FINDING OF NO SIGNIFICANT IMPACT
AND
CLEAN WATER ACT SECTION 404 STATEMENT OF FINDINGS
Lord Hill Levee 2018 Repair
Snohomish County, Washington

1. **Name of Waterway:** Lord Hill Levee, Snohomish River, Snohomish County

2. **Background**. The Lord Hill levee system was constructed to provide a 10-year level of protection (LOP) to over 4 square miles of rural agricultural and residential properties as well as public infrastructure. On 23 November 2017, high flows on the Snohomish River resulted in scour of the levee slope and toe, including the loss of some embankment material of the Lord Hill levee near Station 107+00. The flood event caused damage along a 50-foot section of the levee, which includes a red alder tree that is captured within the slumped material of the levee. In the current damaged condition, the levee provides an estimated 1-year LOP

The proposed levee repair is authorized by Public Law 84-99 (33 U.S. Code Section 701n). The Corps' rehabilitation and restoration work under this authority is limited to flood control works damaged or destroyed by floods. The statute authorizes rehabilitation to the level of protection exhibited by the flood control work prior to the damaging event. French Slough Flood Control District (FCD) is the local, non-Federal sponsor for the proposed action.

3. **Action**. The Corps has determined that the preferred alternative is the Repair-in-Kind Alternative. The action to be conducted is described in Section 3 of the accompanying final Environmental Assessment (EA). The action under the Repair-in-Kind Alternative is to restore the damaged 50-foot section of the levee to the pre-flood LOP. The total length of the repair is 170 feet in order to tie the repair into the existing levee profile.

Coordination: The Notice of Preparation (NOP) for the levee repair was publicly circulated and is noted below. The repair is described in the accompanying final EA and is hereby incorporated by reference:

- Notice of Preparation/Clean Water Act Public Notice: Lord Hill Levee 2018 Repair, Snohomish, WA, dated 3 May 2018

  a. Letters of Comment and Responses

  A public comment period on the NOP, the contents of which are consistent with a CWA Section 404 Public Notice, is occurred from 3 May to 4 June 2018. Comments were received from the Tulalip Tribes and their comments are addressed in Appendix E of the Final EA.

- Final EA: Lord Hill Levee 2018 Repair, dated June 2018

b. Federal Agencies

The United States Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, and the Department of Interior, U.S. Fish and Wildlife Service (USFWS) are responsible for the Endangered Species Act of 1973 (ESA) listed species. The project requires work below Mean Higher High Water (MHHW), and due to the possibility of water quality impacts from elevated turbidity the Corps has determined that the levee repair may affect, but is not likely to adversely affect Coastal/Puget Sound bull trout, Puget Sound Chinook, and Puget Sound Steelhead, or their designated critical habitat. The Corps has determined that there would be no effect to marbled murrelets and Southern resident killer whales or their critical habitat.

The Corps submitted a Biological Assessment (BA) documenting the effects of the proposed repairs to listed species on 26 April 2018 to USFWS and NMFS to initiate consultation. On 8 May 2018, USFWS sent a request for additional information on the project. A response was provided to USFWS on 23 May 2018. On 18 May 2018 NMFS sent a letter of non-concurrence that the project is not likely to adversely affect Puget Sound Chinook salmon and Puget Sound steelhead and their critical habitats. NMFS recommended that the Corps request formal consultation and include information on how turbidity will be controlled during construction, a planting plan that includes how survival of the plants will be assured, and fish capture/avoidance methods. In response, the Corps requested formal consultation which has not been concluded.

Proposed best management practices and conservations measures are as follows:

- In water work will be limited to the in-water work summer window (1 July – 31 August).
- Turbidity Controls:
    - Work will be conducted at low tide and low-flow conditions to the extent practicable and no digging will occur in the water,
    - In order to minimize turbidity, all in-water work involves placement of materials on the river bed with no excavation allowed. The riprap toe (1/2 to 1-ton stones) will be slowly placed on to the river bed, using a bucket with thumb. The excavator will remain on land and only the bucket will enter the water,
    - To prepare the levee bank above the water level for the placement of quarry spall and riprap, excavation or dirt moving at the project site will occur during the summer low-flow level, at low tide, and in the dry, and
    - Monitoring of turbidity levels upstream and downstream of the project site during construction will occur. If turbidity is exceed, the Corps will follow protocols as outlines within its water quality monitoring plan to stop or reduce turbidity. Sediment generating activities will be halted until standards are met and construction methods changed to avoid future exceedances, if possible.
- Live willow stakes will be planted in two rows near ordinary high water as indicated within the design drawings. The Corps will monitor the willow plantings during the spring (February-May, depending on weather and leafout) following the original planting, and in the summer (August), before the Corps turns over the completed repair to the local sponsor. If less than 50% of the 340 planted willows survive during the first year, the

Corps will plant additional willow stakes to adaptively manage and meet the 50% survival rate for the 340 willow stakes planted on the repair site for a year.

Effects of the proposed work on EFH will be essentially identical to those evaluated for critical habitat. Based on the critical habitat analysis, the Corps concludes that the proposed project will not adversely affect EFH for federally managed fisheries in Washington waters.

c. State and Local Agencies

(1) The Corps has reviewed the parameters of Nationwide Permit (NWP) 3 as guidance for analyzing project impacts. The Corps concluded that the Lord Hill Levee Rehabilitation project is functionally analogous to NWP 3. Furthermore, the Corps analyzed the project pursuant to the conditions attached to NWP 3 and concludes that the project satisfies the conditions and qualifies for the State's general certification for Section 401 of the Clean Water Act. A memorandum detailing the Corps' analysis was provided to Washington Department of Ecology (WDOE) for their review on 17 April 2018. A Letter of Verification from WDOE was received on 26 April 2018 concurring that the project meets the parameters of general Certification under NWP 3 and that general consistency with Section 401 is satisfied.

(2) The Corps has conducted a records search and literature review of the Washington Information System Architectural and Archaeological Records Database (WISAARD). The literature review and records search revealed that there have been no cultural resource investigations within the vicinity of the project area of potential effect (APE). There are no properties listed in the National Register of Historic Places (NRHP) or the Washington State Historic Site Register in the project vicinity, and no cultural resources have been recorded with the APE. Letters to document the APE and to submit the Corps' finding of No Historic Properties Affected were sent to the Washington SHPO. The SHPO agreed with the Corps' determination of the APE in a letter dated 14 May 2018 and with the Corps' findings in a letter dated 25 June 2018. Tribal knowledge and concerns letters were sent on 8 June 2018 to the Sauk-Suiattle Indian Tribe, Snoqualmie Indian Tribe, Stillaguamish Tribe, Tulalip Tribes, and Yakama Nation. No response was received.

(3) The Corps has determined that the proposed project is consistent to the maximum extent practicable with the enforceable policies of the approved Washington State (State) Coastal Zone Management Program, particularly the Snohomish County Shoreline Management Plan, and, therefore, in compliance with the Coastal Zone Management Act (CZMA). A determination of consistency was provided to WDOE within the 17 April 2018 NWP 3 memo. Notwithstanding Ecology's letter regarding their verification of 401 certification under NWP 3, we have not received a Letter of Verification from Ecology specifically concurring that general consistency with CZMA is achieved. Ecology's concurrence that the project is consistent to the maximum extent practicable with the enforceable polices of the Washington State coastal zone management program is presumed in accordance with 33 CFR 336.1(b)(9)(iv) and 15 CFR 930.41(a).

d. Treaty Tribes

The project is within the Usual and Accustomed fishing locations of several tribes. This activity will minimally interfere with fish activities of the tribes. The Tribes were contacted regarding the project and USACE will continue to coordinate throughout the project with the tribes in furtherance of meeting Tribal Treaty obligations.

5. Environmental Effects and Impacts:

a. Summary of Effects

(1) The Final EA for the Lord Hill Levee 2018 Repair, dated June 2018, describes the effects of the proposed project.

(2) Pursuant to Section 404(b)(1) of the CWA and 40 CFR 230, an evaluation of placement of fill material into the waters of the U.S. determined that the project will be consistent with the State's water quality standards. USACE prepared a Section 404(b)(1) Evaluation that can be found in Appendix B of the EA.

(3) A Letter of Verification from WDOE was received on 26 April 2018 concurring that the project meets the parameters of general Certification under NWP 3 and that general consistency with Section 401 is satisfied. A determination of CZMA consistency was also provided to WDOE. Concurrence has not been received from WDOE specifically concurring that general consistency with CZMA is achieved. WDOE's concurrence that the project is consistent to the maximum extent practicable with the enforceable polices of the Washington State coastal zone management program is presumed in accordance with 33 CFR 336.1(b)(9)(iv) and 15 CFR 930.41(a).

b. Compliance with Applicable Environmental Laws

The environmental laws listed below are applicable to the proposed action. An evaluation of environmental impacts under each of these regimes, as well as compliance with each of these laws, is documented in the Final EA:

- CWA, Sections 404 and 401
- CZMA
- National Environmental Policy Act
- ESA
- Magnuson-Stevens Fishery Conservation and Management Act
- Clean Air Act
- Migratory Bird Treaties Act
- Marine Mammal Protection Act
- National Historic Preservation Act
- Tribal Treaty Fishing Rights
- Executive Order 12898, Environmental Justice

c. Unavoidable Adverse Effects

Unavoidable adverse effects associated with the Repair-in-Kind Alternative will be: (1) temporary and localized increases in noise, activity, and emissions which may affect fish and wildlife in the area; (2) temporary and localized disruption of local traffic by construction activity and vehicles; (3) irretrievable commitment of fuels and other materials for repairs; (4) a temporary and localized increase in turbidity levels during in-water construction which may affect aquatic organisms in the area; (5) removal of vegetation from within the proposed construction areas; and (6) potential impacts to ESA- listed species and their designated critical habitat.

6. Determination:

a. Results of the Environmental Analysis for the Lord Hill Levee 2018 Repair Project

The Final EA prepared for this project recommended a Finding of No Significant Impact (FONSI). The project will not constitute a major Federal action significantly affecting the quality of the human environment.

b. Alternatives

Three alternatives were considered in the EA for the Lord Hill Levee 2018 Repair Project, dated June 2018: (1) no action, (2) repair-in-kind, (3) levee setback, and (4) non-structural alternative.

The Corps rejected Alternative 1 because it will not meet the project purpose and need due to the high likelihood of damage to protected infrastructure and homes during future flood events. Alternative 3 was rejected because the Corps does not have authority to pursue a setback alternative in the absence of participation by the non-Federal interest. The Corps rejected Alternative 4 because the Corps does not have authority to pursue a non-structural alternative in the absence of participation by the non-Federal interest. Alternative 2 will restore the damaged levee section to a condition similar to existing undamaged sections in the vicinity and would tie-in upstream and downstream to match existing slopes and material types. Alternative 2 was selected because it will meet the project purpose and need and is authorized.

c. Individual and Cumulative Environmental Effects

Based on the analysis presented in the Final EA, the preferred alternative is not anticipated to generate an incremental adverse effect on the quality of the human environment. No significant adverse effects on recreation, aesthetics, or the economy are anticipated. USACE has determined that there would be no significant adverse effects to aquatic ecosystem functions and values.

d. Conditions in the Water Quality Certification

The Corps concluded that the Lord Hill Levee Rehabilitation project is functionally analogous to NWP 3. Furthermore, the Corps analyzed the project pursuant to the conditions attached to NWP

3 and concludes that the project satisfies the conditions and qualifies for the State's general certification for Section 401 of the Clean Water Act. A Letter of Verification from WDOE was received on 26 April 2018 concurring that the project meets the parameters of general Certification under NWP 3 and that general consistency with Section 401 is satisfied. All construction work will be limited to the timeframe between 1 July and 31 August in order to reduce impacts on salmonids at vulnerable life stages.

e. Conditions in the CZMA Consistency Concurrence

USACE determined that this project is consistent to the maximum extent practicable with the enforceable policies of the approved Washington coastal management plan. A determination of consistency was provided to WDOE within the 17 April 2018 NWP 3 memo. Concurrence has not been received from WDOE specifically concurring that general consistency with CZMA is achieved. WDOE's concurrence that the project is consistent to the maximum extent practicable with the enforceable polices of the Washington State coastal zone management program is presumed in accordance with 33 CFR 336.1(b)(9)(iv) and 15 CFR 930.41(a).

7. Summary of Impacts and Compliance. Impacts of the proposed work will be minor, short-term, and temporary. This project complies with the Endangered Species Act; a biological assessment was prepared and provided to both USFWS and NMFS, however, consultation is concurrently ongoing. Due to the urgent nature of completing the emergency actions prior to the oncoming flood season, the Corps may proceed with construction prior to completion of the consultation with the Services pursuant to the "emergency circumstances" provisions of the ESA consultation regulation, and may complete ESA consultation after the fact rather than delaying the urgent work in order to complete ESA consultation before construction begins. The applicable regulation is set out at 50 CFR Section 402.05 (a) and (b) and provides as follows:

a) Where emergency circumstances mandate the need to consult in an expedited manner, consultation may be conducted informally through alternative procedures that the Director determines to be consistent with the requirements of section 7(a)-(d) of the Act. This provision applies to situations involving acts of God, disasters, casualties, national defense or security emergencies, etc.

b) Formal consultation shall be initiated as soon as practicable after the emergency is under control. The Federal agency shall submit information on the nature of the emergency actions(s), the justification for expedited consultation, and the impacts to endangered or threatened species and their habitats. The Service will evaluate such information and issue a biological opinion including the information and recommendations given during emergency consultation.

The proposed repairs are considered to constitute emergency circumstances under 50 CFR 402.05 because it is necessary to protect human life and property, which will be in imminent danger upon the commencement of the ensuing flood season if the project were not implemented.

Though consultation is not complete, the Corps has reached an agency determination of species/habitat effect, based on the best factual and technical information available at the time of decision, and following preliminary coordination with the Services. Key conservations measures

intended to minimize impacts on listed species and habitat include the BMPs addressed above in Section 3.b. In light of the conservation measures and best management practices that will be employed, the project is not reasonably expected to generate take of listed species by: (1) creating the likelihood of injury to listed species by significantly disrupting normal behavior patterns including breeding, feeding, or sheltering, or (2) significantly modifying or degrading habitat to the extent that individual members of species would be actually killed or injured by significantly impairing essential behavior patterns including breeding, feeding, or sheltering.

The Corps has concluded that the levee is a part of the baseline condition of the River in this reach and that the proposed action, with the best management practices/conservation measures and proposed compensatory mitigation, will have minimal impact on listed species. The Corps will commit to fully funding and performing all Reasonable and Prudent Alternatives necessary to avoid the likelihood of jeopardy to listed species or destruction or adverse modification of designated critical habitat, as well as RPMs necessary and appropriate to minimize the impact of Incidental Take, that are described if a Biological Opinion is received from the Services.

Impacts to ESA listed fish and their prey will be minimized by conducting in-water work during the in-water work window of 1 July to 31 August. This project will comply with Sections 401 and 404 of the Clean Water Act. A 404(b)(1) analysis has been prepared, and the Corps has received a Letter of Verification from WDOE concurring that the project meets the parameters of general Certification under NWP 3 and that general consistency with Section 401. A consistency determination under the Coastal Zone Management Act was also provided to WDOE. Concurrence has not been received from WDOE specifically concurring that general consistency with CZMA is achieved. WDOE's concurrence that the project is consistent to the maximum extent practicable with the enforceable polices of the Washington State coastal zone management program is presumed in accordance with 33 CFR 336.1(b)(9)(iv) and 15 CFR 930.41(a). The project complies with the National Historic Preservation Act and the USACE has coordinated the work with the Washington State Historic Preservation Office (SHPO) and the Sauk-Suiattle, Snoqualmie, Stillaguamish, and Tulalip Tribes, and the Yakama Nation.

8. District Engineer's Findings and Conclusions.

I have evaluated the levee repair activity in light of the public interest factors prescribed in 33 CFR 336.1(c). The following factors were evaluated as considerations potentially impacting the quality of the human environment in the accompanying EA and coastal zone consistency evaluation: navigation and the Federal standard, water quality, coastal zone consistency, wetlands, endangered species, historic resources, scenic values, recreational values, fish and wildlife, and application of non-Federal land use policies. No additional impacts to state/regional/local land use classifications, determinations, and/or policies are anticipated as the project will maintain an existing levee system that provides a 10-year level of protection to over 4 square miles of rural agricultural and residential properties as well as public infrastructure. In accordance with 33 CFR 337.1(a)(14) and 325.3(c)(1), the following additional relevant factors were also considered: conservation and economics.

The selected alternative represents the least costly alternative, constituting the discharge of dredged or fill material into waters of the United States in the least costly manner and at the least costly and most practicable location, is consistent with sound engineering practices, and meets the environmental standards established by the Clean Water Act Section 404(b)(1) evaluation process. Execution of the selected alternative, following considerations of all applicable evaluation factors, is in the public interest.

Furthermore, based on the attached environmental assessment, I have determined that the selected action is not a major Federal action that will have significant effects on the quality of the human environment, and does not require preparation of an environmental impact statement.

08 JUL 18
DATE

MARK A. GERALDI
COL, EN
Commanding

Environmental Assessment and Clean Water Act, Section 404 Public Interest Review

Lord Hill Levee 2018 Repair

Snohomish County, WA

July 2018

US Army Corps of Engineers®
Seattle District

Table of Contents

1 Introduction

Under the Council on Environmental Quality (CEQ) regulations, 40 CFR § 1500.1(c) and 40 CFR § 1508.9(a)(1), implementing the National Environmental Policy Act (NEPA) of 1969 (as amended), the purpose of an Environmental Assessment (EA) is to "provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact" on actions authorized, funded, or carried out by the Federal government, and to assist agency officials to make decisions that are based on understanding of "environmental consequences, and take actions that protect, restore, and enhance the environment." This EA evaluates the environmental effects of the proposed levee repair project on the French Slough Flood Control District's Lord Hill Levee. The levee was damaged during a flood event and the Corps is proposing to restore the level of flood protection existing prior to the November 2017 flood event.

This document also integrates a review of factors underlying a determination of whether executing the project would be in the public interest, pursuant to Clean Water Act Section 404 and rules and regulations published as 33 CFR Part 335, "Operation and Maintenance of Army Corps of Engineers Civil Works Projects Involving the Discharge of Dredged or Fill Material into Waters of the U.S. or Ocean Waters"; 33 CFR Part 336, "Factors to be Considered in Evaluation of Army Corps of Engineers Dredging Projects Involving the Discharge of Dredged Material into Waters of the U.S. and Ocean Waters"; 33 CFR Part 337, "Practice and Procedure"; and 33 CFR Part 338, "Other Corps Activities Involving the Discharge of Dredged Material or Fill into Waters of the U.S."

1.1 Background

The Lord Hill levee system was constructed to provide a 10-year level of protection (LOP) to over 4 square miles of rural agricultural and residential properties as well as public infrastructure. The original levee construction is approximately 5 to 12 feet high on the landward side and is, depending on the location on the levee, comprised of levee embankment material with riprap on the riverward slope or comprised entirely of levee embankment material (e.g., river soils). The landward and riverward slopes are covered with sod. On 23 November 2017, high flows on the Snohomish River resulted in scour of the levee slope and toe, including the loss of some embankment material of the Lord Hill levee near Station 107+00. At Station 107+00, the levee appears to be comprised entirely of levee embankment material (e.g., river soils). The flood event caused damage along a 50-foot section of the levee, which includes a red alder tree that is captured within the slumped material of the levee. In the current damaged condition, the levee provides an estimated 1-year LOP.

1.2 Authority

The proposed levee repair is authorized by Public Law 84-99 (33 U.S. Code Section 701n). The Corps' rehabilitation and restoration work under this authority is limited to flood control works damaged or destroyed by floods. The statute authorizes rehabilitation to the level of protection exhibited by the flood control work prior to the damaging event. French Slough Flood Control District (FCD) is the local, non-Federal sponsor for the proposed action.

