of Influence Making up the Action Area:

1. Project-related noise will permeate the environment for up to approximately 792 feet (0.15 miles) in the air surrounding the Project Area during general project construction.
2. Habitat alteration will be limited to the Project Area, including existing and proposed temporary construction easements associated with the construction of the trail, pedestrian bridge installation and boardwalk installation.

3. Temporary impacts to water quality from construction activities will be limited to those areas regraded within the Fishtrap Creek stream channel and up to 200 feet downstream. NTU's are not discussed in the BE or Mitigation Plan, however, sediment disturbance is expected to be low because the work area will be dewatered.
4. There are no temporary impacts to water quality from construction activities within Benson Ditch because this stream is seasonal, and work will be performed during the dry season.
5. Dewatering/diversion of Fishtrap Creek and isolation of the work area within Benson Ditch is necessary for bank stabilization measures.
6. Flows in Fishtrap Creek will be diverted around the work area using a supersack structure or similar civil works.
7. The bank stabilization actions, up and downstream of the bridge, include placement of large woody debris, riparian plantings, temporary erosion control features, placement of stream gravels, and buried riprap.
8. According to Section 3.3.1 of the BE, the zone of influence for impacts to water quality arising from temporary construction activities is within the stream channel at Fishtrap Creek and up to 200 feet downstream. There are no other zones of influence for water quality impacts within Benson Ditch as work will be performed during the dry months.

Rangewide Status of the Species

Species listed under the ESA fall under the jurisdiction of one of two federal agencies: The United States Fish and Wildlife Service (USFWS) for terrestrial and freshwater species, and the NMFS for marine and anadromous species.

Section 5.3 of the BE identified the possible presence of listed species and designated critical habitat (DCH) in the Action Area by compiling data provided by the USFWS (2021), National Oceanic and Atmospheric Administration (NOAA)-NMFS (2021), and the Priority Habitats and Species (PHS) Database (WDFW 2021). Official lists for ESA species are presented in Appendix B of the BE.

In the Corps initiation package, and in the analyses provided in Sections 4 and 5 of the BE, we examined the status of each species that would be adversely affected by the proposed action to inform the description of the species' "reproduction, numbers, or distribution" as described in 50 CFR 402.02.

In Section 5.1, Table 3 lists the following ESA-Listed fish populations and Critical Habitat likely to occur with the action area. NMFS confirms that the following species are likely to occur within this action area, and NMFS concurs with this list:

1. PS Chinook, and designated Critical Habitat
2. PS Steelhead, and designated Critical Habitat

NOAA identifies the Puget Sound Chinook salmon ESU is composed of 31 historically quasi-independent populations, 22 of which are extant (Ruckelshaus et al. 2006). The populations are distributed in five geographic regions, or major population groups (MPGs), identified by the

Puget Sound Technical Recovery Team (PSTRT 2002) based on similarities in hydrographic, biogeographic, and geologic characteristics of the Puget Sound basin.

NOAA identifies the Puget Sound Designated Population Segment (DPS) of Steelhead and the Puget Sound Evolutionarily Significant Unit (ESU) of Chinook Salmon as listed species (threatened), which are present in the Fishtrap Creek watershed (72 FR 26722; 70 FR 37160-37204).

Chinook

According to Section 5.3.1. of the BE, the Puget Sound ESU for Chinook Salmon includes those stocks in Puget Sound westward to the Elwha River. Spawning occurs in late summer and fall.

This is confirmed by NMFS citing Ford, et. al, 2022: "the ESU includes all naturally spawning populations of Chinook salmon from rivers and streams flowing into Puget Sound, including the Strait of Juan De Fuca from the Elwha River eastward, rivers and streams flowing into Hood Canal, South Sound, North Sound, and the Strait of Georgia in Washington, as well as numerous artificial propagation programs."

The Northwest Fisheries Science Center (NWFSC, 2015) concluded that all Puget Sound Chinook salmon populations were still well below the NMFS Technical Review Team's (TRT) minimum planning range for recovery escapement levels.

Most populations were also consistently below the spawner–recruit levels identified by the TRT as consistent with recovery. Across the ESU, most populations further declined in abundance since the 2011 status review, and indeed, this decline had been persistent over the previous seven-to-ten years. Productivity remained low in most populations. Hatchery-origin spawners were present in high fractions in most populations outside the Skagit River watershed, and in many watersheds the fraction of natural-origin spawner abundances had declined over time.

Total abundance in the ESU over the entire time series shows that individual populations have varied in increasing or decreasing abundance. Several populations (North and South Fork Nooksack, Sammamish, Green, White, Puyallup, Nisqually, Skokomish, Dungeness, and Elwha Rivers) are dominated by hatchery returns. Generally, many populations experienced increases in total abundance during the years 2000–08, and more recently in 2015–17, but general declines during 2009–14, and a downturn again in the two most-recent years, 2017–18.

We also used information from Washington State (SalmonScape), and Section 5.0 of the BE to confirm that Chinook salmon are documented in the Nooksack River, and based on no obstructions present, they are likely to be found in Fishtrap Creek and Benson Ditch. Steelhead are also found within Fishtrap Creek. Critical habitat for both listed species is designated in Fishtrap Creek.