1.3 Project Location

The Lord Hill levee is approximately 16,700 feet long. The levee is located at the confluence of the Snohomish River and the Pilchuck River, extending 2.4 miles up the Snohomish River and 0.4 miles up the Pilchuck River (Figure 1). The proposed rehabilitation is located on the Snohomish River approximately 1.5 miles upstream of the confluence with the Pilchuck River.

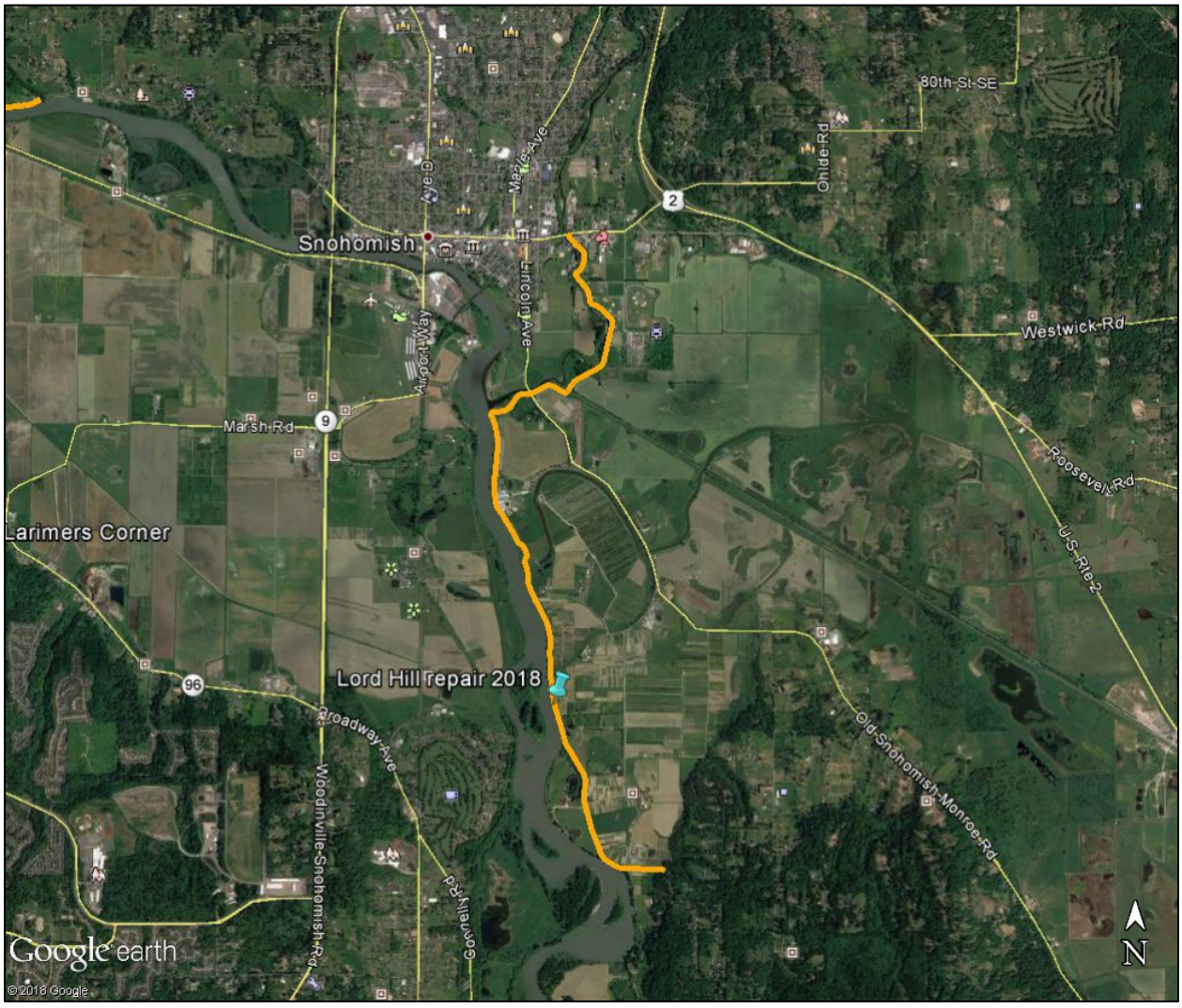

Figure 1. Overview of the project location. The yellow line indicates the Lord Hill levee and the blue pin indicates the damaged area.

1.4 Purpose and Need

The purpose of the Lord Hill Levee Rehabilitation Project (project) is to restore the level of flood protection existing prior to the November 2017 flood event in order to protect lives and property from subsequent flooding. Prior to the flood damage, the levee system provided 10-year level of protection to over 4 square miles of rural agricultural and residential properties as well as public infrastructure. The need for this project was generated by the damage of irregularly occurring severity that was caused by the November 2017 flood event. Per Public Law 84-99, the Corps is authorized to repair damaged flood control works to the pre-flood level of protection.

2 Proposed Action and Alternatives

Criteria for selecting an agency preferred alternative included analyzing total cost of implementation, environmental effects of the action and potential to achieve the project purpose. These are compared against the potential costs, environmental effects, and public safety risks of taking no action.

2.1 Alternative 1 – No Action

The No-Action Alternative would leave the levee in its current damaged state. This alternative would not meet the project purpose and need due to the high likelihood of damage to protected infrastructure and homes during future flood events. It is nevertheless carried forward to serve as a benchmark for purposes of further evaluation of the effects of the alternatives.

2.2 Alternative 2 – Repair-in-Kind

This alternative would restore the damaged levee section to a condition similar to existing undamaged sections in the vicinity and would tie-in upstream and downstream to match existing slopes and material types.

2.3 Alternatives Considered but Eliminated from Detailed Study

2.3.1 Alternative 3 – Levee Setback

This alternative would shift the alignment of the levee embankment landward by a yet-to-be-determined distance in order to avoid or minimize direct contact with the river current. Typically, the setback would be a newly-constructed earth embankment structure and would abandon the existing levee located on the river bank. It may not be able to be completed prior to the next flood season and may be more costly than other alternatives due to more extensive embankment material requirements. This approach would encroach on existing structures (private residences) and privately-owned land currently used for residential and agricultural purposes. All real estate needs, including interests in the setback footprint, must be provided by the levee system owner. If real estate is not available to be acquired in the setback alignment then this alternative would not be possible. Under some circumstances the non-Federal interest must incur the incremental cost of constructing a levee setback, in which case the setback alternative cannot be pursued without the affirmative participation of that non-Federal interest. The Corps does not have authority to pursue a setback alternative in the absence of participation by the non-Federal interest, which is the case in this specific instance. This alternative will thus not be considered further.

2.3.2 Alternative 4 – Non-Structural Alternative

This alternative consists of floodplain management strategies generally involving changes in land use offered by other federal and state programs. Such strategies would include: zoning, easements, flood warning, floodplain evacuation, and flood insurance. Nonstructural strategies involve acquisition, relocation, elevation, and flood proofing existing structures. This alternative would relocate all existing structures, utilities and other infrastructure outside of the floodplain. The costs associated with this alternative are extremely high relative to the level of benefit. The levee system owner has been informed of their option to pursue this alternative but has chosen not to. The Corps does not have authority to pursue a non-structural alternative in the absence of participation by the non-Federal interest, which is the case in this specific instance. Therefore, this alternative has been eliminated from detailed consideration.

2.4 Agency Preferred Alternative

The repair-in-kind alternative (Alternative 2) would restore the damaged 50-foot section of the levee to pre-flood LOP and would tie-in upstream and downstream to match existing slopes and comparable material types used along the levee. The damaged section is 50 feet long and the total length of the repair is approximately 170 feet in order to tie the repair into the existing levee profile (Figures 2 and 3).

The site limits would be clearly marked using stakes and flagging. A haul road would be along a combination of existing gravel roads, unimproved dirt roads, and across farm fields (Figure 2). Very little to no material placement is anticipated to be completed along this route. If required, some spall and gravel improvement along the haul way may be necessary depending on site conditions at the time of construction. Storage and staging shall occur at a location landward of the levee crown as depicted on the design plan. Staging activities consist of temporary stockpiling of excess rock, supplies, equipment and vehicles.

Repair of the riverward slope is intended to match the upstream/downstream sections of the levee. The Repair-in-Kind alternative would re-establish the levee to the pre-flood level of protection. Deconstruction would include the removal of the one alder tree and grading of the riverward bank above the water line. No excavation or grading would be conducted in-water. Work would be sequenced to minimize turbidity and follow all Best Management Practices (BMPs) listed in 4.1 below. If found on site, any existing satisfactory rock would be reused. The riverward riprap toe (1/2 to 1 ton stones) would be placed onto the channel bottom and below the water line, depending on flow and tide conditions at the time of construction, and allowed to embed into the substrate by gravity (Figure 4). Only the excavator bucket would enter the water. All rock would be placed with an excavator bucket with thumb. A 1 foot thick bedding layer of 2 to 4-inch quarry spalls would be overlain by a 2 foot thick blanket of Class II (25 to 500 pounds) riprap along the riverward slope to provide erosion protection. The slope rock would be constructed to a finished 1.5H:1V slope.

Additionally, the alder captured within the slumped material (Figure 5) would be placed unanchored on the toe rock with the root ball pointing downstream. The landward side and the riverward side of the levee above the OHWL would have a 6-inch cover of topsoil placed and then be seeded with native grasses. Two willow lifts would be planted along the repair area on riverward side of the levee (Figure 4). One willow lift would be approximately 1 foot below the ordinary high water mark and the second lift approximately 1 foot above the ordinary high water mark. The approximate total number of live willow stakes is estimated at 340, and this number of plantings is considered to be overplanting. The plantings would more than replace the lost shade cover from the one red alder and other ground cover vegetation that would be removed or covered during construction, as well as the organic leaf drop from the alder. By planting a double row of willows at elevations staggered 1- foot above and below the ordinary high water mark along the length of the 170 foot proposed repair, the Corps is aiming for at least a 50% survival rate of the 340 plantings during the first year. A survival rate of at least 50% of the 340 plantings during the first year would more than remedy the functionality lost by the alder's absence by increasing the shading and organic leaf drop to cover the length of the 170 foot proposed repair, and will address the time lag until replacement with installed willows is achieved at full maturity and functionality. Additionally, soil would be placed over the armoring above ordinary high water. This would be seeded with native grasses to minimize the exposed rock along the water and restore the herbaceous covering in the reach.

Figure 2. Lord Hill Levee 2018 repair project footprint showing the construction limits and proposed access and staging areas.

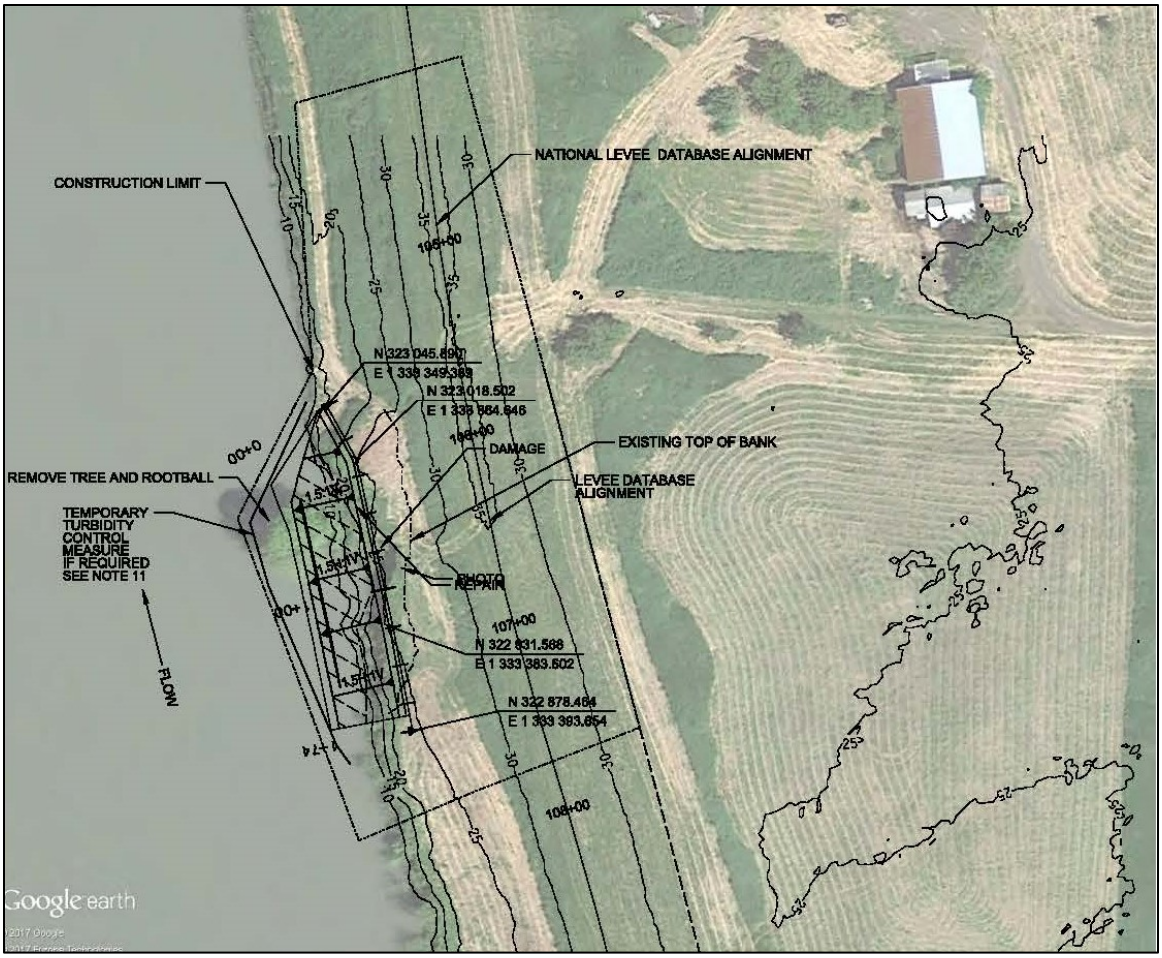

Figure 3. Plan view of the project site.

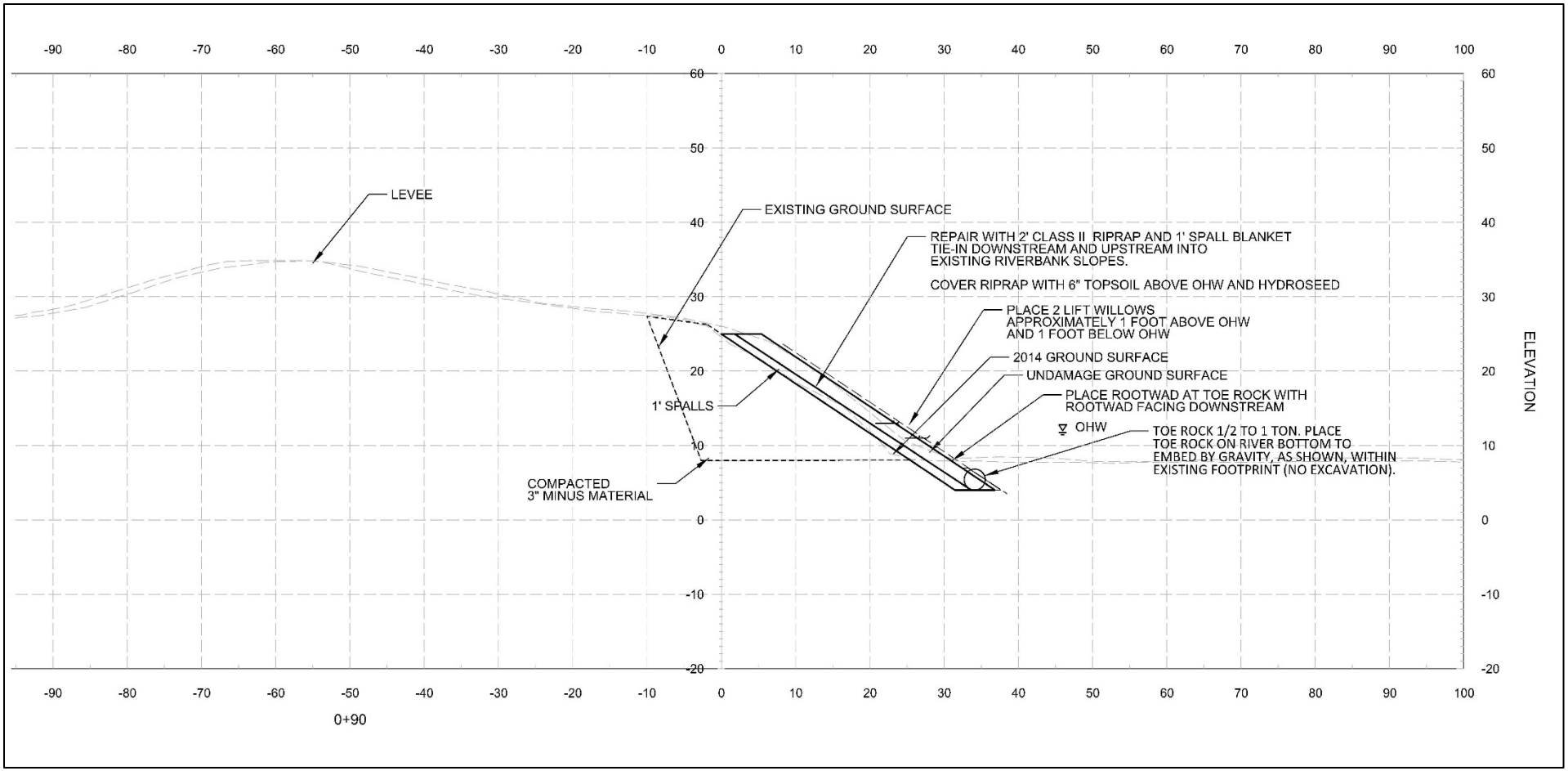

Figure 4. Cross section of the proposed repair.

Figure 5. Red alder within slumped material at damage site (photo taken Jan 2018).

3 Affected Environment and Effects of the Alternatives

The following focuses on those resources specific to the proposed project area that have the potential to be affected by activities connected with the proposed levee repair project. An environmental effect, or impact, is defined as a modification in the existing environment brought about by mission and support activities. These impacts are described as direct or indirect. Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.8 describe direct impacts as *those which are caused by the action and occur at the same time and place*. The CEQ regulations define indirect impacts as *those that are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable*. Indirect impacts may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Cumulative impacts are those that result from the incremental impacts of an action added to other past, present, and reasonably foreseeable actions, regardless of who is responsible for such actions.

3.1 Vegetation

The project area consists of a well-maintained levee and its surroundings on the east (right) bank of the Snohomish River. The levee is 10 to 12 feet high. The upper slope, crest, and landward slope of the levee is regularly mowed to maintain a grass covering. Most of the upland areas within the project site are highly disturbed from mowing, grazing, or other vegetation management activities.

Due to local sponsor maintenance, the levee is vegetated primarily with grasses and forbs throughout its length. The primary species at the proposed project location is reed canary grass (*Phalaris arundinacea*) and Himalayan blackberry (*Rubus armeniacus*), of which both are Class C noxious weeds in the state of Washington. One red alder tree is captured within the slumped material of the levee which appears to be an expansion of an erosion pocket observed during a continuing-eligibility inspection in April 2017 (based on aerial photos, the area around the tree has experienced progressive erosion since about 2015). It has a 30-40 cm diameter at breast height (DBH) and will be lost as a result of the repair action.

No wetlands occur within the proposed repair area.

3.1.1 Alternative 1 – No Action

Without repair, no direct impact to vegetation is expected. Continued erosion of the damaged area would be expected to compromise the vegetation on the slope. Further slumping of the bank would cause further loss of vegetation and increased exposure of bare soil. Should a breach occur, vegetation in the surrounding area could also be compromised by inundation.

3.1.2 Alternative 2 – Repair-in-Kind

Vegetation, primarily reed canary grass and Himalayan blackberry, within the repair area would be lost due to the repair action. However, impacts would be offset as the repair includes integrating two willow lift plantings into the levee slope, below and above ordinary high water. The willow plantings are intended to replace the loss of vegetation, including the red alder tree. The riverward slope above OHW and the crown would also receive top soil and will be seeded with a native grass seed mix to replace the lost grasses on the levee. No significant impact to vegetation is expected with the implementation of Alternative 2.

3.2 Fish and Wildlife

The project area is in an agricultural area with limited wildlife habitat. Species using the area are limited to those that are acclimated to co-existing with humans. Snohomish County completed a local habitat assessment in 2007. This assessment shows the project area to have moderate to moderately low habitat value (WDFW 2018b).

3.2.1 Alternative 1 – No Action

The No Action alternative could have a limited impact on aquatic and terrestrial species. Continued erosion of the levee, leading to a levee breach could cause inundation of the protected area. Inundation and erosion could cause the loss of some trees and impacts to associated habitat function. If a breach occurred, high turbidity and potential contamination could be seen from the resultant flooding of the adjacent agricultural properties. Decreased water quality could occur for a long distance, depending on the extent of inundation and the materials within the flooded area. Fish and wildlife in the area could be negatively affected by the turbidity increase and contaminants released into the river should such a breach occur.

3.2.2 Alternative 2 – Repair-in-Kind

Wildlife in the area are likely acclimated to human presence given the surrounding agricultural land use. Wildlife may temporarily avoid the area due to increased noise and human presence, but would return quickly once construction is complete. Loss of the tree, grasses, and blackberries would temporarily decrease wildlife habitat availability in the project area until mitigation plantings are established. Long-term habitat availability is not expected to decrease. Construction is expected in August, which is outside of the nesting season.

Disturbance from vibration is possible during construction, stemming from delivery and dumping of rock on land as it is staged for construction, and as a result of excavation and placement of rock along the riverward face of the levee. Vibration could cause any fish in the area to move away from the construction zone; however, the river channel provides similar habitat in nearby locations for any fish that vacate the project area.

Excavation and placement of rock may lead to elevated temporary and localized turbidity levels surrounding the construction. Turbidity monitoring, as described in Section 4.1, would be conducted to ensure that state water quality standards are not exceeded and impacts to fish are limited.

The in-water work window for this reach is 1 July to 31 August. This window is designed to limit impacts to fisheries, particularly salmonids, by avoiding the most sensitive time periods. The in-water work would be limited to this window.

When completed, the Lord Hill levee repair with mitigation plantings is not intended or expected to generate appreciable change in habitat conditions as compared with conditions pre-existing the November 2017 flood event. The 2018 repair construction work may result in short-term impacts to fish and wildlife from noise, vibration, increased human presence, and removal of vegetation. Significant impacts to these resources are not expected.

3.3 Threatened and Endangered Species

In accordance with Section 7(a)(2) of the Endangered Species Act (ESA), federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed and proposed threatened or endangered species. The following table lists threatened and endangered species potentially occurring within the project vicinity.

Table 1. Threatened species potentially occurring within the project vicinity.

Species	Listing Status	Critical Habitat
Southern Resident Killer Whale *Orcinus orca*	Endangered	Designated
Coastal/Puget Sound Bull Trout *Salvelinus confluentus*	Threatened	Designated
Puget Sound Chinook Salmon *Oncorhynchus tshawytscha*	Threatened	Designated
Puget Sound Steelhead *Oncorhynchus mykiss*	Threatened	Designated
Marbled Murrelet *Brachyramphus marmoratus*	Threatened	Designated

There is no critical habitat designated for marbled murrelet within the action area (USFWS 1996). Marbled murrelet (*Brachyramphus marmoratus*) may transit the action area while travelling between nesting and feeding areas, however the additional noise and human presence is not expected to impact marbled murrelet flight patterns. Their typical flying altitudes have been recorded at a mean height of 246 meters (807 feet) above ground level (Stumpf et al. 2011) and typical ambient noises in this rural agricultural area would vary depending on harvest times and machinery used. Southern resident killer whale (*Orcinus orca*) show a strong preference for Chinook salmon (primarily Frazier River Chinook salmon), with chum salmon as the second-most preferred (NMFS 2008). They may occasionally include Snohomish River Chinook salmon in their diet, however, because the impact to Chinook from the proposed action is overall minor and because the percentage of Snohomish River Chinook that make up the killer whale diet is likely very small, no effect to killer whales is expected. As such, no effect to marbled murrelets and Southern resident killer whales is expected and these species will not be discussed further.

Other listed species may occur in Snohomish County as well but have no potential to be affected by the proposed project. The proposed project will have "*no effect*" on the following species and their designated critical habitat due to their sensitivities to human encroachment, lack of suitable habitat, or because their presence is so transitory that any temporal affects to these species from construction activities would not be perceived as unusual, cause disruption of behavior or lead to measurable reductions in their prey base. These species include the North American Wolverine (*Gulo gulo luscus*), Canada lynx (*Lynx canadensis*), grizzly bear (*Ursus arctos horribilis*), gray wolf (*Canis lupus*), northern spotted owl (*Strix occidentalis*), and yellow-billed cuckoo (*Coccyzus americanus*).

Coastal/Puget Sound Bull Trout

Bull trout are found throughout the Snohomish River basin (SBSRF 2005). Adult and sub-adults may be within the action area (upper Snohomish River) to use it as foraging, migrating, and overwintering (FMO) habitat while most juvenile rearing occurs in natal streams in the upper Skykomish River (SBSRF 2005). The Washington Department of Fish and Wildlife (WDFW 2018a) has documented rearing of larger juvenile and sub-adult bull trout in the Snohomish River, including within the project area. Specifically, anadromous bull trout migrate through the project area to tidally influenced areas in the lower river and Puget Sound in late winter/spring and then return to the freshwater in late spring and early summer. Fluvial bull trout are bull trout that remain in freshwater. Anadromous and fluvial bull trout may remain in the Snohomish River to overwinter rather than migrating into the upper basin with spawning adults. Sub-adult and adult fish that overwinter and rear in the freshwater sections of the Snohomish River can utilize the proposed action area. During the proposed construction period, warm water temperatures (18°C) may limit the use of the project area by bull trout for all life stages (Goetz et al. 2004, Goetz 2016 (Chapter 3)).

Puget Sound Chinook

Two different stocks of Chinook exist in the Snohomish River, delineated by differences in return or run timing. Snohomish summer Chinook salmon are the early returning stocks, and Snohomish fall Chinook are the late-returning stocks (Ruckelshaus et al. 2006).

Summer Chinook adults migrate in August and September and spawn from September through early November (NMFS 2007). Juveniles of this stock remain in fresh water for a full year before migrating to the ocean. Fall Chinook adults migrate in September, and spawn between mid-September and late-November (NMFS 2007). Typically, fall Chinook juveniles move downstream during their first spring to enter the estuary (SBSRTC 1999).

Summer Chinook spawn in the Snohomish River and may spawn within the action area while fall Chinook are known to be present with the action area (WDFW 2018).

During the proposed construction period, Chinook adults will be migrating to their spawning locations in the Snohomish River, but all work will occur during the fish window and will not impact known spawning periods. Juveniles could also be present.

Puget Sound Steelhead

There are both winter-run and summer-run wild steelhead stocks in the Snohomish Basin (SBSRTT 2008). Winter steelhead may rear within the action area, while summer steelhead are known to be present within the action (WDFW 2018).

Adult winter steelhead enter fresh water between February to May and summer steelhead enter fresh water as sexually immature fish between May and October, although some may enter as early as February (SBSRTT 2008). Within the Snohomish basin, the winter steelhead have not been recorded as spawning at the project site, although they have been recorded spawning upstream at Lord Hill Regional Park (WDFW 2018). Wild steelhead in the Snohomish basin typically spend two years in freshwater before outmigrating to the marine environment in the late winter and spring (SBSRTT 2008), so both move through the action area during several life stages. Juveniles rearing in the area may include fry

and yearling fish. During the proposed construction period, steelhead adults could be migrating through and juveniles could be rearing in the action area.

3.3.1 Alternative 1 – No Action

If a breach and subsequent flooding occurred, the no action alternative could adversely impact listed fish and their critical habitat. If a breach occurred, high turbidity and potential contamination could be seen from the resultant flooding of the agricultural protected area. Decreased water quality could occur for a long distance within the Snohomish River, depending on the extent of inundation and the materials within the flooded area. Listed fish could be negatively affected by the turbidity increase and contaminants released into the water column should such a breach occur.

3.3.2 Alternative 2 – Repair-in-Kind

The potential effects are the same for Coastal/Puget Sound bull trout, Puget Sound Chinook, and Puget Sound Steelhead. The in-water work would be constrained to the in-water work window for this location (1 July to 31 August). Disturbance from vibration is possible during construction, stemming from delivery and dumping of rock on land as it is staged for construction, and as a result of excavation and placement of rock along the riverward face of the levee. Salmonids have been found to respond maximally to sounds between 35 and 170 Hz, but the fish did not move more than 60 cm from the sound source (Van Derwalker 1967). Construction-generated vibration would be in a low-frequency range, and salmonids may be able to hear only in low ranges (Hawkins and Johnstone 1978). Abbott (1972) observed no response at 600 Hz in rainbow trout which otherwise responded generally to signals at 150 and 300 Hz. It is possible that vibrations below the hearing range of salmonids would still be perceived and might elicit a startle response. Movement of heavy equipment is likely to create vibratory disturbances in general. Hawkins and Johnstone (1978) said that Atlantic salmon were sensitive to sounds transmitted through substrate in a river environment. Vibration could cause any fish in the area to move away from the construction zone. The Snohomish river channels provide similar habitat in nearby locations for any fish that vacate the project area. Vibrational disturbance during construction will be minimized by working from the top of the bank, avoiding in-water excavation, and placing rock individually or in small bucket loads (no end-dumping into the river).

Placement of rock may lead to elevated temporary and localized turbidity levels surrounding the construction. Salmonids exhibit physiological and behavioral responses to suspended sediments (Newcombe and MacDonald 1991). Physiological effects can include gill trauma (Servizi and Martens 1987; Noggle 1978; Redding et al. 1987), and effects on osmoregulation, blood chemistry (Redding et al. 1987), growth, and reproduction. Behavioral responses include feeding disruption from olfactory and visual impairment (Kim et al. 1986, cited in Sigler 1988); gill flaring; and curtailment of territorial defense (Berg and Northcote 1985). Conversely, some protection against predation may be afforded salmonids in areas of suspended sediment (Gregory 1988). Suspension of sediments can increase biochemical oxygen demand, and reduce dissolved oxygen levels in the water. Turbidity would be controlled during construction by working during a period of low summer flows, avoiding in-water excavation, placing rock individually or in small bucket loads (no end-dumping into the river), working from the top of the bank, and use of clean rock with minimal fines.

There is little riparian habitat both directly upstream and downstream of the work site. There is a single mature tree within the project site, which will be removed as a result of the project repair. Riparian trees, particularly the larger trees, contribute to shading the river. Loss of herbaceous plants and shrubs

would also have a short term impact on nutrient input (plant material and insect fall) and quality of refuge habitat for fish when flooding inundates the existing bench. The water quality function would be reduced slightly following construction while the vegetation regrows. The willow lift plantings and native grass reseeding would replace vegetation that must be removed for construction and would reduce the time lag before planted vegetation restores the habitat function of the project area. It should be noted that directly across the river, including the islands, and upstream towards Lord Hill Regional Park there are areas of functioning riparian habitat.

Planted riparian vegetation, with time and maturity, is expected to provide shade to the channel and cover the riprap slopes. Overcompensating the number of plantings (340 willow lifts) during the initial planting over the length of 170 feet, and aiming for at least a 50% survivability rate of these plantings during the first year would more than fully replace the level of shading provided by the alder throughout the project reach, as well as address the temporal lag until full functional establishment of the willows. The willow lifts would provide organic input through leaf drop to nurture the base of the food web, and serve as a source of terrestrial insects for forage for juvenile fish. The placement of the downed alder should slow the river current near the levee toe and provide refuge for juvenile fish.

Potential impacts of the proposed project to threatened and endangered species are addressed in a separate Biological Assessment (BA). The BA provides the Corp's rationale for the effect determinations briefly described in the following. The Corps has determined that the proposed project is **not likely to adversely affect** Coastal/Puget Sound bull trout, Puget Sound Chinook, and Puget Sound Steelhead, or their designated critical habitat. This determination is based upon the elimination of direct impacts that would result from scheduling the work during the summer work window, the minor impacts to vegetation, the inclusion of a willow lift near ordinary high water, covering the armored area above ordinary high water with topsoil and reseeding with native grasses, and the limited in-water work.

3.4 Cultural Resources

The Corps has coordinated its environmental review of impacts on cultural resources for NEPA with its responsibilities to take into account effects on historic properties[1] as required by Section 106 of the National Historic Preservation Act (NHPA). The Corps has determined and documented the area of potential effect (APE) for both direct and indirect effects, as required at 36 C.F.R § 800.4 of the regulations implementing Section 106. The APE includes the length of the levee repair and all staging and access areas, totaling 25 acres. The Washington State Historic Preservation Officer (SHPO) agreed with our determination of the APE on 14 May 2018.

The Corps has conducted a records search and literature review of the Washington Information System Architectural and Archaeological Records Database (WISAARD). The literature review and records search revealed that there have been no cultural resource investigations within the vicinity of the project APE. There are no properties listed in the National Register of Historic Places (NRHP) or the Washington State Historic Site Register in the project vicinity, and no cultural resources have been recorded within the APE. A portion of the Lord Hill Levee was previously recorded by the Corps in 2015 and found not eligible for listing on the NRHP. We have also notified the Sauk-Suiattle Indian Tribe, Swinomish Indian Tribal Community, Stillaguamish Tribe of Indians, Tulalip Tribes, and Yakama Nation

[1] *Historic properties* are those cultural resources that are eligible for inclusion or listed on the National Register of Historic Places.

about the project to identify properties to which they may attach religious or cultural significance or other concerns with historic properties that may be affected. The Tribes did not comment on the undertaking.

3.4.1 Alternative 1 – No Action

The No-Action alternative would have no adverse impact on cultural resources, as there are no cultural resources within the project APE.

3.4.2 Alternative 2 – Repair-in-Kind

Alternative 2 would have no adverse incremental impact on cultural resources, as there are no cultural resources within the project APE.

3.5 Water Quality

The Snohomish River along the project area is listed on the Washington Department of Ecology's (WDOE) list of impaired waters because state standards for polychlorinated biphenyls (PCBs) and 2,3,7,8-TCDD (dioxin) have been exceeded (WDOE 2018). Water quality use designations for the Snohomish River from the Pilchuck River to the confluence with Skykomish and Snoqualmie Rivers are as a core summer salmonid habitat, primary contact recreation, and the water supply uses are domestic, industrial agricultural, stock, and wildlife habitat.

3.5.1 Alternative 1 – No Action

Under the No Action Alternative, continued erosion of the damaged area would be expected, especially during high water and flood events. This continued erosion would endanger the stability of the levee and continue to contribute to an increased level of turbidity with pulses of higher turbidity during high water and flood event. A breach of the levee could occur, causing flooding to the protected agricultural and residential properties. The flooding of homes, and agricultural buildings could cause contaminants such as gas, oil, sewage, pesticides, herbicides, etc. to enter the water.

3.5.2 Alternative 2 – Repair-in-Kind

Short-term impacts could result from the 2018 repairs to the levee. Construction-related turbidity (inputs of small particles of silt and clay that suspend in the water column) is regulated by the Clean Water Act and an increase in turbidity due to fill placement could occur during in-water work. Turbidity will be monitored during construction when in-water work is occurring. If turbidity readings were to approach or exceed state water quality standards, construction would pause and construction methods may be altered to ensure no further exceedances occur.

Removal of one tree and bank vegetation could have minor impacts to water quality including increased solar radiation, with potential impacts to water temperature. The proposed action would minimize tree removal by limiting the repair to the length necessary to restore a stable prism and include plantings to offset this impact. No long term impact to water temperature would be expected due to this action.

3.6 Air Quality, Greenhouse Gas Emissions, and Noise

The Clean Air Act requires EPA to set standards for air quality, regulating pollutants that are considered harmful. Areas of the country where air pollution levels persistently exceed the National Ambient Air Quality Standards (NAAQS) are designated as "non-attainment" areas. The EPA sets *de minimis* threshold levels for six common air pollutant: ozone, carbon monoxide, nitrogen dioxide, particulate matter (solid and liquid particles suspended in the air), sulfur dioxide, and lead. Areas that do not meet

the minimum threshold levels are designated non-attainment areas. Washington meets the NAAQS across the state but 12 communities are at risk of violating standards (Ecology 2018). The areas at risk are shown below in Figure 6. The location of the proposed project is in an attainment area.

The Clean Air Act also designates noise as a pollutant. Noise becomes a pollutant when it either interferes with normal activities such as sleeping, conversation, or disrupts or diminishes the quality of life. While noise is generated from a variety of sources, the largest source at the repair site is expected to be related to traffic and vehicle noises. Noise levels at the site are unknown, however, the project area is an agricultural area near a local road. Typical sources of sound in the project area are vehicle engine noises and farm machinery.

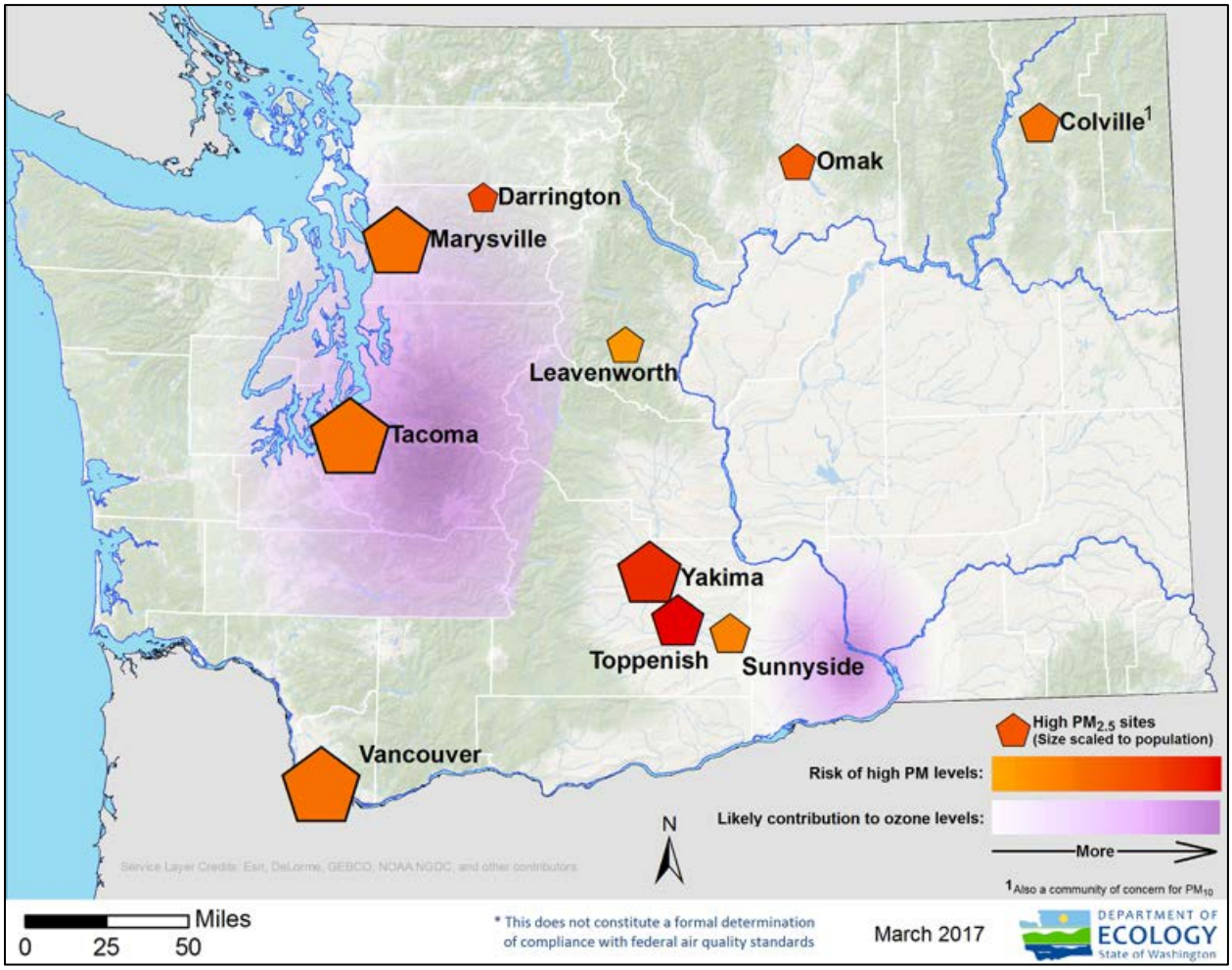

Figure 6. Areas of Washington at risk of not meeting air quality standards for particulate matter (pentagons) and ozone (purple shading)(Ecology 2018).