Steelhead

As referenced in Section 5.3.2 of the BE, the Puget Sound DPS of steelhead includes Winter and Summer Steelhead in the river basins of the Strait of Juan de Fuca, Puget Sound and Hood Canal, Washington, bounded to the west by the Elwha River and to the north by the Nooksack River and Dakota Creek, both of which are included in the DPS (71 FR 15666- 15680; 72 FR 26722).

Steelhead and designated Critical Habitat are documented in Fishtrap Creek (WDFW 2021). Therefore, Steelhead are likely to occur within the Action Area, and NMFS concurs with this finding.

According to Ford, 2022, the 2015 status review concluded that the biological risks faced by the Puget Sound steelhead DPS had not substantively changed since the listing in 2007, nor since the 2010 status review. In a parallel risk assessment process, the Puget Sound Technical Review Team concluded that the DPS was at very low viability, as were all three of its constituent Major Population Groups and many of its 32 Demographically independent Populations (Hard et al. 2015).

Review of abundance trends in Ford, 2022 indicated some minor increases in spawner abundance or improving productivity over the 2–3 years prior to the review; however, most of these improvements were small, and abundance and productivity throughout the DPS remained at levels of concern for demographic risk. Trends in abundance of natural spawners remained predominantly negative. Particular aspects of spatial structure and diversity, including limited availability of suitable habitat, were likely to be limiting the viability of most Puget Sound steelhead populations.

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).

We used information in Section 5.0 to confirm that Fishtrap Creek and Benson Ditch have documented use by PS steelhead and PS Chinook salmon within the Project Area (WDFW 2021). Further, and according to the limiting factors report (Smith 2002), Fishtrap Creek (and likely Benson Ditch) have been rated as having poor riparian, water quality and quantities, and poor connections to floodplain habitat. This is consistent with observations made by GeoEngineers during site visits that document lack of shade, lack of large woody debris, steep

banks, and adjacent vegetation dominated by invasive reed canary grass (*Phalaris arundinacea*) and Himalayan blackberry (*Rubus armeniacus*).

Finally, according to water quality data from Ecology cited in Section 4.0 of the BE, both Benson Ditch and Fishtrap Creek are on the 303(d) list for dissolved oxygen (Fishtrap Creek and Benson Ditch) and temperature (Fishtrap Creek). In addition, according to the limiting factors report (Smith 2002), water quantity for Fishtrap Creek is a limiting factor for salmonids in the creek.

Effects of the Action

Under the ESA, "effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see 50 CFR 402.17). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b).

General and project-specific effects include:

- Construction-related noise.
- Incidental Take of listed species.
- Habitat alteration, and
- Impacts to water quality and quantity.

According to Section 2.0 of the BE, the project will include bank stabilization and riparian mitigation considerations. The effects listed above capture the main elements analyzed here, coupled with those included in the construction of the pedestrian bridge.

The project activities will extend below the OHWM of Fishtrap Creek. Machinery to be used will likely include, but is not limited to, an excavator, dump trucks, flatbed trucks, concrete trucks, rollers and other miscellaneous heavy civil construction equipment. The project is anticipated to take approximately 85 days to complete. All in-water work will be restricted to the WDFW fish window of July 15 — September 15.

Additional monitoring, impact minimization and mitigation actions, consistent with the adopted RM plan, are described in the subsequent Reasonable and Prudent Measures, Terms and Conditions, and Conservation Measures sections of this consultation.

Sections 6 and 7 of the adopted BE and mitigation plan provide discussions and assessments of the effects of the action(s). NMFS has evaluated these sections and after our independent, science-based evaluation determined it meets our regulatory and scientific standards, and our analysis we examined a sequence of environmental stressors, mechanisms, responses, and risk of the proposed action and any mitigating activities. Conclusions are based on the proposed action's effect, or no effect, to fish, critical habitat, and physical or biological features.

NMFS used information provided therein, and in consultation with the applicant and their consultants, to determine the effects to listed species and their critical habitat using a stressor, exposure and response framework.

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

We further determined the proposed action *would adversely affect EFH as follows*: Permanent shading of aquatic habitat. However, this affect will be minor, minimal and or undetectable. As such, NMFS concluded the action *would not adversely affect EFH.*

Two of the four proposed actions (*see:* Page 3) represent minor effects to listed species, critical and essential fish habitat:

New Jim Kaemingk, Sr. Trail Path: The United States Army Corps of Engineers (Corps) proposes to authorize the construction a new trail approximately 2,800 linear feet of trail to connect the existing portion of the existing route which currently ends on Main Street near North 8th Street and starts again on Depot Road at Lynden City Park. The area north of the trail are single-family residential homes with large areas of grass fields dominating the trail route.

- The intent of this activity is to improve safety by diverting foot and bicycle traffic away from the downtown industrial corridor on Depot Road and also away from Fishtrap Creek bank habitat.
- As described in Section 1.2 of the BE, evidence of current human use throughout the forested buffer is apparent with several informal trails extending from top of-bank down to the OHWM of Fishtrap Creek and Benson Ditch. Establishing a main trail as part of the proposed action will eliminate or reduce human foot traffic on informal pathways that currently degrades riverbank habitat.
- NMFS concurs that responses to the effect of trail path construction to fish and habitat would be temporary and minor and are *not likely to adversely affect* PS Chinook Salmon, PS steelhead, or critical habitat.
- As reported in the December 29, 2022 NMFS/GeoEngineers conference call, some of the adjacent fields to the trail and Fishtrap Creek are used for grazing which would cause destruction of riparian habitat. However, fencing currently excludes livestock from accessing the Fishtrap Creek and Benson Ditch. As confirmed by the engineers and City, these fences will remain intact and be maintained by the landowners.