3.6.1 Alternative 1 – No Action

The No-Action Alternative would have no direct effect on air quality or noise. However, taking no action to repair the damaged levees may lead to emergency flood fight measures during flood events. While it is not possible to accurately predict the amount of emissions and noise generated for an unknown event and extent of damage, it is assumed that effects to air quality and noise would be similar to past repairs. This means that impacts to air quality would be temporary and clearly *de minimis* and would not require

a conformity determination under 40 CFR 93.153(c)(2)(iv). A temporary increase in noise during night hours could occur if flood fight activities require night work to address the situation. Effects to noise would also be temporary and consist of construction related sounds at variable intensity.

3.6.2 Alternative 2 – Repair-in-Kind

Emissions from construction activities such as material placement, compaction, and hauling are estimated using emission factors from the Off-Road model. This model contains emission factors for calculating emissions from construction equipment. The emission factors, type and number of equipment and the length of construction were used in calculating construction emissions for the repair. The results are shown in Table 2. Like past levee repairs, increases in emissions resulting from a levee repair would be clearly *de minimis* and would thus be exempted by 40 CFR Section 93.153(c)(2)(iv) from the conformity determination requirements. Unquantifiable but minor exacerbation of effects of carbon dioxide emissions on global climate change would be anticipated. In addition, equipment such as dump trucks and excavators would have mufflers and exhaust systems in accordance with state and federal standards.

Impacts to noise would be similar to that under a flood fight as described in the No Action Alternative. However, all construction would take place during daylight hours to avoid disturbing local residents and businesses. All noise impacts would be temporary.

Table 2. Estimated emissions for a levee setback repair.

	Emission Type					
	NO_2	**SO_x**	**CO**	**VOC**	**PM[1]**	**GHG[2]**
Construction Estimate	4.1	0.01	2.7	0.6	0.2	808.7
Threshold (metric tons/yr)	250	250	100	250	100	25,000[a]

[1]PM2.5 and PM10 are combined in this table. Each is regulated at 100 tons/year for emissions.
[2]Green House Gases (GHG) represents the sum of carbon dioxide and methane.
[a]CEQ benchmark of 25,000 metric tons total (Sutley 2010).
[b]Maintenance area *de minimis* threshold (EPA 2016).

3.7 Indian Treaty Rights

In addition to the Federal government's responsibilities under NHPA, the Federal government must consider the effects its actions may have on American Indian treaty rights. The Federal basis of a tribe's legal status rests within the context of U.S. Constitutional provisions for Federal government's powers for treaty making with other sovereign nations, and American Indian tribes' inherent sovereignty. One of the treaty-reserved rights is the ability to conduct fishing activities at all Usual and Accustomed locations. Tribal fisheries are central to the cultural and economic existence of the Tribes and their members.

The project site is within the Usual and Accustomed areas for several tribes.

3.7.1 Alternative 1 – No Action

The No Action Alternative would allow natural river bank processes to occur through erosion and sedimentation along the levee. There would be no change to the tribes' ability to conduct fishing activities.

3.7.2 Alternative 2 – Repair-in-Kind

This alternative would return the site back to its pre-existing habitat conditions. There would be no change to the tribes' ability to conduct fishing activities.

3.8 Traffic, Utilities, and Public Services

No utilities such as electricity, phone, and water are known within the levee footprints. However, utilities are known to exist behind the Lord Hill levee and service residential, infrastructure, and agriculture nearby. The levee protects over 4 square miles of rural agricultural and residential properties as well as public infrastructure. Prior to the damage, the levee system provided a 10-year level of protection. In the damaged condition, the levee provides an estimated 1 year level of protection.

3.8.1 Alternative 1 – No Action

No impacts to traffic, utilities, and public services, would occur under this alternative unless a flooding event requires flood fight action or causes a levee breach. During flood fight actions, vehicles and equipment associated with the action could disrupt and increase local traffic. However, emergency actions preserve the integrity of the levee, which provides flood risk reduction. Increases in traffic would be localized and of short duration, with no long-term impacts. No utilities would likely be disturbed during the emergency repairs and no recreational use exists at the site that could potentially be impacted. If utilities were disturbed during repairs they would be replaced. If emergency action is not implemented in time or are not sufficient, a breach in the levee could cause significant impacts to these resources, such as road closures or power outages.

3.8.2 Alternative 2 – Repair-in-Kind

No utilities are known to occur within the existing levee footprint, which could be affected by the Repair In-Kind alternative. This alternative would fully restore the level of flood protection. Construction-related traffic may cause temporary increases to, and disruption of, local traffic. No long-term change in traffic would occur as a result of the project. A utility locate would be implemented to ensure avoidance, and if it is discovered that utilities are disturbed or destroyed, they would be avoided or replaced. No public services other than minor traffic impacts would likely result from this repair.

3.9 Land Use and Recreation

The area near the proposed project site is primarily agriculture with associated residential buildings. Additionally, the project area is private property and is thus not open to the public for recreational purposes.

3.9.1 Alternative 1 – No Action

Taking no action to prevent continuing erosion could lead to a possible breach of the levee. This would lead to significant impacts to protected agricultural properties, local roadways, and private residences.

3.9.2 Alternative 2 – Repair-in-Kind

The protected area behind the levee includes several residential homes and actively managed agricultural fields and orchards. The proposed action restores the flood protection level provided by the levee prior to the damaging flood. No change to land use is expected from the implementation of the proposed action.

4 Best Management Practices and Conservation Measures

4.1 Best Management Practices (BMPs)

Below are BMPs that would be incorporated into the action. Some would be integrated into the repair, while others would be guides to operation and care of equipment.

- In water work would be limited to the in-water work summer window (1 July – 31 August).
- Work would be completed during a period of low flow.
- Equipment that would be used near or in the water would be cleaned prior to construction.
- Fueling would occur on the back side of the levee.
- Biodegradable hydraulic fluids would be used as appropriate in any portion of the equipment that would work in the water.
- Drive trains of the equipment would not operate in the water.
- Construction equipment would be regularly checked for vehicle-fluid drips or leaks. Any leaks and drips would be cleaned up and fixed promptly, or the equipment would be removed from the project site.
- All construction materials would be contamination-free, such as oils and excessive sediment.
- Rocks would only be placed within the project footprint, from the toe and up the levee slope. All placement would be done individually along the riverward slope and toe, or in small controlled bucket loads if material is small.
- At least one fuel spill kit with absorbent pads would be onsite at all times and personnel would be properly trained in its use.
- Turbidity Controls:
    - Work would be conducted at low tide and low-flow conditions to the extent practicable and no digging would occur in the water.
    - In-water construction would occur within the fish window.
    - In order to minimize turbidity, all in-water work involves placement of materials on the river bed with no excavation allowed. The riprap toe (1/2 to 1 ton stones) would be slowly placed on to the river bed, using a bucket with thumb. The excavator would remain on land and only the bucket would enter the water.

- To prepare the levee bank above the water level for the placement of quarry spall and riprap, excavation or dirt-moving at the project site would occur during the summer low flow level, at low tide, and in the dry.
- Monitoring of turbidity levels upstream and downstream of the project site during construction would occur. If turbidity is exceeded, the Corps would follow protocols as outlined within its water quality monitoring plan (Appendix G) to stop or reduce turbidity. Sediment generating activities would be halted until standards are met and construction methods changed to avoid future exceedances, if possible. See Appendix A for more details. Results of turbidity monitoring would be recorded and provided to a Corps biologist once in-water work is completed.

- Vegetation removal would be limited to the repair site.
- Removed woody vegetation (including the rootwad) would placed along the completed toe of the repair area to provide habitat function to the aquatic environment.
- Live willow stakes would be planted in two rows near ordinary high water as indicated within the design drawings. The Corps will monitor the willow plantings during the spring (February-May, depending on weather and leafout) following the original planting, and in the summer (August), before the Corps turns over the completed repair to the local sponsor. If less than 50% of the 340 planted willows survive during the first year, the Corps would plant additional willow stakes to adaptively manage and meet the 50% survival rate for the 340 willow stakes planted on the repair site for a year.
- At least one Corps biologist and geotechnical engineer would be available via phone during construction. Corps biologist may visit the construction site and provide periodic updates to the Services on construction including an onsite visit with staff. The geotechnical engineer may also visit the construction site.

4.2 Conservation Measures

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further assist the purpose of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. The Corps has developed conservation measures and incorporated these into the levee repair to reduce environmental impacts of the repair to ESA-listed species. Some of these measures have been discussed above (retaining existing riparian vegetation, woody debris placement). This list may need to be amended during consultation with the services. For this project the measures would be:

- Placement of a large wood debris item along the completed levee toe (discussed in 3.3),
- Hydroseeding (discussed in 3.3),
- Follow-up post-construction review of conservation measures, and
- Willow plantings.

The repair site would be examined after the repair is completed. If conservation measures and repairs are different than described here or what is depicted in the plans, they would be recorded and described. This would be provided to the Services.

The Corps imposes rigorous safety considerations on levees, one aspect of which is restricting vegetation growth on levees within 15 feet of the levee toe (as determined by the elevation of the landward grade). Maintaining these safety measures is generally the responsibility of the levee system owner, but in conducting repairs under PL 84-99 the Corps would adhere to its vegetation standards. The Corps integrates vegetation in light of impacts to ESA listed species, but must consider levee structural integrity, as well as accessibility and inspectability. For the proposed repair the Corps would integrate two willow lifts (stakes placed within a continuous band of soil) along the length of the repair which would be placed every foot for an estimated total number of 340 willow stakes. Willow plantings would consist of willow stakes approximately 4 feet in length. All plantings would be integrated horizontally for constructability and levee integrity. The Corps would place willow stakes approximately one foot above and one foot below ordinary high water while using preexisting conditions and upstream and downstream vegetation as a guide. Additionally, the empty voids between riprap would be filled with embankment material and spall rock where plantings are placed. This would help retain the soil matrix within the planting zone so that it wouldn't settle into the crevices where it could not be accessed by the willow plantings and reduce soil loss during high flows. The Corps will monitor the willow plantings during the spring (February-May), depending on weather and leafout) following the original planting, and in the summer (August), before the Corps turns over the completed repair project to the local sponsor. If less than 50% of the 340 planted willows survive during the first year, the Corps will adaptively manage and plant additional willows to meet a 50% survival rate for willows on the repair site for a year.

5 Unavoidable Adverse Effects

Unavoidable adverse effects associated with the Repair-in-Kind Alternative would be: (1) temporary and localized increases in noise, activity, and emissions which may affect fish and wildlife in the area; (2) temporary and localized disruption of local traffic by construction activity and vehicles; (3) irretrievable commitment of fuels and other materials for repairs; (4) a temporary and localized increase in turbidity levels during in-water construction which may affect aquatic organisms in the area; (5) removal of vegetation from within the proposed construction areas; and (6) potential impacts to listed species and their critical habitat.

6 Cumulative Effect Analysis

Cumulative effects include effects resulting from past, present, and future federal, state, tribal, local or private actions that are reasonably foreseeable to occur in the project area. Past repairs have been performed on the Lord Hill levee. The most recent repairs, in 2014 and 2016 were at the confluence of the Snohomish and Pilchuck Rivers. Additionally, about 2,000 feet upstream of the mouth of the Pilchuck River, the Corps conducted an emergency flood fight construction to place a berm on the landside of the levee near during a flood event in November 2015.

The Snoqualmie/Skykomish/Snohomish River Basin, which includes the project site, has been substantially modified in the last 150 years due to development for agriculture, residential areas, infrastructure, and commercial areas. Several dams are present on tributaries to the Skykomish River upstream of the project area in the Cascade foothills. A network of levees occurs in the lower river basin has occurs downstream of from Gold Bar (on the Skykomish River) and Fall City (on the Snoqualmie River) to the confluence of the Snohomish River with Puget Sound at Everett. The levees

have confined the river, impacted water quality, and altered flows. Riparian habitat has been lost, side channel and other floodplain features, including intertidal marshes in the lower river delta, have been cut-off and salmonid populations have steeply declined from estimated historic levels. When examined basin wide, the levee repair addressed in this EA would be one of many actions that serve to maintain the status quo, not expanding or adding to the existing levee systems and other water control measures in the basin.

As the local non-Federal sponsor, the French Slough Flood Control District continues to maintain the Lord Hill levee and conducts periodic repairs and vegetation maintenance. These actions by the local sponsor maintain the status quo. Maintenance on this and other levees in the system will continue into the foreseeable future. Future flooding in the basin is likely to damage Federal and non-Federal structures. Non-Federal entities would likely undertake at least some repair actions under those circumstances and may seek Federal assistance with repairs or emergency responses. It is possible that additional damage sites may be discovered in the future by local sponsors who could request Federal assistance from the Corps. If the Corps determines that the damages are eligible for assistance under the Public Law 84-99 Levee Rehabilitation Program then additional repairs may take place.

No other future projects within this reach are known. Future projects of larger scope in the basin are likely to include aspects of, or be driven by habitat mitigation and enhancement features, with most of the recent and foreseeable projects occurring 4 to 8 miles downstream and restoring large areas of estuarine marsh through levee setbacks. Examples include two levee setbacks on Smith Island along Union Slough (one completed in 2002 and the other planned to be completed this summer), the Qwuloolt ecosystem restoration project on Ebey Slough, the Spencer Island levee setback, and the Blue Heron conservation bank. Notwithstanding the completed and planned setback projects in the same vicinity, past and foreseeable PL84-99 levee repair projects in the basin include frequent projects on the non-federal levee surrounding Smith Island, as well as periodic projects to repair flood damages to eligible levees on the Snoqualmie River near the towns of Snoqualmie and Fall City.

Repair of the Lord Hill levee, as addressed in this EA, would maintain but not appreciably add an increment of ecological losses in the active floodplain while not substantively detracting from the overall ecosystem restoration efforts in the basin. The preferred alternative is not anticipated to generate an incremental adverse effect on the quality of the human environment, when considered in conjunction with other past and present actions, and future proposals.

7 Environmental Compliance

This EA is being prepared pursuant to Sec. 102(C) of the NEPA, and includes compliance with other laws, regulations and Executive Orders as discussed below.

7.1 National Environmental Policy Act

NEPA (42 U.S.C. 4321 et seq.) requires that Federal agencies consider the environmental effects of their actions. It requires that an EIS be included in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment. The EIS must provide detailed information regarding the proposed action and alternatives, the environmental effects of the alternatives, appropriate mitigation measures, and any adverse environmental effects that cannot be avoided if the proposal is implemented. Agencies are required to demonstrate that decision makers have considered these factors prior to undertaking actions. Major

Federal actions determined not to have a significant adverse effect on the quality of the human environment may be evaluated through an EA.

Through a combination of Corps project priority determination and funding timelines, it was not feasible for the Corps to complete all NEPA procedures prior to accomplishing the Federal action, which is signing the Cooperative Agreement (CA) with the French Slough Flood Control District in Snohomish County. The CA for the Lord Hill Levee needed to be signed by 1 May 2018 in order to provide time for preparation for and execution of construction prior to commencement of the ensuing flood season, and within agreed upon fish windows to reduce impacts to ESA listed species.

Due to the fact NEPA compliance had not been complete at the time of execution of the CA, the Corps complied with NEPA to the fullest extent possible (Section 102). The Corps' NEPA regulation regarding "emergency actions" does allow for completion of NEPA documentation after the fact in emergency situations. Emergency actions are discussed in 33 CFR 230.8 as follows:

> "Section 230.8 - Emergency actions. In responding to emergency situations to prevent or reduce imminent risk of life, health, property, or severe economic losses, district commanders may proceed without the specific documentation and procedural requirements of other sections of this regulation. District commanders shall consider the probable environmental consequences in determining appropriate emergency actions and when requesting approval to proceed on emergency actions, will describe proposed NEPA documentation or reasons for exclusion from documentation. NEPA documentation should be accomplished prior to initiation of emergency work if time constraints render this practicable. Such documentation may be accomplished after the completion of emergency work, if appropriate. Emergency actions include Flood Control and Coastal Emergencies Activities pursuant to Public Law 84-99, as amended, and projects constructed under sections 3 of the [Rivers and Harbors] Act of 1945 or 14 of the Flood Control Act of 1946 of the Continuing Authorities Program. When possible, emergency actions considered major in scope with potentially significant environmental impacts shall be referred through the division commanders to HQUSACE (CECW-RE) for consultation with CEQ about NEPA arrangements."

In addition to these levee repairs, the Seattle District had been working on design and coordination for 9 other levees for construction in summer 2018 and at least 9 others in 2019. This effort strained the available Seattle District staff resources, as well as the resources of the coordinating agencies, slowing progress on evaluation and coordination of each individual project, including the Lord Hill levee repair. It was impossible for the Corps to complete all the following NEPA procedures (prior to the date on which the Federal action of signing the CA was necessary): complete and finalize the EA; determine whether a FONSI was appropriate or an EIS must be prepared; and execute and promulgate a FONSI, if deemed warranted. Therefore, the agency complied with NEPA "to the fullest extent possible" under the circumstances.

In accordance with NEPA, Federal projects are required to disclose potential environmental impacts and solicit public comment. A Notice of Preparation for the Lord Hill Levee Repair was published on 3 May 2018 with a 30-day comment period. The submission deadline for comments to be considered was 4 June 2018. Comments were received from the Tulalip Tribes and their comments are addressed in Appendix E. See Section 8 for additional public involvement information.

This EA has been prepared pursuant to NEPA Sec. 102(C). Effects on the quality of the human environment as a result of the proposed projects are anticipated to be less than significant. The EA has incorporated any necessary and applicable modifications to the scope and/or nature of the project, any effects to the human environment resulting from these modifications, the procedures and practices used to implement the project, and/or the type and extent of compensatory mitigation associated with the project. Accompanying this EA is a FONSI.

7.2 Endangered Species Act

The ESA (16 U.S.C. 1531-1544), amended in 1988, establishes a national program for the conservation of threatened and endangered species of fish, wildlife, and plants and the habitat upon which they depend. Section 7(a) of the ESA requires that Federal agencies consult with U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS), as appropriate, to ensure that proposed actions are not likely to jeopardize the continued existence of endangered or threatened species or to adversely modify or destroy designated critical habitats. The Corps submitted a Biological Assessment (BA) documenting the effects of the proposed repairs to listed species on 26 April 2018 to USFWS and NMFS to initiate consultation. On 8 May 2018, USFWS sent a request for additional information on the project. A response was provided to USFWS on 23 May 2018. On 18 May 2018 NMFS sent a letter of non-concurrence that the project is not likely to adversely affect Puget Sound Chinook salmon and Puget Sound steelhead and their critical habitats. NMFS recommended that the Corps request formal consultation and include information on how turbidity will be controlled during construction, a planting plan that includes how survival of the plants will be assured, and fish capture/avoidance methods. The Corps prepared a response and requested formal consultation with NMFS on 14 June 2018. Consultation with USFWS and NMFS is ongoing. Further detail is provided in this EA to address these requests, including a commitment by the Corps to provide monitoring and adaptive management of the willow lifts to ensure a 50% survivability rate of the 340 willow lifts planted at the repair site during the first year, after which the Corps will return the levee repair project to the non-federal sponsor.