Wetland Trail Pedestrian Bridge: The United States Army Corps of Engineers (Corps) proposes to authorize the construction of a new pedestrian bridge over an existing Category III Wetland. The Corps of Engineers proposes to build 220 feet of boardwalk over this existing wetland. As with the new trail, and described in Section 1.1 of the BE, construction of this boardwalk will provide enhanced protection for wetland hydrologic function and eventually provide better water quality

- As proposed, activities within or adjacent to fish and wildlife habitat conservation areas conditions for approval will include: establishment of buffer zones (described below); preservation of critically important vegetation and/or habitat features such as snags and downed wood; limitation of access to the habitat area, including fencing to deter unauthorized access; seasonal restriction of construction activities; and establishment of a duration and timetable for periodic review of mitigation and monitoring activities.
- Fishtrap Creek is designated as a shoreline of the state of Washington and a Class A stream and Benson Ditch is classified as a Class B stream. Fishtrap Creek will include a 150-foot riparian buffer and Benson Ditch will require a 100-foot riparian buffer.
- NMFS concurs that responses to the effect of trail path construction to fish and habitat would be temporary and minor and are *not likely to adversely affect* PS Chinook Salmon or steelhead or critical habitat. Further, pedestrian traffic on informal trails that currently stresses existing riparian habitat, will be reduced or eliminated, and wetland function improved through establishment of buffer zones.

Two of the four proposed actions (*see:* Page 3), represent potentially more substantial effects to listed species, critical and essential fish habitat:

New Pedestrian Bridge over Fishtrap Creek: The Corps proposes to authorize the construction of a new over-water pedestrian bridge spanning Fishtrap Creek. As depicted in Appendix A of the BE, no in-water abutments, pilings or other structures will be used in construction below the OHWM. Effects from construction in Fishtrap Creek, Benson Ditch, and the adjacent riparian habitat, are anticipated to be temporary and consist of the following effects, stressors and responses:

- As described in Section 1.2, and review of section 6.0 and 7.0 of the BE, NMFS concludes that stormwater, floodplain, water quality, fish and fish habitat will be impacted from the proposed action and project activities and *may affect, but not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.*
- Direct effects on fish downstream will result from increased sedimentation into the water (causing turbidity) and or as a result of release of contaminants during construction, and will be temporary and subject to mitigation actions. Section 6.13 describes implementation of a set of BMPs that will reduce the probability of adverse impacts to aquatic habitats resulting from increased sedimentation/turbidity. NMFS agrees that these measures will mitigate downstream transport of contaminants.
- Water quality impacts to the creeks during construction will be further controlled through implementation of construction stormwater BMPs as described in Section 2.1 of the Revised Restoration Mitigation Plan, a Stormwater Pollution and Prevention Plan (SWPPP) and a Temporary Erosion and Sediment Control Plan (TESC) plan will be in place during all in-water work. The Project will also comply with the State of Washington Water Quality Standards (WAC 2003). Compliance with these standards will be monitored during construction as specified in the NPDES permit and 401 Water Quality Certification, and will be a required component of project monitoring in the Terms and Conditions section of this opinion.

- Section 3.0 describes that construction activity and noise in excess of background conditions generated during the project could permeate terrestrial habitats for up to approximately 792 feet and directly in Fishtrap Creek and Benson Ditch. The BE estimates that the maximum potential noise level generated during construction as a result of simultaneous operation of all three of the loudest pieces of equipment is estimated to be 95 dB, however, NMFS will require that the noise levels do not exceed 85 dBA. These effects will be minor and temporary and are not likely to adversely affect listed species. NMFS concurs with this conclusion based on the use of NMFS-accepted pile driving sound measurement thresholds for ESA-listed species citing cumulative exposure Injury (SELcum) thresholds for ESA listed fish of 232 dB from impact pile driving (NMFS, 2022).
- Section 3.0 of the BE that the project will not create *new pollution generating impervious surfaces*. NMFS concurs with this determination. This is a pedestrian only bridge.
- NMFS determined that the bridge decking will create shade over Fishtrap Creek that will potentially increase predation and delay salmonid migration; however, the effects of this will be minor and undetectable.
- Long Term Effects of Fishtrap Creek Pedestrian Bridge: The long-term effects of this proposed action *may affect* listed PS Chinook, PS steelhead and their critical habitats, and NMFS concurs with conclusions of *but not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat* for the following actions:
    a. Creation of shade will increase predation and delay salmonid migration. NMFS has determined that this will be a minor, minimal and undetectable effect on migrating or rearing ESA listed fish.
    b. Direct effects to ESA-listed fish during bridge and bank stabilization work. Actions to protect fish during construction include fish exclusion and removal, if necessary. Methods and monitoring are outlined in the Terms and Conditions section, and Incidental Take is described in the ITS.