Due to the urgent nature of completing the emergency actions prior to the oncoming flood season, the Corps may proceed with construction prior to completion of the consultation with the Services pursuant to the “emergency circumstances” provisions of the ESA consultation regulation, and may complete ESA consultation after the fact rather than delaying the urgent work in order to complete ESA consultation before construction begins. The applicable regulation is set out at 50 CFR Section 402.05 (a) and (b) and provides as follows:

a) Where emergency circumstances mandate the need to consult in an expedited manner, consultation may be conducted informally through alternative procedures that the Director determines to be consistent with the requirements of section 7(a)-(d) of the Act. This provision applies to situations involving acts of God, disasters, casualties, national defense or security emergencies, etc.

b) Formal consultation shall be initiated as soon as practicable after the emergency is under control. The Federal agency shall submit information on the nature of the emergency actions(s), the justification for expedited consultation, and the impacts to endangered or threatened species and their habitats. The Service will evaluate such information and issue a biological opinion including the information and recommendations given during emergency consultation.

The proposed repairs are considered to constitute emergency circumstances under 50 CFR 402.05 because it is necessary to protect human life and property, which will be in imminent danger upon the commencement of the ensuing flood season if the project were not implemented.

Though consultation is not complete, the Corps has reached an agency determination of species/habitat effect, based on the best factual and technical information available at the time of decision, and following preliminary coordination with the Services. Section 3.3 summarizes the effect determinations made in the Biological Assessment for each of the species potentially occurring in the project vicinity. Key conservations measures intended to minimize impacts on listed species and habitat include the BMPs addressed in Section 4.1 and the conservation measures addressed in Section 4.2. In light of the conservation measures and best management practices that will be employed, the project is not reasonably expected to generate take of listed species by: (1) creating the likelihood of injury to listed species by significantly disrupting normal behavior patterns including breeding, feeding, or sheltering, or (2) significantly modifying or degrading habitat to the extent that individual members of species would be actually killed or injured by significantly impairing essential behavior patterns including breeding, feeding, or sheltering.

The Corps has concluded that the levee is a part of the baseline condition of the River in this reach and that the proposed action, with the best management practices/conservation measures and proposed compensatory mitigation, will have minimal impact on listed species. The Corps would commit to fully funding and performing all Reasonable and Prudent Alternatives necessary to avoid the likelihood of jeopardy to listed species or destruction or adverse modification of designated critical habitat, as well as RPMs necessary and appropriate to minimize the impact of Incidental Take, that are described if a Biological Opinion is received from the Services.

This EA will be reevaluated after consultation is complete. If necessary, the EA will be supplemented with necessary and applicable corresponding modifications to the scope and/or nature of the project, the procedures and practices used to implement the project, and/or the type and extent of compensatory mitigation associated with the project and the associated FONSI reassessed.

7.3 Magnuson-Stevens Fisheries Conservation and Management Act (MSA)

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996, requires all Federal agencies to consult with the NMFS on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (EFH). Section 3(10) of the MSA defines EFH as those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity. Though primarily focused on marine species, anadromous fishes like Pacific salmon have EFH that can occupy freshwater habitats critical to their life cycle. EFH for Chinook, coho and pink salmon occurs in the project area (NMFS 2018).

Effects of the proposed work on EFH would be essentially identical to those evaluated for critical habitat. Based on the critical habitat analysis, the Corps concludes that the proposed project *will not adversely affect EFH* for federally managed fisheries in Washington waters.

7.4 Clean Water Act

The Corps does not issue permits for its own Civil Works activities. Nevertheless, the Corps accepts responsibility for the compliance of its Civil Works project with Sections 401 and 404 of the Federal

Water Pollution Control Act. The project repair at the damaged area is a Repair-in-Kind to return to the pre-flood condition. While the project does not expand outside of the original constructed prism, the repair requires a deviation in the composition of the levee at the project location. This repair is analogous to a Nationwide Permit (NWP) 3, which authorizes the repair, rehabilitation, or replacement of any currently serviceable structure or fill, provided that the structure or fill is not to be put to a different use. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. The project is to repair an existing serviceable structure and to maintain the use (flood control) of that structure. The proposed repair would include a minor deviation in the levee composition to include armoring the riverward side with a 2-foot thick Class II layer of riprap with placement of a layer of soil on the surface to closely mimic pre-project conditions. The increased quantity of armor rock would address the scour potential within the project reach to meet current construction and safety codes. The re-constructed levee toe would be placed within the same footprint of the pre-flood toe. No change in the footprint would occur from the pre-damaged condition and no new structures would be added.

The Corps has reviewed the parameters of NWP 3 as guidance for analyzing project impacts. The Corps concluded that the Lord Hill Levee Rehabilitation project is functionally analogous to NWP 3. Furthermore, the Corps analyzed the project pursuant to the conditions attached to NWP 3 and concludes that the project satisfies the conditions and qualifies for the State's general certification for Section 401 of the Clean Water Act. A memorandum detailing the Corps' analysis was provided to WDOE for their review on 17 April 2018. A Letter of Verification from WDOE was received on 26 April 2018 concurring that the project meets the parameters of general Certification under NWP 3 and that general consistency with Section 401 is satisfied.

7.5 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972 as amended (16 U.S.C. §1451-1464) requires Federal agencies to conduct activities in a manner that is consistent to the maximum extent practicable with the enforceable policies of the approved State Coastal Zone Management Program. In evaluating compliance with CZMA, the Corps has determined that the proposed work is consistent to the maximum extent practicable with the enforceable policies of the approved Washington Coastal Management Program. The State has made a general determination that activities meeting the parameters of NWP 3 are consistent with the enforceable policies of the CZMA. A determination of consistency was provided to WDOE for their review on 17 April 2018 (see Appendix F). WDOE provided a Letter of Verification on 26 April 2018 which concurred that the project meets the requirements for state 401 certification under the conditions of NWP 3. The Corps provided a determination of consistency to Ecology for their review on 17 April 2018. Notwithstanding Ecology's letter regarding their verification of 401 certification under NWP 3, we have not received a Letter of Verification from Ecology specifically concurring that general consistency with CZMA is achieved. Ecology's concurrence that the project is consistent to the maximum extent practicable with the enforceable polices of the Washington State coastal zone management program is presumed in accordance with 33 CFR 336.1(b)(9)(iv) and 15 CFR 930.41(a).

7.6 National Historic Preservation Act

Section 106 of the NHPA requires that the effects of actions on sites, buildings, structures, or objects included or eligible for the National Register of Historic Places must be identified and evaluated. As

required under Section 106 of the NHPA, the Corps coordinated with the Washington State Department of Archeology and Historic Preservation (DAHP) and consulted with the Sauk-Suiattle Indian Tribe, Swinomish Indian Tribal Community, Stillaguamish Tribe of Indians, and Tulalip Tribes. The Tribes did not comment on the undertaking. On 8 June 2018, the Corps submitted a finding of No Historic Properties Affected to the Washington State Historic Preservation Officer. The SHPO agree with the Corps' findings in a letter dated, 25 June 2018. Documentation of the consultation can be found in Appendix C.

7.7 Clean Air Act

The Clean Air Act (CAA) requires states to develop plans, called State Implementation Plans (SIP), for eliminating or reducing the severity and number of violations of NAAQS while achieving expeditious attainment of the NAAQS. The Act also requires Federal actions to conform to the appropriate SIP. An action that conforms with a SIP is defined as an action that would not: (1) cause or contribute to any new violation of an standard in any area; (2) increase the frequency or severity of any existing violation of any standard in any area; or (3) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

The Corps has determine that the project constitutes routine facility repair generating an increase in emissions that is clearly *de minimis* (see Section 7.7), and thus a conformity determination is not required, pursuant to 40 CFR 93.153 (c)(2)(iv).

7.8 Executive Orders

7.8.1 Executive Order 11990, Protection of Wetlands

Executive Order 11990 encourages Federal agencies to take actions to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands when undertaking Federal activities and programs. No wetlands exist within the proposed construction areas. The proposed action is consistent with this order.

7.8.2 Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations

Executive Order 12898 requires Federal agencies to consider and address environmental justice by identifying and assessing whether agency actions may have disproportionately high and adverse human health or environmental effects on minority or low income populations. Disproportionately high and adverse effects are those effects that are predominately borne by minority and/or low income populations and are appreciably more severe or greater in magnitude than the effects on non-minority or non-low income populations.

The proposed action would not have a disproportionate adverse impact on low-income or minority populations since the preferred alternative would restore pre-existing levels of flood protection to the floodplain and is not expected to impact low-income or minority populations. Therefore, the proposed action complies with this order.

7.8.3 Executive Order 11988, Floodplain Management

Executive Order 11988 requires Federal agencies to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy of the floodplain, and to avoid direct and indirect support of floodplain development where there is a practicable alternative. In accomplishing this objective, "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to

minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by flood plains."

Under Engineering Regulation 500-1-1(Chapter 5 Section 3 Paragraph 5-13.f), the provisions of Executive Order 11988 are normally not applicable to the repair of flood control works to the pre-disaster condition, as the repair actions do not directly affect either the modification or occupancy of floodplains, and do not directly or indirectly impact floodplain development. The proposed project does not constitute a major rehabilitation project, require extensive engineering and design, or significantly change the project footprint and therefore is not required to be evaluated for its impact on the floodplain.

8 Public Involvement, Review, and Consultation

Public involvement activities and agency coordination are summarized below.

8.1 Public Involvement Process

Corps Planning Policy and NEPA emphasize public involvement in government actions affecting the environment by requiring the benefits and risks associated with the proposed actions are assessed and publicly disclosed. In accordance with NEPA public involvement requirements (40 C.F.R. § 1506.6) and Corps Planning Policy (ER 1105-2-100), opportunities were presented for the public to provide oral or written comments on potentially affected resources, environmental issues to be considered, and the agency's approach to the analysis. Efforts to involve the public included a notice of preparation and comment period. The Corps issued a Notice of Preparation (NOP) on 3 May 2018 for a 30-day comment period that ended on 4 June 2018. Comments and responses from the NOP are in Appendix F.

8.2 Tribal Government Consultation and Coordination Process

In accordance with Executive Order 13175 Consultation and Coordination with Indian Tribal Governments, the Corps identified affected tribes of the project area and provided information regarding the feasibility study, proposed Federal action, and opportunities for the tribes to provide information and comment on the project. Consultation began with a site visit to the project site to discuss the proposed project with all stakeholders.

The following list provides information regarding the Corps' efforts to coordinate with the tribes:

1. Tribal knowledge and concerns letter sent on 8 June 2018.

2. Section 106 of NHPA consultation (see 7.5 for specifics).

3. Notification letter to natural resources managers sent on 9 May 2018.

8.3 Agencies and Persons Consulted

The following agencies and entities have been involved with the environmental coordination of the proposed project:

- National Marine Fisheries Service (NMFS)
- U.S. Fish and Wildlife Service (USFWS)
- Washington Department of Ecology (WDOE)

- Washington State Historic Preservation Office (WA SHPO)
- Sauk-Suiattle Indian Tribe
- Snoqualmie Indian Tribe
- Stillaguamish Tribe
- Tulalip Tribes
- Yakama Nation

9 Public Interest Evaluation Factors for Section 404

An evaluation of the levee repair activity was conducted in light of the public interest factors prescribed in 33 CFR 336.1(c). These factors include: navigation and the Federal standard for dredged material disposal; water quality; coastal zone consistency; wetlands; endangered species; historic resources; scenic and recreation values; fish and wildlife; marine sanctuaries; and applicable state/regional/local land use classifications, determinations, and/or policies. Of these, water quality, coastal zone consistency, endangered species, historic resources, recreational values, and fish and wildlife have been evaluated in this EA. The factor of marine sanctuaries established under the Ocean Dumping Act would not applicable, as there are no sanctuary effects of the project. No additional impacts to state/regional/local land use classifications, determinations, and/or policies would be anticipated as the project provides flood control protection.

In accordance with 33 CFR 337.1(a)(14) and 325.3(c)(1), the following additional relevant factors were also considered:

- Conservation: This action entails a levee repair, which provides protection to over 4 square miles of rural agricultural and residential properties as well as public infrastructure. The effects on fish and wildlife, including listed species, have been fully evaluated.
- Economics: As reflected in this EA, construction activities associated with this project would not adversely affect the economy, including tourism and recreation.

As provided in 33 CFR sections 335.4, 336.1(c)(1) and 337.6, the Corps has fully considered, on an equal basis, all alternatives that are both reasonable and practicable, i.e., available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. The necessary budget resources are available and adequate to fully support the action. The preferred alternative represents the least costly alternative, constituting the discharge of dredged or fill material into waters of the United States in the least costly manner and at the least costly and most practicable location, is consistent with sound engineering practices, and meets the environmental standards established by the CWA Section 404(b)(1) evaluation process. Execution of the preferred alternative, following consideration of all applicable evaluation factors, would be in the public interest.

10 Summary

Based on the above analysis, this project is not a major Federal action significantly affecting the quality of the human environment, and therefore does not require preparation of an EIS.

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Photo 1. Lord Hill site looking downstream towards the damaged area.

Photo 2. Lord Hill site looking upstream from the damaged location.

US Army Corps
of Engineers
Seattle District

FY18 PL 84-99 LEVEE REHABILITATION
SNOHOMISH RIVER, SNO-02-18
LORD HILL LEVEE

SNOHOMISH WA

VICINITY MAP
NOT TO SCALE

INDEX OF DRAWINGS

SHEET NO.	PLATE NO.	DESCRIPTION
1	G-001	TITLE, AREA, AND INDEX
2	C-001	HAUL ROUTE AND ACCESS
3	C-101	SITE PLAN
4	C-301	TYPICAL SECTIONS

PN471020

SAFETY PAYS

IF SHEET MEASURES LESS THAN 22" X 34" IT IS A REDUCED PRINT. REDUCE SCALE ACCORDINGLY.

US Army Corps of Engineers, Seattle District

File No: E-6-7-48

Date: 26 MARCH 2018

Recommended by: Guy L. Green, P.E., Chief, Design Branch, 04/06/18

Approved by: Julian T. Wills, P.E., Chief, Engineering Division, 04/06/18

Submitted by: Daryl S. Downing, Project Manager, 04/06/18 Date

Reviewed by: Anil L. Wagarwal, P.E., Chief, Tech Review, 04/06/18 Date

U.S. ARMY CORPS OF ENGINEERS SEATTLE DISTRICT SEATTLE WASHINGTON

Prepared by: Jan West P.E., Chief Section, 04/06/18 Date

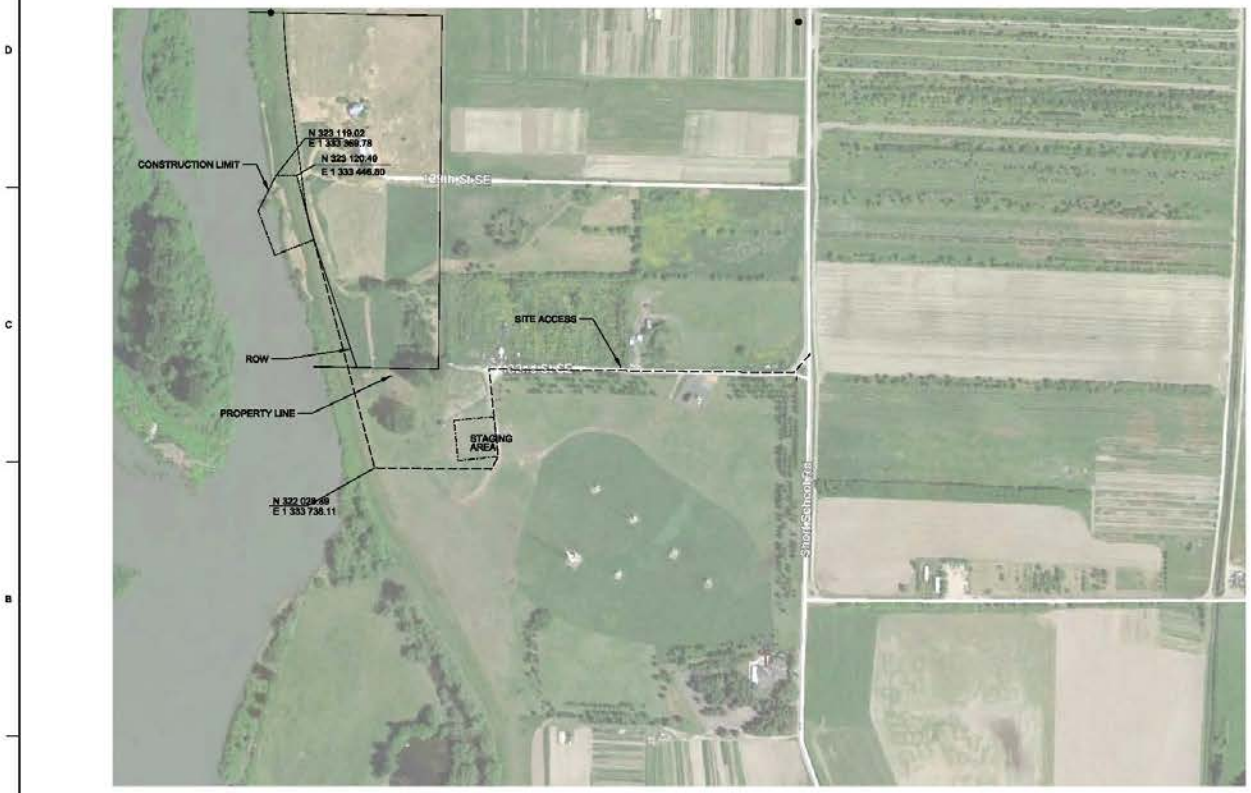
PL 84-99 LEVEE REHABILITATION SNOHOMISH RIVER, SNOHOMISH COUNTY, WA LORD HILL LEVEE, SNO-02-18

TITLE, AREA, AND INDEX

SHEET IDENTIFICATION G-001 SHEET 1 OF 4

DESIGN FILE: I:\MCX\Design\FY18_PL 471020_LORDHill\Civil_Dsn\CAD_Sheets\Sheets\FY18_PL 471020_LORD G-001(GRL).dgn

DATE AND TIME PLOTTED: 3/7/2018



NOTES:

1. HAUL ROUTE MAXIMUM GRADE IS 10%.
2. ACCESS AND EGRESS IS VIA SHORT SCHOOL ROAD AND 132ND ST. SE.
3. RESTORE ACCESS AFTER PROJECT COMPLETION.
4. IN-WATER WORK WINDOW IS 15 JUNE TO 31 AUGUST.