Bank Stabilization Actions: Appendix A provides descriptions of bank stabilization actions that will have direct, but temporary effects on fish and critical habitat. Further, and according to Section 6.0 of the BE, bank stabilization activities will provide future habitat enhancement for the reaches extending above and below the new pedestrian bridge, including the lower reach portions of Benson Ditch. NMFS concurs with this conclusion.

- As described in Section 6.0, all in water work will occur during the approved WDFW Fish Window (July 15 – September 15) and PS Chinook will likely be absent from the project area and PS Steelhead interaction will be minimal.
- Fish exclusion and removal, as necessary, will be conducted in accordance with the Terms and Conditions listed in this consultation, and will be monitored and reported by a qualified biologist. Temporary reduction in riparian habitat quality. Effects will be minor and temporary and result in significant improvement to the overall aquatic habitat in the project area. NMFS concurs with this assessment and has adopted the Best Management Practices outlined in Section 2.0, and have established reasonable and prudent measures, necessary to monitor and report activities. NMFS concurs that fish exclusion and removal *will not likely affect listed species or their critical and or essential habitat.*

- Permanent impacts to Fishtrap Creek and wetland and shoreline buffers will occur as part of the proposed action; however, both mitigation and bank stabilization activities outlined in Section 6.0, and in the Terms and Conditions of the Incidental Take Statement will provide stability and future habitat enhancement for the reaches extending above and below the new pedestrian bridge, including the lower reach portions of Benson Ditch.
- According to Section 6.0 of the BE, bank stabilization actions in Benson Ditch will have *no effect* on fish due to seasonal flow and construction timing that will be limited to times when the streambeds are dry. Overall, bank stabilization activities will provide stability and future habitat enhancement for the reaches extending above and below the new pedestrian bridge, including the lower reach portions of Benson Ditch following construction. NMFS concurs with this determination.

Section 6.0 of the BE determines that PS Chinook salmon and steelhead will be affected by the proposed action. However, the effects of construction will be minor and temporary and will not impact more than two cohorts of the affected populations. NMFS concurs with this finding.

Section 2.1 of the BE, and associated section details contained in adopted sections of the RM, describes the following general activities that will occur in the project and action areas:

1. Work Area Isolation and Fish Exclusion. Prior to performing construction activities, the work area below the OHWM within both Benson Ditch and Fishtrap Creek will be isolated from perennial stream flows and from ephemeral flows due to summer rain events. NMFS concludes that these actions will protect listed species by excluding them from the work area.
2. Relocation of Existing Utilities and Structures. Prior to construction work for the proposed project, existing utilities and structures will need to be moved. According to the BE, these include a single power pole, several fences and two existing buildings. NMFS concludes that these activities will have no effect on listed species or habitat.
3. Vegetation Clearing. Most of the vegetation to be removed consists of mowed grasses and Himalayan blackberry, but some areas of native shrubs and native trees will be removed as a result of the project. Section 3.2 of the RM plan identifies a total of 40,625 square feet of shoreline riparian buffer enhancement. NMFS concludes that these activities will temporarily affect listed species but *will not likely affect listed species or their critical and or essential habitat.*
4. Mitigation Plantings. Within the Fishtrap Creek shoreline buffer habitat areas, native plants will be installed in areas currently dominated by grasses and in areas with exposed bare soils. The plant species to be installed will be consistent with existing native species found adjacent to the stream. NMFS concludes that these actions will mitigate the temporary effects of vegetation clearing.
5. Erosion Control Feature Removal. The temporary erosion control measures and BMPs will be removed when construction activities are completed, and it has been identified that soil conditions are stable, and the new structures are functioning properly.

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.

According to Section 6.0 of the BE, no specific projects are reasonably certain to occur in the area that will not have a federal nexus and would therefore be considered a cumulative impact. NMFS concurs with this statement.

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 to the environmental baseline and the cumulative effects, taking into account the status of the species and critical habitat, 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.

Neither the BE nor the Mitigation plan included integration and or synthesis of risk. However, the analysis of baseline fish habitat conditions was conducted at the project level scale and in Section 4.3.3 included pathways and indicators to compare the net effect of the project on aquatic fish habitat as documented for the baseline condition with those anticipated to result from the project. The BE's finding states that none of the indicators are currently properly functioning, due to the amount of development, including roads, single-family homes and manicured lawns within the landscape surrounding Fishtrap Creek and Benson Ditch. NMFS concurs with this assessment and finds that post project aquatic and riparian conditions will be improved as a result of the proposed action.
NOAA identifies the Puget Sound Chinook salmon ESU is composed of 31 historically quasi-independent populations, 22 of which are extant (Ruckelshaus et al. 2006). The populations are distributed in five geographic regions, or major population groups (MPGs), identified by the Puget Sound Technical Recovery Team (PSTRT 2002) based on similarities in hydrographic, biogeographic, and geologic characteristics of the Puget Sound basin.

NOAA identifies the Puget Sound Designated Population Segment (DPS) of Steelhead and the Puget Sound Evolutionarily Significant Unit (ESU) of Chinook Salmon as listed species (threatened), which are present in the Fishtrap Creek watershed (72 FR 26722; 70 FR 37160-37204). According to Section 5.3.1. of the BE, the Puget Sound ESU for Chinook Salmon includes those stocks in Puget Sound westward to the Elwha River. Spawning occurs in late summer and fall.