1 SITE ACCESS
SCALE: 1" = 200'

1" = 200' 0 200' 400'

LEGEND

- ACCESS ROUTE
- STAGING AREA
- WORK LIMIT

N

US Army Corps of Engineers
SEATTLE DISTRICT

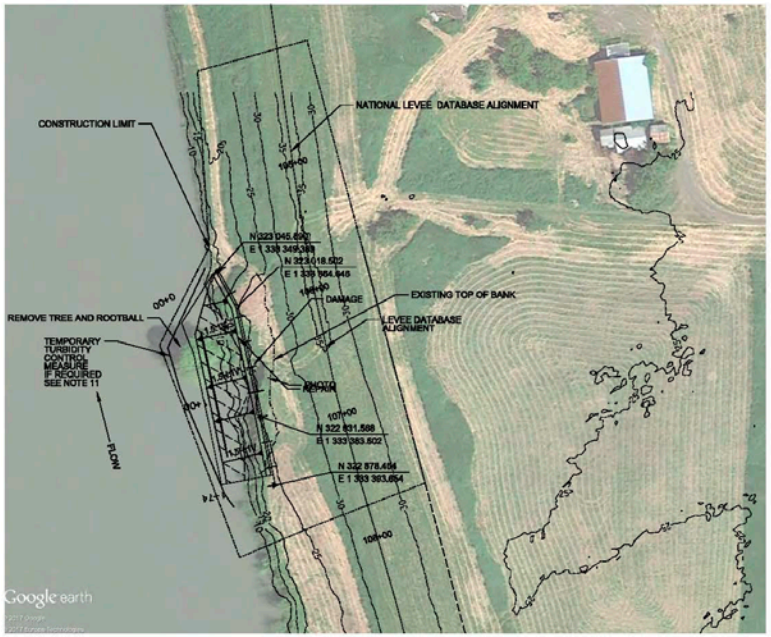
U.S. ARMY CORPS OF ENGINEERS
SEATTLE DISTRICT
SEATTLE, WASHINGTON

PL 84-99 PY 1 LEVEE REHABILITATION
SNOHOMISH RIVER, SNOHOMISH, WA
LOWER MILL LEVEE, SWD-QE-18

SITE ACCESS AND STAGING

SHEET IDENTIFICATION
C-001
SHEET 2 OF 4

DESIGN FILE: I:\A&E\Designs\FY18_P2-471020_LHEINCon_Doors\CAD_Sheets\Civil\FY18_P2-471020_LHSN-C-001.dgn



1 SITE PLAN
SCALE: 1" = 40'

1" = 40' 0 40' 80'

GENERAL NOTES

1. RESTORE ACCESS TO THE SITE AFTER PROJECT COMPLETION.
2. RUBBISH, DEBRIS, GARBAGE, AND OTHER REFUSE SHALL BE REMOVED FROM THE JOB SITE AND DISPOSED OF LEGALLY, OFF SITE.
3. ENSURE THE WORK CREW HAS ALL APPLICABLE SAFETY TRAINING PRIOR TO CONSTRUCTION.
4. ALL AREAS OF THE JOB SITE TEMPORARILY DISTURBED BY CONSTRUCTION SHALL BE GRADED TO THE PRE-CONSTRUCTION GRADE AND PROTECTED AND/OR REVEGETATED AS NECESSARY.
6. ALL MATERIALS USED FOR CONSTRUCTION SHALL BE NEW AND UNDAMAGED UNLESS OTHERWISE APPROVED BY USACE. THE SAME MANUFACTURER OF EACH ITEM SHALL BE USED THROUGHOUT THE WORK UNLESS OTHERWISE APPROVED BY USACE.
8. DO NOT FILL EXISTING DITCHES OR CHANNELS UNLESS OTHERWISE SHOWN ON PLANS.
7. HORIZONATAL COORDINATE SYSTEM IS WASHINGTON STATE PLANE NORTH ZONE NAD83, U.S. SURVEY FEET.
8. VERTICAL COOODINATE SYSTEM IS NAVD88.
9. TOPOGRAPHHY IS FROM 2015 PUGET SOUND LIDAR CONSORTIUM.
10. IN-WATER WORK WINDOW IS 15 JULY TO 31 AUGUST.
11. TEMPORARY TURBIDITY CONTROL MEASURES SUCH AS A FLOATING SILT CURTAIN OR PHYSICAL ISOLATION SUCH AS ROCK OR SUPER SACKS MAY BE REQUIRED DEPENDING ON ACTUAL SITE CONDITIONS. AT THE TIME OF A 2018-04-19 SITE VISIT THE POSITION OF THE FALLEN TREE AND EROSION HAD CHANGED SINCE 2018-01. THE SPRING RUNOFF HAS NOT YET OCCURRED SO SOME CHANGE IN SITE CONDITIONS ARE ANTICIPATED. THE POSITION OF THE FALLEN TREE HAS A LARGE EFFECT ON THE TYPE OF ISOLATION TO SELECT AND WORK SEQUENCING TO MINIMIZE TURBIDITY.

LEGEND

HATCHED AREAS BELOW RIVER LEVEL AT TIME OF IMAGE

N

US Army Corps of Engineers® SEATTLE DISTRICT

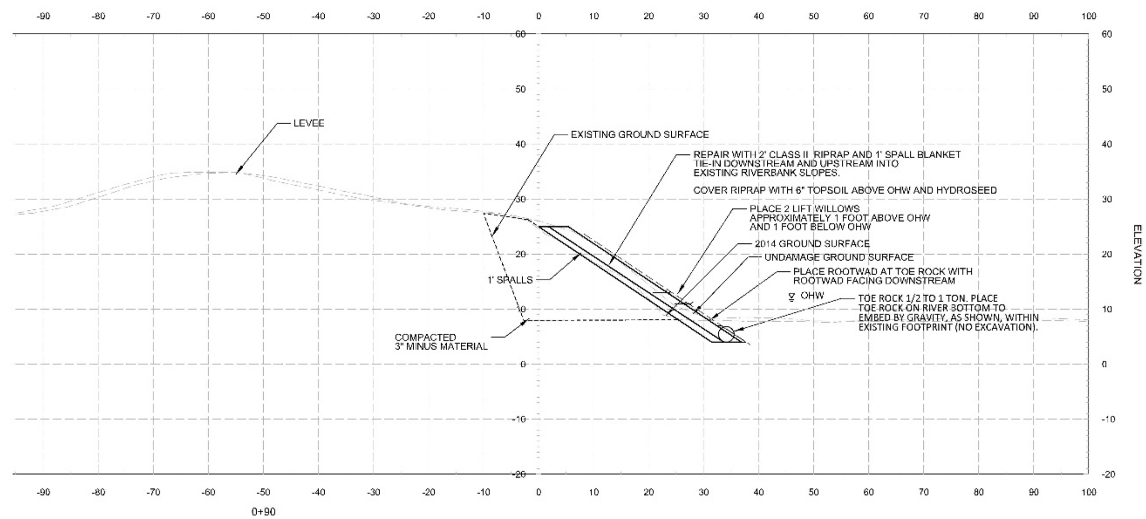
U.S. ARMY CORPS OF ENGINEERS SEATTLE DISTRICT SEATTLE, WASHINGTON

PL 84-99 FY 18 LEVEE REHABILITATION
SKAGIT COUNTY, WASHINGTON
LOWER HILL LEVEE, SWD-02-14

SITE PLAN

SHEET IDENTIFICATION
C-101

DESIGN FILE: I:\A&ECDesigns\FY18_P2-471320_LHSNICon_Desel\CAD_Sheets\CH\FY18_P2-471020_LHSN-C-101.dgn



A TYPICAL SECTION

SCALE: 1" = 10'

NOTES:

TWO LIFTS OF WILLOW STAKES, APPROXIMATELY 1 FOOT BELOW OHW AND 1 FOOT ABOVE OHW. SITKA WILLOW AND/OR HOOKER'S WILLOW LIVE STAKES WILL BE PLACED EVERY 12-INCHES. WILLOWS SHALL BE 3 TO 4 FOOT LONG STAKES EMBEDDED INTO A 6-INCH LAYER OF SOIL.

TABLE 1. CLASS II RIPRAP GRADATION

100% SMALLER THAN	500# (18")
50% SIZE	200# (13")
90% LARGER THAN	100# (12")
10%	25-100# (6-10")
TOLERANCE +6"	

TABLE 2. 2-IN TO 4-IN QUARRY SPALL ROCK
(ALL PERCENTAGES ARE BY WEIGHT)

SIEVE SIZE	PERCENT PASSING
4"	100
2"	0
TOLERANCE -1"	

TABLE 3. 2-IN MINUS FILL
(ALL PERCENTAGES ARE BY WEIGHT)

SIEVE SIZE	PERCENT PASSING
3"	100
2"	90
PASSING #200	LESS THAN 20%

TABLE 4. EARTHWORK QUANTITIES, CY

395	CLASS II RIPRAP 2' THICK
27	1 TON TOE ROCK
230	QUARRY SPALL BEDDING
13.200 SF	HYDROSEED SF
495	3-INCH MINUS EMBANKMENT FILL
540	CUT
425	QUARRY SPALL ROAD IMPROVMENT
2,350	CSBC

US Army Corps of Engineers
SEATTLE DISTRICT

DESIGNED BY: GK | DWN BY: GK | CKD BY: TF | SUBMITTED BY: DOWNING | PLOT DATE: 04/29/2019 | PLOT TIME: 10:58:14 AM | DATE: 6 APRIL 2019 | SOLICITATION NO.: | CONTRACT NO.: | FILE NUMBER: F-8-8-NNN | FILE NAME: FY18_P2-471020_LHSN-C-301.dgn | SIZE:

U.S. ARMY CORPS OF ENGINEERS
SEATTLE DISTRICT
SEATTLE, WASHINGTON

PL 84-99 FY 18 LEVEE REHABILITATION
SNOHOMISH RIVER, SNOHOMISH, WA
LORD HILL LEVEE, SNO-02-18

SECTION

SHEET IDENTIFICATION
C-301
SHEET 1 OF 4

DESIGN FILE: I:\AECDesigns\FY18_P2-471020_LHSN\Con_Docs\CAD_Sheets\Civil\FY18_P2-471020_LHSN-C-301.dgn

Clean Water Act Section 404 (b)(1) Analysis

Lord Hill Levee Repair

Rehabilitation of Flood Control Works
Snohomish River, Snohomish County, Washington

Substantive Compliance for
Clean Water Act Section 404(b)(1) Evaluation

1. **Introduction**. The purpose of this document is to record the U.S. Army Corps of Engineers (Corps) compliance evaluation of the repair of the Lord Hill Levee on the Snohomish River, Snohomish County, Washington, pursuant to the Section 404 of the Clean Water Act (CWA), the Rivers and Harbors Act (RHA), and the General Regulatory Policies of USACE. Specifically, this document addresses substantive compliance issues, including where Clean Water Act 404(b)(1) Guidelines require an evaluation of impacts for work involving discharge of fill material into the waters of the U.S. [40 CFR §230.12(a)]; and the USACE General Regulatory Policies [33 CFR §320.4(a)], which is used as a reference, that provides measures for evaluating permit applications for activities undertaken in navigable waters.

The main body of this document summarizes the information presented with Attachment A and includes relevant information from the Environmental Assessment for the project that was collected pursuant to the National Environmental Policy Act (NEPA) of 1969 [42 USC §4321 et seq.]. Attachment A provides the Corps' specific analysis of compliance with the CWA 404(b)(1) and the Public Interest factors (33 CFR §320.4(a), used as a reference) requirements.

2. **Project Description**. The Lord Hill levee system was constructed to provide a 10-year level of protection (LOP) to over 4 square miles of rural agricultural and residential properties as well as public infrastructure. The original levee construction is approximately 5 to 12 feet high on the landward side and is, depending on the location on the levee, comprised of levee embankment material with riprap on the riverward slope or comprised entirely of levee embankment material (e.g., river soils). The landward and riverward slopes are covered with sod. On 23 November 2017, high flows on the Snohomish River resulted in scour of the levee slope and toe, including the loss of some embankment material of the Lord Hill levee near Station 107+00. At Station 107+00, the levee appears to be comprised entirely of levee embankment material (e.g., river soils). The flood event caused damage along a 50-foot section of the levee, which includes a red alder tree that is captured within the slumped material of the levee. In the current damaged condition, the levee provides an estimated 1-year LOP.

The repair-in-kind alternative (Alternative 2) would restore the damaged 50-foot section of the levee to pre-flood LOP and will tie-in upstream and downstream to match existing slopes and comparable material types used along the levee. The damaged section is 50 feet long and the total length of the repair is approximately 170 feet in order to tie the repair into the existing levee profile (Figures 2 and 3).

The site limits would be clearly marked using stakes and flagging. A haul road would be along a combination of existing gravel roads, unimproved dirt roads, and across farm fields (Figure 2). Very little to no material placement is anticipated to be completed along this route. If required, some spall and gravel improvement along the haul way may be necessary depending on site conditions at the proposed time of construction. Storage and staging would occur at a location landward of the levee crown as depicted on the design plan. Staging activities would consist of temporary stockpiling of excess rock, supplies, equipment and vehicles.

Repair of the riverward slope is intended to match the upstream/downstream sections of the levee. The Repair-in-Kind alternative would re-establish the levee to the pre-flood level of protection. Deconstruction would include the removal of the damaged alder and grading of the riverward bank above the water line. Work would be sequenced to minimize turbidity and follow all Best Management Practices (BMPs) listed in 4.1 below. If found on site, any existing satisfactory rock will be reused. The riverward riprap toe (1/2 to 1 ton stones) will be placed onto the channel bottom and allowed to embed into the substrate by gravity (Figure 4). No excavation or grading would occur in the water. Only the excavator bucket would enter the water. All rock would be placed with an excavator bucket with thumb. A 1 foot thick bedding layer of 2 to 4-inch quarry spalls would be overlain by a 2 foot thick blanket of Class II (25 to 500 pounds) riprap along the riverward slope to provide erosion protection. The slope rock would be constructed to a finished 1.5H:1V slope.

Additionally, the tree captured within the slumped material (Figure 5) would be placed unanchored on the toe rock with the root ball pointing downstream. The landward and riverward sides of the levee would have a 6-inch cover of topsoil placed above OHW and then seeded with native grasses. Two willow lifts would be planted along the repair area on riverward side of the levee (Figure 4). One willow lift would be approximately 1 foot below the ordinary high water mark and the second lift approximately 1 foot above the ordinary high water mark. The approximate total number of live willow stakes is estimated at 340. A fifty percent survival rate of the plantings over the length of the 170 foot repair site at the end of the first year would more than replace the lost cover from the red alder and other ground cover vegetation that would be removed or covered during construction, as well as address the temporal lag until the willows are established. Additionally, soil would be placed over the armoring above ordinary high water. This will be seeded with native grasses to minimize the exposed rock along the water and restore the herbaceous covering in the reach.

3. **Project Purpose and Need**. The purpose of the Lord Hill Levee Rehabilitation Project (project) is to restore the level of flood protection existing prior to the November 2017 flood event in order to protect lives and property from subsequent flooding. Prior to the flood damage, the levee system provided 10-year level of protection to over 4 square miles of rural agricultural and residential properties as well as public infrastructure. The need for this project was generated by the damage of irregularly occurring severity that was caused by the November 2017 flood event. Per Public Law 84-99, the Corps is authorized to repair damaged flood control works to the pre-flood level of protection.

4. **Availability of Environmentally Acceptable Practicable Alternatives to Meet the Project Purpose**. The alternatives evaluated for this project were as follows;

> a. *Alternative 1 – No Action*. The No-Action Alternative would leave the levee in its current damaged state. This alternative would not meet the project purpose and need due to the high likelihood of damage to protected infrastructure and homes during future flood events. It is

nevertheless carried forward to serve as a benchmark for purposes of further evaluation of the effects of the alternatives.

b. *Alternative 2 – Repair in Kind*. This alternative would restore the damaged levee section to a condition similar to existing undamaged sections in the vicinity and would tie-in upstream and downstream to match existing slopes and material types.

c. *Alternative 3 – Levee Setback*. This alternative would shift the alignment of the levee embankment landward by a yet-to-be-determined distance in order to avoid or minimize direct contact with the river current. Typically, the setback would be a newly-constructed earth embankment structure and would abandon the existing levee located on the river bank. It may not be able to be completed prior to the next flood season and may be more costly than other alternatives due to more extensive embankment material requirements. This approach would encroach on existing structures (private residences) and privately-owned land currently used for residential and agricultural purposes. All real estate needs, including interests in the setback footprint, must be provided by the levee system owner. If real estate is not available to be acquired in the setback alignment then this alternative would not be possible. Under some circumstances the non-Federal interest must incur the incremental cost of constructing a levee setback, in which case the setback alternative cannot be pursued without the affirmative participation of that non-Federal interest. The Corps does not have authority to pursue a setback alternative in the absence of participation by the non-Federal interest.

d. *Alternative 4 – Non-Structural Alternative*. This alternative consists of floodplain management strategies generally involving changes in land use offered by other federal and state programs. Such strategies would include: zoning, easements, flood warning, floodplain evacuation, and flood insurance. Nonstructural strategies involve acquisition, relocation, elevation, and flood proofing existing structures. This alternative would relocate all existing structures, utilities and other infrastructure outside of the floodplain. The costs associated with this alternative are extremely high relative to the level of benefit. The levee system owner has been informed of their option to pursue this alternative but has chosen not to. The Corps does not have authority to pursue a non-structural alternative in the absence of participation by the non-Federal interest. Therefore, this alternative has been eliminated from detailed consideration.

Findings: The Corps rejected Alternative 1 because it would not meet the project purpose and need due to the high likelihood of damage to protected infrastructure and homes during future flood events. Alternative 3 was rejected because the Corps does not have authority to pursue a setback alternative in the absence of participation by the non-Federal interest. The Corps rejected Alternative 4 because the Corps does not have authority to pursue a non-structural alternative in the absence of participation by the non-Federal interest. Alternative 2 would restore the damaged levee section to a condition similar to existing undamaged sections in the vicinity and would tie-in upstream and downstream to match existing slopes and material types. Alternative 2 was selected as the preferred alternative because, of the practicable alternatives, it would meet the project purpose and need and is authorized.

5. **Significant Degradation, either Individually or Cumulatively, of the Aquatic Environment**

a. *Effects on Physical, Chemical, or Biological Characteristics of the Aquatic Ecosystem.* The proposed action, the Repair-in-Kind (Alternative 2), includes a natural loss of one mature tree (it is caught within the slumped material of the damaged section of the levee), a red alder. The remaining vegetation primarily consists of reed canary grass (*Phalaris arundinacea*) and Himalayan blackberry (*Rubus armeniacus*), of which both are Class C noxious weeds in the state of Washington.

Construction related turbidity (inputs of small particles of silt and clay that suspend in the water column) may occur during any in-water work. Turbidity would be monitored during construction. For each new type of in-water work, turbidity measurements would be taken hourly for the first three hours and then once every three hours for a minimum of one full day. If no exceedances are noted, that type of activity would not be monitored further. If turbidity readings approach or exceed water quality standards, construction would pause and construction methods may be altered to ensure no further exceedances occur.

Prior to the damage, it appeared the site was composed entirely of river soils. The repair includes armoring to ensure compliance with current levee structural standards, which would be covered above the ordinary high water line with a 6-inch layer of soils, planted with grasses, to mirror the pre-flood riparian habitat condition. The Alternative 2 repair remains within the original levee footprint, thus largely maintaining the status quo. By including two willow lifts above and below ordinary high water and reseeding, using a native grass mix, of the levee slope the post-construction condition will copy conditions pre-flood damage. This is expected to offset the temporary impacts and, with plant maturity, improve the amount of overhanging vegetation at the project site.

b. *Effects on Recreational, Aesthetic, Historical, and Economic Values* The project area is private property and is thus not open to the public for recreational purposes.

Prior to the damage, the levee system provided 10-year level of protection to over 4 square miles of rural agricultural and residential properties as well as public infrastructure. The proposed action would restore the level of protection and is not expected to change existing land uses.

The Corps consulted with the Washington State Historic Preservation Officer (SHPO) and the Sauk-Suiattle Indian Tribe, Swinomish Indian Tribal Community, Stillaguamish Tribe of Indians, and Tulalip Tribes as required by the National Historic Preservation Act. There are no properties listed in the National Register of Historic Places or the Washington State Historic Site Register in the project vicinity, and no cultural resources have been recorded within the Area of Potential Effect (APE).

Findings. This work is not exempt from Section 404 of the CWA. The Corps does not issue permits for its own civil works activities. Nevertheless, the Corps has accepted responsibility for the compliance of its civil works projects with Section 404 of the CWA, as well as the obligation to seek water quality certification under Section 401. The repair is a repair-in-kind with only a minor deviation (composition of material) from the current condition. This repair would be analogous to a Nationwide Permit (NWP) 3

which authorizes the repair, rehabilitation, or replacement of any currently serviceable structure, provided that the structure or fill is not to be put to a different use. Necessary minor deviations in the structure's configuration are authorized. See Appendix F for the NWP 3 and CZMA verification.