This is confirmed by NMFS citing Ford, et. al, 2022: "the ESU includes all naturally spawning populations of Chinook salmon from rivers and streams flowing into Puget Sound, including the Strait of Juan De Fuca from the Elwha River eastward, rivers and streams flowing into Hood Canal, South Sound, North Sound, and the Strait of Georgia in Washington, as well as numerous artificial propagation programs."

The Northwest Fisheries Science Center (NWFSC, 2015) concluded that all Puget Sound Chinook salmon populations were still well below the NMFS Technical Review Team's (TRT) minimum planning range for recovery escapement levels.

Most populations were also consistently below the spawner–recruit levels identified by the TRT as consistent with recovery. Across the ESU, most populations further declined in abundance since the 2011 status review, and indeed, this decline had been persistent over the previous seven-to-ten years. Productivity remained low in most populations. Hatchery-origin spawners were present in high fractions in most populations outside the Skagit River watershed, and in many watersheds the fraction of natural-origin spawner abundances had declined over time.

Total abundance in the ESU over the entire time series shows that individual populations have varied in increasing or decreasing abundance. Several populations (North and South Fork Nooksack, Sammamish, Green, White, Puyallup, Nisqually, Skokomish, Dungeness, and Elwha Rivers) are dominated by hatchery returns. Generally, many populations experienced increases in total abundance during the years 2000–08, and more recently in 2015–17, but general declines during 2009–14, and a downturn again in the two most-recent years, 2017–18.

As referenced in Section 5.3.2 of the BE, the Puget Sound DPS of Steelhead includes Winter and Summer Steelhead in the river basins of the Strait of Juan de Fuca, Puget Sound and Hood Canal, Washington, bounded to the west by the Elwha River and to the north by the Nooksack River and Dakota Creek, both of which are included in the DPS (71 FR 15666- 15680; 72 FR 26722).

Steelhead and designated Critical Habitat are documented in Fishtrap Creek (WDFW 2021). Therefore, Steelhead are likely to occur within the Action Area, and NMFS concurs with this finding.

According to Ford, 2022, the 2015 status review concluded that the biological risks faced by the Puget Sound steelhead DPS had not substantively changed since the listing in 2007, nor since the 2010 status review. In a parallel risk assessment process, the Puget Sound Technical Review Team concluded that the DPS was at very low viability, as were all three of its constituent Major Population Groups and many of its 32 Demographically independent Populations (Hard et al. 2015).

Review of abundance trends in Ford, 2022 indicated some minor increases in spawner abundance or improving productivity over the 2–3 years prior to the review; however, most of these improvements were small, and abundance and productivity throughout the DPS remained at levels of concern for demographic risk. Trends in abundance of natural spawners remained predominantly negative. Particular aspects of spatial structure and diversity, including limited availability of suitable habitat, were likely to be limiting the viability of most Puget Sound steelhead populations.

Relative to listed species, when we consider the response of exposed species to construction effects, only impact pile driving is likely to injure or kill individual fish from the listed populations, and this is most likely to occur among rearing juveniles. Because habitat conditions

are poor in the action area, we do not expect high numbers of rearing fish from any population to be present for extended periods, and even fewer to be located specifically within the radius where sound levels are high enough to injure or kill small fishes. For this reason, we do not expect any injury or mortality to a level that the reduced cohort abundance will be appreciable diminished, or the population's productivity, spatial structure, or diversity affected.

Similarly, the increment of additional predation that is likely to occur as an indirect consequence of the shading from the pedestrian bridge, though chronic and likely to affect many individuals over the projected lifetime that the bridge remain in place, is again constrained by the fact that juvenile rearing is not likely to be in large numbers, and migrating fish typically pass by the area without lingering. Again, taken together, the short- and long-term reductions in population abundance are unlikely to appreciably alter the remaining viability parameters.

Most of the effects on critical habitat are adverse, but temporary. Hence, the PBFs will quickly regain their baseline level of function for the conservation role they are designated (rearing or migration, and the critical habitat in the project area will be improved through installation the habitat forming bank stabilization components. When we project effects over time, we cannot discern, even when cumulative effects are considered, that critical habitat is affected or modified to the degree that it would preclude rearing and juvenile migration. Accordingly, we do not consider the action's effects sufficient to reach the adverse modification or destruction threshold for critical habitat.

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 listed PS Chinook, steelhead or their critical and essential habitats.

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, NMFS concludes that the proposed action is not likely to reduce appreciably the likelihood of both the survival and recovery of a listed species by reducing its numbers, reproduction, or distribution; or appreciably diminish the value of designated or proposed critical habitat as a whole for the conservation of the species.

Critical Habitat

The BE examined the condition of critical habitat throughout the designated area, and describes this in Section 5.0, and Section 9.0 for Essential Fish Habitat. They discuss the function of the physical or biological features essential to the conservation of the species that create the conservation value of that habitat.

Chinook

This ESU of Chinook Salmon and designated Critical Habitat is known to occur in the project area (70 FR 52630-52853; 70 FR 37160-37204). Chinook Salmon are documented in the Nooksack River and therefore, could be found in Fishtrap Creek and Benson Ditch. Therefore, Chinook Salmon are likely to occur within the Action Area, and NMFS concurs with this finding.

According to Section 5.1, designated critical habitat for Chinook Salmon includes freshwater and near-shore marine areas of the Puget Sound (70 FR 52630-52853). The Corps and City of Lynden consultants cite and use Primary Constituent Elements (PCEs) for Chinook Salmon critical in the BE. Freshwater-specific PCEs for Chinook Salmon (i.e., PCEs 1, 2 and 3) are present within the project area in limited quantity and of limited quality; specific locations within the action area that provide these PCEs include Fishtrap Creek and Benson Ditch.

1. Freshwater spawning sites with water quantity and quality conditions and substrate supporting 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 supporting juvenile development; and natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels and undercut banks;
3. Freshwater migration corridors free of obstruction with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels and undercut banks supporting juvenile and adult mobility and survival.

According to BE, PCEs 4, 5 and 6 are not present in the project or action area. These include, estuarine, nearshore and offshore marine areas. NMFS concurs with this finding.

Steelhead

The Puget Sound DPS of Steelhead includes Winter and Summer Steelhead in the river basins of the Strait of Juan de Fuca, Puget Sound and Hood Canal, Washington, bounded to the west by the Elwha River and to the north by the Nooksack River and Dakota Creek, both of which are included in the DPS (71 FR 15666-15680; 72 FR 26722). Steelhead are documented in Fishtrap Creek (WDFW 2021), and NMFS concurs with the designation.

Specifically, the freshwater and near-shore marine areas of the Puget Sound (81 FR 9251-9325) are included in this designation. According to the BE, the PCEs listed for steelhead critical habitat are identical to Chinook Salmon and include: PCEs 1, 2 and 3 listed above. In Section 5.4.1 the BE notes that these are present within the project area; specific locations within the action area that provide these PCEs include Fishtrap Creek, but that PCEs 4, 5 and 6 are not present in the project or action area. These include, estuarine, nearshore and offshore marine areas. NMFS concurs with this finding.

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.

Amount or Extent of Take

The ESA listed populations of PS Chinook and PS Steelhead in Fishtrap Creek and Benson Ditch will be affected, but not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat by the proposed action. The effects of construction, bank stabilization and habitat revegetation actions will be temporary and will not impact more than two cohorts of the affected populations. The permanent loss of habitat quality resulting from the proposed action is very small when compared to the habitat available for the affected populations, and habitat conditions in the project area will be enhanced, overall, as a result of the proposed action.

NMFS determines that incidental take is reasonably certain to occur in the form of injury or death occurring from in-water sound pressure waves during impact pile driving, and from harm associated with the installation of the pedestrian bridge support piles. This will affect the rearing and migration habitat life history phases of steelhead during year 1 construction, and Chinook year 1 from handling during fish exclusion, and in the following 2 years due to habitat alteration and increased predation.

Take caused by either mechanism cannot be accurately predicted or easily documented by observation for a variety of reasons, including uncertainty in abundance of fish present at any given time, the variability of presence over time, the delay in some responses (death), and the unobservable nature of some harm, such as consumption by piscivores; however, NMFS assess that 16 chinook, and up to 21 steelhead migrating and or rearing juveniles, will be harmed or killed during the construction and habitat recovery phases of this proposed action. At most, a few individual fish within one population of each species will die each year as a result of predation caused by the proposed action.

In these circumstances, we further rely on an “extent of take” which is an observable measure causally linked to the form of take, and which can be monitored for compliance and as a re-initiation trigger. For this consultation, take in the form of injury or death from impact pile driving is the duration of the impact hammering, which is 8 hours, broken across a three-day

period, to occur within a single week, occurring between July 15 — September 15 of the year in which the construction occurs.

Effect of the Take

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

Reasonable and Prudent Measures

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

We used information in Section 2.2 to verify that in-water work below the OHWM of Fishtrap Creek and Benson Ditch will only occur during the combined Washington Department of Fish and Wildlife (WDFW) and USACE freshwater in-water work window for Fishtrap Creek (July 15 to September 15).

The Corps or the applicant shall apply the following reasonable and prudent measures to ensure that take is minimized.

1. Reasonable and Prudent Measure 1: Protect Fish Life During Dewatering. Employ methods described in the December 30, 2022 email from GeoEngineers to NMFS, and previously referenced in this opinion and in the following Terms and Conditions section.
2. Reasonable and Prudent Measure 2: Protect Fish Life from Construction Noise and use of Heavy Equipment as described in Section 3 of the BE.
3. Reasonable and Prudent Measure 3: Protect Critical Habitat from the effects of actions on water quality through the referenced Stormwater Pollution Protection Plan (SWPPP) and the Temporary Erosion Control Plan (TESC) described in the Proposed Action section of this opinion and the BA Section 7.0 and MIT plan Section 3.0.
4. Reasonable and Prudent Measure 4: Prepare and provide NMFS with plan(s) and report(s) describing how impacts of the incidental take (IT) on listed species in the action area would be monitored and documented. Short term monitoring of the construction activities, including fish exclusion, removal, and handling, and 5-year monitoring of the riparian recovery and the integrity of the bank stabilization treatments, and possible debris loading from both current upstream conditions and new LWD etc. on the pedestrian bridge are an element of the RPM.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the Federal action agency must comply (or must ensure that any applicant complies) with the following terms and conditions. The Corps, or any applicant, has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this ITS (50 CFR 402.14). If the entity to whom a term and condition is directed

does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

The following terms and conditions apply to *all* reasonable and prudent measures:

a. Submit any updated and or final plans when they become available, and submit the (IT) report within 30 days following completion of all in-water work.