This alternative would have no adverse impact on cultural resources, as there are no cultural resources within the project APE. There would also be no change to recreational opportunities at the site.

The USACE has determined that the proposed work would have beneficial economic impacts and no significant adverse impacts to aquatic ecosystem functions, recreational, and aesthetic values.

6. **Appropriate and Practicable Measures to Minimize Potential Harm to the Aquatic Ecosystem**

a. *Impact Avoidance and Minimization Measures*. The proposed action would employ typical Best Management Practices (BMPs) and Conservation Measures to avoid and minimize adverse effects. These measures would be written into the Construction Management Plan (CMP). A Corps employee would act as Construction Manager for the effort and would ensure that these measures would be employed per the CMP. BMPs and Conservation Measures include:

Best Management Practices (BMPs)

Below are BMPs that will be incorporated into the action. Some are integrated into the repair, while others are guides to operation and care of equipment.

- In water work would be limited to the in-water work summer window (1 July – 31 August).
- Work would be completed during a period of low flow.
- Equipment that would be used near or in the water would be cleaned prior to construction.
- Fueling would occur on the back side of the levee.
- Biodegradable hydraulic fluids would be used as appropriate in any portion of the equipment that will work in the water.
- Drive trains of the equipment would not operate in the water.
- Construction equipment would be regularly checked for vehicle-fluid drips or leaks. Any leaks and drips would be cleaned up and fixed promptly, or the equipment would be removed from the project site.
- All construction materials would be contamination-free, such as oils and excessive sediment.
- Rocks would only be placed within the project footprint, from the toe and up the levee slope. All placement would be done individually along the riverward slope and toe, or in small controlled bucket loads if material is small.
- At least one fuel spill kit with absorbent pads would be onsite at all times and personnel would be properly trained in its use.

- Turbidity Controls:
    - Work would be conducted at low tide and low-flow conditions to the extent practicable and no digging would occur in the water.
    - In-water construction would occur within the fish window.
    - In order to minimize turbidity, all in-water work involves placement of materials on the river bed with no excavation allowed. The riprap toe (1/2 to 1 ton stones) would be slowly placed on to the river bed, using a bucket with thumb. The excavator would remain on land and only the bucket would enter the water.
    - To prepare the levee bank above the water level for the placement of quarry spall and riprap, excavation or dirt-moving at the project site would occur during the summer low flow level, at low tide, and in the dry.
    - Monitoring of turbidity levels upstream and downstream of the project site during construction would occur. If turbidity is exceeded, the Corps would follow protocols as outlined within its water quality monitoring plan (Appendix G) to stop or reduce turbidity. Sediment generating activities would be halted until standards are met and construction methods changed to avoid future exceedances, if possible. See Appendix A for more details. Results of turbidity monitoring would be recorded and provided to a Corps biologist once in-water work is completed.
- Vegetation removal would be limited to the repair site.
- Removed woody vegetation (rootwad) would placed along the completed toe of the repair area or where possible to provide habitat function to the aquatic environment.

- Live willow stakes would be planted in two rows near ordinary high water as indicated within the design drawings. The Corps will monitor the willow plantings during the spring (February-May, depending on weather and leafout) following the original planting, and in the Summer (August), before the Corps turns over the completed repair to the local sponsor. If less than 50% of the 340 planted willows survive during the first year, the Corps would plant additional willow stakes to adaptively manage and meet the 50% survival rate for the 340 willow planted on the repair site for a year. At least one Corps biologist and geotechnical engineer would be available via phone during construction. Corps biologist may visit the construction site and provide periodic updates to the Services on construction including an onsite visit with staff. The geotechnical engineer may also visit the construction site.

Compensatory Mitigation

The following compensatory mitigation measures would be incorporated into the project:

- Placement of a large wood debris item along the completed levee toe (discussed in EA Section 3.3),

- Hydroseeding (discussed in 3.3),and
- Willow plantings.

For the proposed repair the Corps is integrating two willow lifts (stakes placed within a continuous band of soil) along the length of the repair and would be placed every foot for an estimated total number of 340 willow stakes. Willow plantings would consist of willow stakes approximately 4 feet in length. All plantings would be integrated horizontally for constructability and levee integrity. The Corps would place willow stakes approximately one foot above and one foot below ordinary high water while using preexisting conditions and upstream and downstream vegetation as a guide. Additionally, the empty voids between riprap would be filled with embankment material and spall rock where plantings are placed. This would help retain the soil matrix within the planting zone so that it wouldn't settle into the crevices where it couldn't be accessed by the willow plantings and reduce soil loss during high flows. The Corps will monitor the willow plantings during the spring (February-May), depending on weather and leafout) following the original planting, and in the summer (August), before the Corps turns over the completed repair project to the local sponsor. If less than 50% of the 340 planted willows survive during the first year, the Corps will adaptively manage and plant additional willows to meet a 50% survival rate for willows on the repair site for a year.

Findings. The Corps has determined that all appropriate and practicable measures have been taken to minimize potential harm to the environment and appropriate mitigation is proposed to offset unavoidable impacts. There are no practicably available fill alternatives that would be less costly and still be consistent with engineering and environmental requirements, while meeting the project need.

7. **Other Factors in the Public Interest**

a. *Fish and Wildlife*. The Corps has found that the proposed action may affect but is not likely to adversely affect Chinook, bull trout, and steelhead and may affect but is not likely to adversely affect their designated critical habitat. This determination is made based upon constructing in the summer work window, the minor impacts to vegetation, the planting of bush and tree species, the retention of the existing undercut bank, the limited in-water work, and in light of the baseline condition at the project site.

The Corps submitted a Biological Assessment (BA) documenting the effects of the proposed repairs to listed species on 26 April 2018 to USFWS and NMFS to initiate consultation. On 8 May 2018, USFWS sent a request for additional information on the project. A response was provided to USFWS on 23 May 2018. On 18 May 2018 NMFS sent a letter of non-concurrence that the project is not likely to adversely affect Puget Sound Chinook salmon and Puget Sound steelhead and their critical habitats. NMFS recommended that the Corps request formal consultation and include information on how turbidity will be controlled during construction, a planting plan that including how survival of the plants will be assured, and fish capture/avoidance methods. The Corps prepared a response and sent it back the NMFS on 14 June 2018. Consultation with USFWS and NMFS is ongoing. Detail is provided in this EA addressing the substance of the Services' requests.

b. *Water Quality*. The Corps has concluded that this project will not violate Washington State Water Quality Standards. Limited in-water work will be completed and best management practices will limit

turbidity impacts and concerns for spills or leaks from construction equipment. Water quality monitoring will ensure compliance with state standards.

The Corps has reviewed the parameters of NWP 3 as guidance for analyzing project impacts. The Corps concluded that the Lord Hill Levee Rehabilitation project is functionally analogous to NWP 3. Furthermore, the Corps analyzed the project pursuant to the conditions attached to NWP 3 and concludes that the project satisfies the conditions and qualifies for the State's general certification for Section 401 of the Clean Water Act. A memorandum detailing the Corps' analysis was provided to WDOE for their review on 17 April 2018. A Letter of Verification from WDOE was received on 26 April 2018 concurring that the project meets the parameters of general Certification under NWP 3 and that general consistency with Section 401 is satisfied.

c. *Historical and Cultural Resources*. As required under Section 106 of the NHPA, the Corps coordinated with the Washington State Department of Archeology and Historic Preservation (DAHP) and consulted with the Sauk-Suiattle Indian Tribe, Swinomish Indian Tribal Community, Stillaguamish Tribe of Indians, and Tulalip Tribes. The Tribes did not comment on the undertaking. On 8 June 2018, the Corps submitted a finding of No Historic Properties Affected to the Washington State Historic Preservation Officer. The SHPO agree with the Corps' findings in a letter dated, 25 June 2018. Documentation of the consultation can be found in Appendix C.

d. *Activities Affecting Coastal Zones.* The Corps has determined that this work is consistent to the maximum extent practicable with the enforceable policies of the State Coastal Zone Management Program. The State has made a general determination that activities meeting the parameters of NWP 3 are consistent with the enforceable policies of the CZMA. The Washington Department of Ecology provided a Letter of Verification on 26 April 2018 which concurred that the project meets the requirements for state 401 certification under the conditions of NWP 3. Notwithstanding Ecology's letter regarding their verification of 401 certification under NWP 3, a Letter of Verification has not been received from Ecology specifically concurring that general consistency with CZMA is achieved. Ecology's concurrence that the project is consistent to the maximum extent practicable with the enforceable polices of the Washington State coastal zone management program is presumed in accordance with 33 CFR 336.1(b)(9)(iv) and 15 CFR 930.41(a).

e. *Environmental Benefits*. The project is not designed to create an environmental benefit, but does include mitigation that is expected to fully offset the impacts of the action.

Findings. USACE has determined that this project is within the public interest based on review of the public interest factors.

8. **Conclusion**. Based on the analyses presented in the Environmental Assessment, as well as the following 404(b)(1) Evaluation and Application by Analogy of the General Policies for the Evaluation of the Public Interest, the Corps finds that this project complies with the substantive elements of Section 404 of the Clean Water Act.

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Attachment A

Clean Water Act 404(b)(1) Evaluation [40 CFR §230]

404(b)(1) Evaluation [40 CFR §230]

Potential Impacts on Physical and Chemical Characteristics [Subpart C]:

1. Substrate [230.20]

The original levee construction is approximately 5 to 12 feet high on the landward side and is, depending on the location on the levee, comprised of levee embankment material with riprap on the riverward slope or comprised entirely of levee embankment material (e.g., river soils). The landward and riverward slopes are covered with sod. The pre-damaged levee repair site was comprised primarily of river soils. Below ordinary high water, the river soils were exposed, however, post-construction, the site will have rock riprap. Within the project site, the materials would change from river soils to riprap with a cover of topsoil and hydroseed.

2. Suspended particulates/turbidity [230.21]

Minimal turbidity is expected during construction. Best management practices (BMPs) for sediment control will be used throughout construction to minimize any potential turbidity issues. Turbidity monitoring will ensure compliance with state standards.

3. Water [230.22]

The work is not expected to add any nutrients to the water that could affect the clarity, color, odor, or aesthetic value of the water, or that could reduce the suitability of the Snohomish River for aquatic organisms or recreation. There will be a time lag before plantings fully restore the pre-flood riparian function at this site.

4. Current patterns and water circulation [230.23]

The Corps expects minimal disruption of current patterns and water circulation during or after construction. A Hydraulic Engineer assisted with the design of the project to determine rock size and design details to restore flood protection and minimize disturbance. No change to current patterns or water circulation is expected after completion.

5. Normal water fluctuations [230.24].

The levee repair work would have no effect on normal water fluctuations.

6. Salinity gradients [230.25]

The Snohomish River is a freshwater river system with minimal tidal influence. No effect to salinity gradients would occur.

Potential Impacts on Biological Characteristics of the Aquatic Ecosystem [Subpart D]:

1. Threatened and endangered species [230.30]

The Corps has found that the proposed action may affect but is not likely to adversely affect Chinook, bull trout, and steelhead and may affect but is not likely to adversely affect their designated critical habitat. This determination is made based upon constructing in the summer work window, the minor impacts to vegetation, the planting of bush and tree species, the retention of the existing undercut bank, the limited in-water work, and in light of the baseline condition at the project site. The Corps submitted a Biological Assessment (BA) documenting the effects of the proposed repairs to listed species on 26 April 2018 to USFWS and NMFS to initiate consultation. On 8 May 2018, USFWS sent a request for additional information on the project. A response was provided to USFWS on 23 May 2018. On 18 May 2018 NMFS sent a letter of non-concurrence that the project is not likely to adversely affect Puget Sound Chinook salmon and Puget Sound steelhead and their critical habitats. NMFS recommended that the Corps request formal consultation and include information on how turbidity will be controlled during construction, a planting plan that including how survival of the plants will be assured, and fish capture/avoidance methods. The Corps prepared a response and sent it back the NMFS on 14 June 2018. Detail is provided in this EA addressing these topics, as well as the Corps' commitment to provide monitoring and adaptive management of the willow lifts to ensure a 50% survivability rate of the 340 willow lifts planted at the repair site during the first year, after which the Corps will return the levee repair project to the non-federal sponsor. Consultation with USFWS and NMFS is ongoing. Due to the urgent nature of completing the emergency actions to protect human life and property and the effort to limit impacts to listed species by working within this window, and because the repair is time-critical in light of the ensuing flood season, the Corps may proceed with construction prior to completion of the consultation with the Services pursuant to the "emergency circumstances" provisions of the ESA consultation regulation. The Corps will complete ESA consultation after the fact rather than delaying the urgent work in order to complete ESA consultation before construction. The Corps will commit to fully funding and performing any Reasonable and Prudent Alternatives necessary to avoid the likelihood of jeopardy to listed species or destruction/adverse modification of designated critical habitat, as well as Reasonable and Prudent Measures necessary and appropriate to minimize the impact of Incidental Take, that are described when a Biological Opinion is received from the NMFS. The Environmental Assessment will be reevaluated at the time that consultation is complete. If necessary, the EA will be supplemented with necessary and applicable corresponding modifications to the scope and/or nature of the project, the procedures and practices used to implement the project, and/or the type and extent of compensatory mitigation associated with the project. No significant impacts are expected.

2. Fish, crustaceans, mollusks, and other aquatic organisms in the food web [230.31]

Fish crustaceans, mollusks, and other aquatic organisms may be temporarily impacted by small turbidity increases and increased noise. Similar habitat exists upstream and downstream and any impacted areas would be expected to be recolonized quickly by surrounding aquatic organisms.

3. Other wildlife [230.32]

Wildlife in the vicinity of the project is expected to be acclimated to human presence and noise as the project area is in a developed, agricultural area and is adjacent to a local arterial road. Birds and other wildlife may be temporarily displaced due noise and presence of equipment. Similar habitat exists nearby for their use. Loss of vegetation will temporarily reduce available habitat function at the project site. However the tree and shrub plantings will offset this loss. With maturity, the tree and shrub

plantings will provide native riparian habitat. Impacts to wildlife are expected to be temporary and negligible.

Potential Impacts on Special Aquatic Sites [Subpart E]:

1. Sanctuaries and refuges [230.40]

The proposed and completed actions will have no effect on sanctuaries and refuges.

2. Wetlands [230.41]

The proposed and completed actions will not have effects on wetlands.

3. Mud flats [230.42]

No mud flats are present at the project site; therefore, the proposed and completed action will have no effect on mudflats.

4. Vegetated shallows [230.43]

No vegetated shallows are present at the project site; therefore, the proposed and completed action will have no effect on vegetated shallows.

5. Coral reefs [230.44]

Not applicable.

6. Riffle and pool complexes [230.45]

No riffle and pool complexes are present at the project sites; therefore, the proposed and completed action will have no effect on riffle and pool complexes.

Potential Effects on Human Use Characteristics [Subpart F]:

1. Municipal and private water supplies [230.50]

The proposed and completed action will have no effect on municipal or private water supplies.

2. Recreational and commercial fisheries [230.51]

The project area is private property and is thus not open to the public for recreational purposes. As described above, impacts to fisheries are not expected to be significant.

3. Water-related recreation [230.53]

The proposed and completed action will have no effect on water-related recreation.

4. Aesthetics [230.53]

During construction there will be some disturbance from excavation and heavy equipment noise and exhaust. There will be minor vegetation loss, to be offset by riverward plantings. The aesthetics of the reach will be changed with the change in tree locations and types.

5. Parks, national and historic monuments, national seashores, wilderness areas, research sites and similar preserves [230.54]

Not applicable.

Evaluation and Testing [Subpart G]:

1. General evaluation of dredged or fill material [230.60]

Although the Levee Design and Construction Manual, EM 1110-2-1913, recommends 2H:1V as the steepest levee slope to utilize, it was not possible to build a 2H:1V slope due to the short repair length and current shape of the levee face. This would have resulted in difficult construction transitions and would have left an inconsistent final slope. As a result, the design matches existing conditions upstream and downstream with a slope angle that is steeper at 1.5H:1V. In order to match the pre-existing toe location and still fit the necessary rock volume to account for scour. Although the design slope is steeper than 2H:1V, this was taken into account during riprap size analysis.

Borings or other excavations into the project area as part of a geotechnical investigation were not performed specifically for this project. Well Logs obtained from State of Washington Department of Ecology indicate that foundation materials are predominantly silt and sand in the top 25-50 feet with sandy gravel beneath. The riverward bench material is assumed to be silt deposited over time by the river.

2. Chemical, biological, and physical evaluation and testing [230.61]

No soil sampling is required as no contamination is known or expected. Turbidity monitoring will be completed during inwater work to ensure compliance with state water quality standards during construction.

Actions to Minimize Adverse Effects [Subpart H]:

1. Actions concerning the location of the discharge [230.70]

The materials to be discharged (riprap and spall rock) are clean. Staging areas will be located in uplands.

2. Actions concerning the material to be discharged [230.71]

Bank stabilization material will be required to meet Corps standards for placement of riprap. Material will be imported from an approved, clean source.

3. Actions controlling the material after discharge [230.72]

Following placement of the materials for the armoring and repair, no further dispersion is expected, therefore no measures to control placement of these materials are considered necessary.

4. Actions affecting the method of dispersion [230.73]

The rip rap placed below the water line will be placed individually. The excavator will work from the crown of the levee or the riverward bank. Dumptrucks will deliver material, and dump it onto levee

crown. No end dumping into the river will occur. Turbidity impacts are expected to be minor and temporary.

5. Actions related to technology [230.74]

The technology used in the proposed project is considered acceptable for this scope of work. No other specific actions to minimize effects related to technology are needed.

6. Actions affecting plant and animal populations [230.75]

The Corps has coordinated construction activities with state and federal resource agencies, as well as interested tribes, to minimize impacts to fishery and wildlife resources. There will be temporary disturbance to wildlife in the project vicinity due to noise from operation of machinery. Timing of construction will avoid impacts to sensitive species.

7. Actions affecting human use [230.76]

The Corps has taken all appropriate and practicable steps to assure minimal impacts to human use, safety and general appreciation of the area. Traffic will not need to be detoured around the area during construction. Signs and flaggers will be used as needed to minimize impacts and improve safety. Construction will occur during daylight hours to minimize noise impacts to nearby houses. Repair of the flood control structure is not expected to diminish water quality, but may have temporary impacts on local residents.

8. Other actions [230.77]

Best management practices will be used in the proposed construction to ensure that no unnecessary damage to the environment occurs.

Application by Analogy of the General Policies for the Evaluation of the Public Interest [33 CFR §320.4, used as a reference]

1. Public Interest Review [320.4(a)]

The Corps finds this repair to flood control structures to be in compliance with the 404(b)(1) guidelines and in the public interest.

2. Effects on wetlands [320.4(b)]

See 404(b)(1) evaluation above. No net loss of wetlands is expected. Temporary impacts to a category III wetland will be fully mitigated.

3. Fish and wildlife [320.4(c)]

The Corps has found that no impacts will occur to sensitive species and impacts to fish and wildlife will be temporary and minimal.

4. Water quality [320.4(d)]

This work is not exempt from Section 404 of the CWA. The Corps does not issue permits for its own civil works activities. Nevertheless, the Corps has accepted responsibility for the compliance of its civil works projects with Section 404 of the CWA, as well as the obligation to seek water quality certification under Section 401. The repair is a repair-in-kind with only a minor deviation (material) from the current condition. This repair would be analogous to a Nationwide Permit (NWP) 3 which authorizes the repair, rehabilitation, or replacement of any currently serviceable structure, provided that the structure or fill is not to be put to a different use. Necessary minor deviations in the structure's configuration are authorized.