The following terms and conditions implement Reasonable and Prudent Measure 1:

a. The initial phase of aquatic life removal below the OHWM with the dewatered construction areas, will occur prior to installing diversion structures and the following methods will be employed and overseen by a qualified fish biologist.
b. The Corps, City of Lynden, or its contractor, shall engage a biologist trained and/or experienced in fisheries science to make visual observations from the fish exclusion/removal, bank stabilization activities and pile driving roughly 500 feet up and downstream of the activities.
c. Observations will be made and documented with field notes and photographs before and after activities commence and conclude.
d. If the biologist observes that fish seen from vantage points from the dock or shoreline are present in relatively high numbers, the biologist will immediately notify the contractor and the City, to implement up to a one-day delay and the activity is deemed to be affecting PS Chinook or PS steelhead in excess of the ITS. Take in excess of the ITS will result in Reinitiation of consultation.
e. Exclusion netting will be placed across the channel at a 30- to 45-degree angle to prevent water and debris flow from toppling the structure. Exclusion nets will be installed with metal T-posts or wooden stakes for support and anchored to the streambed with sandbags placed along the upstream side. Nets will be installed upstream of the bypass dam location, with enough space to avoid impacts from the pump intake. Surface flow entering the work area will be blocked by exclusion nets to prevent fish from swimming downstream into the work area. Once installed, nets will be checked at least three times per day: when arriving on site, roughly mid-day and prior to departing in the evening. If a build-up of leaves and debris is reducing block net function, or if fish are observed impinged on the net, this rate will be increased and include overnight attention.
f. Once upstream nets are installed, seine nets will be used to perform an initial sweep of the work area. This initial pass may be repeated, if necessary, by additional staff equipped with dip nets walking ahead of the seiners attempting to move fish from hiding cover (undercut banks, large rocks, logs, etc.). Multiple passes will be completed to effectively operate around obstructions.
g. Captured fish will be placed in dark-colored buckets equipped with bubblers and kept out of the sun. Fish will be monitored for stress and released as quickly as feasible outside the fish exclusion zone in appropriate habitat as determined by the field biologist following guidance documents and permit conditions.
h. With the pumps turned on water levels will slowly drop within the work area. Crews will simultaneously work any identified pools to remove fish from more shallow riffle areas. The crews will continue to remove fish from pools until catch rates reach no fish for three

consecutive passes. Small pumps with screened intakes may be used to lower the water level of isolated pools as needed.

The following terms and conditions implement Reasonable and Prudent Measure 2:

a. Noise from the construction activities and operations will be geographically isolated, and the maximum potential noise level generated during construction as a result of simultaneous operation of all equipment would be less than 86 dBA per New et. al. 2014; Kunc et al. 2016; Slabbekoorn et al. 2019.
b. Other equipment used on the project generate noise levels under 81 dBA.

The following terms and conditions implement Reasonable and Prudent Measure 3.

a. During construction, stormwater will be dealt with through a Stormwater Pollution Prevention Plan (SWPPP) to ensure stormwater runoff will not directly enter the wetland or Fishtrap Creek. Nephelometric Turbidity unit (NTU) levels will be monitored up to 500 feet downstream pre-construction, during installation of the exclusion structures, and immediately following all in-water activities.
b. Post construction, stormwater will be infiltrated and dispersed according to appropriate City regulations and the 2019 Stormwater Management Manual for Western Washington.
c. A set of BMPs, described in Section 2.1 and 6.1.3 of the BE will be implemented, and temporary erosion and sediment control (TESC) materials will be placed on site to respond to unanticipated weather conditions or accidental released of construction materials. Materials will be removed when construction ends and it has been identified that soil conditions are stable and the new structures are functioning properly.

The following terms and conditions implement Reasonable and Prudent Measure 4.

a. No later than 60 days following conclusion of all activities, prepare and provide NMFS with plan(s) and report(s) describing how impacts of the incidental take (IT) on listed species in the action area and how this was monitored and documented with results. Send to: projectreports.wcr@noaa.gov referencing WCRO-2021-03158.

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 Corps should incorporate offsetting mitigation as conditions for all in-water permits authorized under its Section 404 authority, to protect and restore the biological integrity of the nation's waters.

Follow and adhere to the City of Lynden's Municipal Codes: 16.16.23, 16.16.370 to avoid, minimize, and compensate for wetland and wetland buffer impacts and protect fish and critical habitat from water quality impacts emanating from these terrestrial actions.

Follow and Adhere to City of Lynden's Municipal Code to mitigate for alterations to fish and wildlife habitat conservation areas to achieve equivalent or greater biologic and hydrologic functions, and include mitigation for adverse impacts upstream or downstream of the development proposal site.

Mitigation shall address each function affected by the alteration to achieve functional equivalency or improvement on a per function basis. Additionally, the Lynden Shoreline Master Plan requires that projects result in no net loss of shoreline ecological functions.

Freeboard for the Pedestrian Bridge should be sized to accommodate a 500-year flood event, to address extreme weather events, and reduce the risk of debris loading. This in consideration of significant amounts of LWD, plantings, and other bank stabilization components installed upstream of the Bridge, and the possibility of subsequent catastrophic failure of the structure with resultant impacts to fish and fish habitat from this debris load.

NMFS recommends review of Nature-Based-Solutions[1] and resilience design criteria provided within the body of best science, as guidance. See references contained in: White House Council on Environmental Quality, White House Office of Science and Technology Policy, White House Domestic Climate Policy Office, 2022. Opportunities for Accelerating Nature-Based Solutions: A Roadmap for Climate Progress, Thriving Nature, Equity, and Prosperity.

Reinitiation of Consultation

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

In these circumstances, we further rely on an "extent of take" which is an observable measure causally linked to the form of take, and which can be monitored for compliance and as a re-initiation trigger.

[1] *Report to the National Climate Task Force. Washington, D.C. (DCEQ, 2022) @ https://www.whitehouse.gov/Nature-Based-Solutions-Resource-Guide-2022.pdf*

ESSENTIAL FISH HABITAT

As stated in the BE analyses above, alteration of EFH may result from permanent shading of aquatic habitat, improvements to fish habitat through installation of stream substrate sediments, installation of large woody debris, streambank stabilization, and/or from temporary alterations to riparian and aquatic habitats during construction activities; however, and as stated in Section 6.0 of the BE, the net effects of habitat alterations on EFH for Pacific salmon are anticipated to be minimal and insignificant. Overwater shading from the pedestrian bridge will have minimal effects for the in-stream conditions. NMFS concurs with this finding.

The action will affect EFH for Chinook and steelhead. In this case, NMFS concludes that the proposed action *will not adversely affect EFH*. Short term adverse effects will include diminished water quality, substrate, prey, migratory and rearing habitat value during construction, and long-term effects are the reduction in freshwater rearing habitat because existing habitat will be removed and or altered, and some existing habitat will be temporarily unavailable in the fish exclusion area.

NMFS also reviewed the proposed action for potential effects on essential fish habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), including conservation measures informing determinations made regarding the potential effects of the action. This review was conducted pursuant to section 305(b) of the MSA, implementing regulations at 50 CFR 600.920, and agency guidance for use of the ESA consultation process to complete EFH consultation.

As detailed in Section 9 of the BE, and habitat alteration that may result from the project is described in Section 3.2. Habitat Alteration and Section 6.2. Habitat Alteration.
Project effects on water quality and quantity, are discussed in Section 3.3 Impacts to Water Quality and Quantity. As described above, the project site includes Fishtrap Creek and Benson Ditch, which support adult or juvenile salmon and steelhead. The proposed action is occurring in a freshwater stream and will not adversely affect groundfish and coastal pelagic species.

The effects described above directly affect salmon EFH and habitat which support salmon prey. There are short-term temporary impacts anticipated during construction. Some permanent impacts are proposed from bank stabilization; however, the long-term impacts of the project on EFH will be beneficial.

Streams, including areas above artificial barriers are considered EFH. Salmon Habitat Areas of Particular Concern (HAPC) are a subset of Pacific Salmon EFH. Freshwater HAPCs include (1) complex channels and floodplain habitats; (2) thermal refugia; and (3) spawning habitat. The Project site does not contain complex channels, floodplains, but may contain degraded spawning habitat and thermal refugia.

As stated in the BE analyses, alteration of EFH may result from permanent shading of aquatic habitat, effects to fish habitat during installation of bank stabilization including, installation of large woody debris, streambank stabilization, and other effects from temporary alterations to

riparian and aquatic habitats during construction activities. NMFS concurs that alteration will occur during construction, but that the effects will be minimal and temporary.

As stated in Section 6.0 the net effects of habitat alterations on EFH for Pacific salmon are anticipated to be minimal and insignificant.

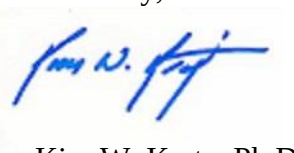
Overwater shading from the pedestrian bridge will have effects for the in-stream conditions, but will be temporary and minimal. There will also be temporary impacts to riparian and aquatic habitats. NMFS concurs that these effects will be short term and mitigated by actions outlined in Sections 2.0, 3.0. 8.0 and 18 from the Restoration and Mitigation Plan

In this case, NMFS concludes that the proposed action will not adversely affect EFH.

This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The biological opinion will be available through NOAA Institutional Repository [*add link*]. A complete record of this consultation is on file at NMFS' Oregon Washington Coastal Office in Portland, Oregon.

Please contact Keith Wolf at: keith.wolf@noaa.gov, or (425) 666-9183, and/or Elizabeth Babcock in the North Puget Sound Branch by electronic mail at Elizabeth.Babcock@noaa.gov if you have any questions concerning this consultation, or if you require additional information.

Sincerely,



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

cc: Matthew J. Bennett, U.S. Army Corps of Engineers

REFERENCES

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