5. Historic, cultural, scenic, and recreational values [320.4(e)]

The project area is private property and is thus not open to the public for recreational purposes.

Prior to the damage, the levee system provided 10-year level of protection to over 4 square miles of rural agricultural and residential properties as well as public infrastructure. The proposed action will restore the level of protection and is not expected to change existing land uses.

The Corps consulted with the Washington State Historic Preservation Officer (SHPO) and the Sauk-Suiattle Indian Tribe, Swinomish Indian Tribal Community, Stillaguamish Tribe of Indians, and Tulalip Tribes as required by the National Historic Preservation Act. There are no properties listed in the National Register of Historic Places or the Washington State Historic Site Register in the project vicinity, and no cultural resources have been recorded within the Area of Potential Effect (APE).

6. Effects on limits of the Territorial Sea [320.4(f)]

Not applicable.

7. Consideration of property ownership [320.4(g)]

Access for construction equipment and materials will be via public rights-of-way and real estate rights of entry provided by French Slough Flood Control District, the non-federal sponsor of the repairs. No change in property ownership will occur.

8. Activities affecting coastal zones [320.4(h)]

The Corps has determined that this work is consistent to the maximum extent practicable with the enforceable policies of the State Coastal Zone Management Program. The State has made a general determination that activities meeting the parameters of NWP 3 are consistent with the enforceable policies of the CZMA. The Washington Department of Ecology provided a Letter of Verification on 26 April 2018 which concurred that the project meets the requirements for state 401 certification under the conditions of NWP 3. Notwithstanding Ecology's letter regarding their verification of 401 certification under NWP 3, a Letter of Verification has not been received from Ecology specifically concurring that general consistency with CZMA is achieved. Ecology's concurrence that the project is consistent to the maximum extent practicable with the enforceable polices of the Washington State coastal zone management program is presumed in accordance with 33 CFR 336.1(b)(9)(iv) and 15 CFR 930.41(a).

9. Activities in marine sanctuaries [320.4(i)]

Not applicable.

10. Other federal, state, or local requirements [320.4(j)]

The Corps has sent information about the proposed action to all applicable federal, state, local, and tribal parties. Coordination has been completed for ESA, Clean Water Act, and Coastal Zone Management Act.

11. Safety of impoundment structures [320.4(k)]

Not applicable.

12. Floodplain Management [320.4(l)]

The project is in compliance. The Corps considered alternatives to reduce hazards and risks associated with floods and to minimize the impact of floods on human safety, health and welfare, and restoring and preserving the natural and beneficial values of the base floodplain. The project maintains the status quo of the level of flood protection.

13. Water supply and conservation [320.4(m)]

Not applicable.

14. Energy conservation and development [320.4(n)]

Not applicable.

15. Navigation [320.4(o)]

This project will not impede current navigability within the Snohomish River.

16. Environmental benefits [320.4(p)]

The district engineer has weighed the beneficial and detrimental environmental aspects of the project. No net detriments are expected.

17. Economics [320.4(q)]

Economic studies were undertaken which included studies enumerating and evaluating damages related to the existing economic development protected by the levee, sensitivity evaluations and optimization scenarios evaluating the benefits and costs of alternative project scopes. The outcome of these evaluations combined with engineering, environmental, and local sponsor considerations have led to the selection of the recommended plan. Repairing the levee was found to be economically justified based on a comparison of the annualized benefits (damages prevented by restoring the levee) and the annualized cost of repairs.

18. Mitigation [320.4(r)].

Willow lifts will be implemented for mitigation.

Allyson Brooks Ph.D., Director
State Historic Preservation Officer

June 25, 2018

Mr. Evan Lewis
Environmental & Cultural Resources
Seattle District
Corps of Engineers
PO Box 3755
Seattle, Washington 98124

Re: Lord Hill Levee Rehabilitation Project
Log No.: 2018-05-03431-COE-S

Dear Mr. Lewis:

Thank you for contacting our department. We have reviewed the materials you provided for the proposed Lord Hill Levee Rehabilitation Project, Snohomish, Snohomish County, Washington.

We concur with your Determination of No Historic Properties Affected.

We would appreciate receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4).

In the event that archaeological or historic materials are discovered during project activities, work in the immediate vicinity must stop, the area secured, and the concerned tribe's cultural staff and cultural committee and this department notified.

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer in compliance with the Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations 36CFR800.4. Should additional information become available, our assessment may be revised, including information regarding historic properties that have not yet been identified. Thank you for the opportunity to comment and a copy of these comments should be included in subsequent environmental documents.

Sincerely,

Robert G. Whitlam, Ph.D.
State Archaeologist
(360) 890-2615
email: *rob.whitlam@dahp.wa.gov*

Appendix D: Endangered Species Act

From:	Kurt Nelson
To:	Pepi, Vanessa E CIV USARMY CENWS (US)
Cc:	Derek Marks; Todd Zackey; Tim Brewer
Subject:	[Non-DoD Source] RE: 2018 Repair of the French Slough Flood Control District Lord Hill Levee - Notice of Preparation
Date:	Thursday, May 31, 2018 10:25:39 AM

Ms. Pepi

The Lords Hill project area is in the "Usual and Accustomed Area" of the Tulalip Tribes. The Tribes review USARMY permit applications for potential impacts to habitats required by Treaty Reserved resources, such as salmon. The proposed project has the potential to continue or increase impacts to those resources. In consideration of potential impacts the Tribes submit the following comments:

(1) Has the site been inspected at low flows to determine whether undercutting is occurring, or is any bathymetry work planned?
(2) Do the repairs extend the levee further out into the river, if so what is the area? Additional river encroachment should be mitigated. Preferably the repairs should be restricted to the same footprint as the existing levee.
(3) This area of the levee tidally fluctuates. Willow lifts were part of the mitigation for lost vegetation. Your description says the willow lifts will be planted at and below the to OHWM, where is that on the levee face that is tidally fluctuates?
(4) Can large wood be incorporated into the repair?
(5) Does this area of the levee have a history of failure, if so wouldn't it be preferable to modify the levee design to address this condition, a design that includes a setback?

It is the position of the Tribes that with these project applications, the impacts need to be avoided, minimized and mitigated. With the actions resulting in a net gain in habitat capacity and ecological function. Returning a project back to pre-existing poor habitat conditions is unacceptable and needs to be reconsidered.

Kurt

-----Original Message-----
From: Pepi, Vanessa E CIV USARMY CENWS (US) <Vanessa.E.Pepi@usace.army.mil>
Sent: Thursday, May 3, 2018 3:35 PM
To: Pepi, Vanessa E CIV USARMY CENWS (US) <Vanessa.E.Pepi@usace.army.mil>
Cc: Downing, Daryl S CIV USARMY CENWS (US) <Daryl.S.Downing@usace.army.mil>; Leslie, Melissa L CIV USARMY CENWS (US) <Melissa.L.Leslie@usace.army.mil>
Subject: 2018 Repair of the French Slough Flood Control District Lord Hill Levee - Notice of Preparation

Dear Sir and Madam,

Interested parties are hereby notified that the U.S. Army Corps of Engineers, Seattle District (Corps) plans to prepare, pursuant to the National Environmental Policy Act (NEPA), an Environmental Assessment (EA) for proposed levee repairs to the French Slough Flood Control District Lord Hill Levee on the Snohomish River, Snohomish County, Washington. Please find the attached Notice of Preparation (NOP) of the 2018 Repair of the Lord Hill Levee.

The Corps in partnership with the French Slough Flood Control District are proposing to repair the levee which was damaged during high water events in November 2017. The proposed action is to restore the levee to the pre-flood level of protection.

Submit comments to the address at the top of the attached NOP or to vanessa.e.pepi@usace.army.mil no later than June 04, 2018. The Corps has posted the attached NOP at the following website:
Blockedhttp://www.nws.usace.army.mil/Missions/Environmental/Environmental-Documents/
under "Lord Hill Levee 2018 Repair."

The Corps thanks the Tulalip Tribes for their interest in this project. The responses are numbered to match the numbered comments.

(1) The proposed action is authorized by the Rehabilitation and Inspection Program under Public Law 84-99. The program is authorized to repair flood control works damaged by flooding in order to restore the pre-damage level of protection. The damage event occurred in November 2017 and the planned initiation of construction is August 2018, during the low flow period. In order to restore flood protection prior to the upcoming flood season, it is not possible to obtain low flow data or bathymetry. The repair design is not expected to significantly alter the hydraulics nor the topographic or bathymetric features of the location. The post-construction configuration of the bank below the OHW mark will be essentially unchanged. The site will not be inspected or observed during low flow until the planned construction. There is no bathymetry work planned at the project location at this time.

(2) The repairs do not extend the levee beyond the pre-flood toe. The repair will remain fully within the existing footprint.

(3) As stated in the NOP and shown on the designs, the willow lifts will be planted approximately 1-foot above and below the OHWM. The intent is to place a double line of willows along the existing vegetation line to place the willows in an opportune location for both survival and to provide shade line along the river bank. This height is consistent with past repairs in similar locations, which have shown survivability of the willow lifts.

(4) The Corps agrees that, where possible, bioengineering does need to be considered. The installation of the willow lifts within the repair area is an example of bioengineering, where the Corps is being conservative in terms of safety while also working to limit the impacts of the repair work. With this project the Corps is also minimizing impacts by curtailing in-water work. Incorporation of large woody debris, while providing habitat benefits, also requires additional work below ordinary high water and potentially includes the creation of a wider rock toe in front of the levee structure. Woody structures have to be designed as "sacrificial" in these high energy rivers, such that if it is lost in a high water event the levee remains secure. Based on the small linear extent of the repair and the habitat provided by the adjacent island, it was determined that the additional design and construction cost to incorporate large woody debris, and the incremental adverse environmental effects of a larger and more protruding toe, did not justify the benefit.

(5) Having reviewed previous records, it appears that this particular area of the levee has not been previously repaired. This approach would encroach on existing structures (private residences) and privately-owned land currently used for residential and agricultural purposes. All real estate needs, including interests in the setback footprint, must be provided by the levee system owner. If real estate is not available to be acquired in the setback alignment then this alternative would not be possible. Under some circumstances the non-Federal interest must incur the incremental cost of constructing a levee setback, in which case the setback alternative cannot be pursued without the affirmative participation of that non-Federal interest. The Corps does not have authority to pursue a setback alternative in the absence of participation by the non-Federal interest.

Memo

To: Paul Anderson,, Department of Ecology

From: Vanessa Pepi, U.S. Army Corps of Engineers

CC: Rebekah Padgett, Department of Ecology

Date: 4/17/2018

Re: Lord Hill Levee Rehabilitation – Evaluation for substantive compliance with Nationwide Permit 3.

Introduction

The purpose of this document is to record the U.S. Army Corps of Engineers (Corps) substantive compliance evaluation of the levee rehabilitation at the Lord Hill Levee on the Snohomish River, Snohomish County, Washington in respect to Nationwide Permit (NWP) 3. The Corps concludes that the levee rehabilitation work is functionally analogous to NWP 3. The Corps also concludes that the project satisfies the conditions associated with the above NWPP and qualifies for the State's pre-certification for Section 401 of the Clean Water Act and pre-determined consistency concurrence for the Coastal Zone Management Act (CZMA). Details for construction of the project are included below and in the appendices.

Background

On 23 November 2017, high flows on the Snohomish River were recorded at a peak flow of 66,900 cfs on the Snohomish River near Monroe USGS gage 12150800. As a result of this high flow event, scour of the levee slope and toe, including loss of riprap and some embankment material occurred on the Lord Hill Levee. Damage has been recorded along a 50-foot section of the levee and in its current condition the levee provides an estimated 1-year level of protection. Per Public Law (PL) 84-99, the Corps is authorized to repair damaged flood control works to the pre-damaged condition and level of protection.

The original levee construction is approximately 5 to 12 feet high on the landward side and is, depending on the location on the levee, comprised of levee embankment material with riprap on the riverward slope or comprised entirely of levee embankment material. The landward and riverward slopes are covered with sod. At Station 107+00 (where the damage is located), the levee appears to be comprised entirely of levee embankment material. The damaged section is 50 feet long and the total length of the repair is approximately 170 feet in order to tie the repair into the existing levee profile. Repair of the riverward slope is intended to match the upstream/downstream sections of the levee and will re-establish the levee to the pre-flood level of protection. Deconstruction will include excavating the levee embankment from the levee toe landward to the extents of the repair at the base of the excavation. Any existing satisfactory rock will be reused. The riverward riprap toe (1 to 2 ton stones) will be placed into the channel bottom. Only the excavator bucket will enter the water. All rock will be placed with an excavator bucket with thumb. A 1 foot thick bedding layer of 2 to 4-inch

quarry spalls will be overlain by a 2 foot thick blanket of Class II (25 to 500 pounds) riprap along the riverward slope to provide erosion protection The slope rock will be constructed to a finished 1.5H:1V slope. Spoils from any excavation may be placed over the buried toe in an effort to maintain and minimize substrate changes.

Additionally, the tree captured within the slumped material will be placed unanchored on the toe rock with the root ball pointing downstream. The landward and riverward sides of the levee will have a cover of topsoil and then seeded with native grasses. Plantings of approximately 170 live willow stakes (at 1-foot intervals) will occur above, but near the ordinary high water mark, along the riverward edge of the levee. The plantings will replace the lost cover from the red alder and other ground cover vegetation that will be removed or covered during construction and will reduce the time lag before the vegetation restores the habitat function of the project area. Also, soil will be placed over the armoring above ordinary high water. This will be seeded with native grasses to minimize the exposed rock along the water and restore the herbaceous covering in the reach.

NWP 3 authorizes the repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. This NWP also authorizes the removal of previously authorized structures or fills. Any stream channel modification is limited to the minimum necessary for the repair, rehabilitation, or replacement of the structure or fill; such modifications, including the removal of material from the stream channel, must be immediately adjacent to the project. This NWP also authorizes the removal of accumulated sediment and debris within, and in the immediate vicinity of, the structure or fill. This NWP also authorized the repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events, provided the repair, rehabilitation, or replacement is commenced, or is under contract to commence, within two years of the date of their destruction or damage.

The Corps does not issue permits for its own civil works activities. Nevertheless, the Corps has accepted responsibility for the compliance of its civil works projects with Clean Water Act Section 404, as well as the obligation to seek water quality certification under Section 401. NWP 3 applies to the repair, rehabilitation, or replacement of a previously authorized structure; thus, NWP 3 does not directly apply to Corps activities under PL 84-99. However, the effects of the Corps' Lord Hill Levee repair project on water quality would be essentially identical to the water quality effects of repairs to Corps-authorized structures. Therefore, the Corps has concluded that the Lord Hill Levee repair would generate effects that are functionally analogous to the effects of a repair to an authorized structure conducted in accordance with NWP 3, and that extension of the water quality certification established under NWP 3 to this project is fully justified.

General State Section 401 certification under NWP 3 has been established, subject to conditions. Individual 401 review is required if:

1. The project or activities are below the OHWM with new work being proposed outside the original footprint.
2. The proposed project or activity increases the original footprint of the structure by more than $1/10^{th}$ acre in wetlands. Note 1: "Original footprint" refers to the configuration of the structure or filled area within the last two years. Note 2: This may include causing surrounding wetlands to be drained.
3. The project or activity includes adding a new structure, such as a weir, flap gate/tide gate, or culvert to the site.

The purpose of the project is repair flood damage done to the levee. The project is to repair an existing serviceable structure and to maintain the use (i.e., flood control) of that structure. The proposed repair includes a minor deviation in the levee composition to include armoring the riverward side with a 2-foot thick Class II layer of riprap. The increased quantity of armor rock would address the scour potential within the project reach to meet current construction and safety codes. The re-constructed levee toe will be placed within the same footprint of the pre-flood toe. No change in the footprint would occur from the pre-damaged condition and no new structures would be added.

The Corps' Analysis of State 401 Certification General Conditions

In order for any NWP authorization involving Section 404 activities to be valid in Washington State, permittees must comply with all applicable State 401 Certification general conditions. The following are the eight general conditions and how the Lord Hill Levee Rehabilitation project meets each condition.

1. For in-water construction activities. Individual 401 review is required under this condition for projects or activities authorized under NWPs that will cause, or be likely to cause or contribute to an exceedance of a State water quality standard (WAC 173-201A) or sediment management standard (WAC 173-204).

Temporary increases in turbidity may result from construction activities. In order to reduce the temporary increases in turbidity and potential related effects on juvenile salmonids, all in-water construction work would take place during the established fish window (1 July – 31 August). The design and implementation construction will incorporate best management practices (BMPs) such as turbidity monitoring during construction to ensure any temporary increases are in compliance with State Water Quality Conditions. No exceedances are anticipated; however, should construction efforts increase turbidity above the state standards, work would be halted and construction methods adjusted to ensure that further exceedances would not occur.

2. Projects or Activities Discharging to Impaired Waters. Ecology Section 401 review is required for projects or activities authorized under NWPs if the project or activity will occur in a 303(d) listed segment of a waterbody or upstream of a listed segment and may result in further exceedances of the specific listed parameter.

The project occurs within a 303(d) listed segment waterbody. Within the project area, the Snohomish River is listed for dioxin and PCB impairment. However, the proposed action would have no effect on these listings and would not result in further exceedances of the specific listed parameters.

3. Application. For projects or activities that will require Ecology Section 401 review, applicants must provide Ecology with a Joint Aquatic Resources Permit Application (JARPA) along with the documentation provided to the Corps, as described in National General Condition 32, Pre-Construction Notification.

The proposed action is functionally analogous to NWP 3 and qualifies for State's pre-certification for Section 401 of the Clean Water Act; therefore, the project does not require individual 401 review. Project description details are included in this memo as well as the attached project designs.

4. Aquatic resources requiring special protection. Certain aquatic resources are unique, difficult-to replace components of the aquatic environment in Washington State. Activities that would affect these resources must be avoided to the greatest extent possible. Compensating for adverse impacts to high value aquatic resources is typically difficult, prohibitively expensive, and may not be possible in some landscape settings. Individual 401 review is required for activities in specified wetland types.

The proposed project would not have impacts on any aquatic resources requiring special protection.

5. Mitigation. Applicants are required to show that they have followed the mitigation sequence and have first avoided and minimized impacts to aquatic resources wherever practicable. For projects requiring Ecology Section 401 review with unavoidable impacts to aquatics resources, adequate compensatory mitigations must be provided..

The proposed project is functionally analogous to NWP 3 and is not expected to require Individual 401 review. However, to offset the unavoidable impacts, mitigation is included in the project design. Unavoidable impacts would be temporary and minor, to include minimal turbidity, noise, vegetation removal, and increased human presence. Mitigation will include one willow lift placed at ordinary high water, placing a tree with rootwad on the toe of the project site, and covering the upper slope with topsoil and hydroseed.

6. Temporary Fills. Individual 401 review is required for any project or activity with temporary fill in wetlands or other waters of the State for more than 90 days, unless the applicant has received written approval from Ecology.

The proposed project does not include the placement of any temporary fill in wetlands or other waters of the State.

7. Stormwater Discharge Pollution Prevention. Projects that involve land disturbance or impervious surfaces must implement prevention or control measures to avoid discharge of pollutants in stormwater runoff to waters of the state. For land disturbances during construction, the project must follow Ecology's current stormwater manual.

The project is not expected to discharge pollutants in stormwater runoff to waters of the state. Best management practices will be implemented. This includes:

- Equipment used near the water will be cleaned prior to construction.
- Work will be conducted during a period of low flow
- Biodegradable hydraulic fluids will be used in machinery where appropriate.
- Refueling will occur on the backside of the levee.
- Construction equipment shall be regularly checked for drips or leaks.
- At least one fuel spill kit with absorbent pads will be onsite at all times.
- Drive trains of equipment will not operate in the water.
- Turbidity monitoring will be done to ensure that no exceedances occur.
- Placement of rock will occur individually or in small bucket-loads with an excavator. No end dumping onto the bank or into the river would occur.

8. State Certification for PCNs not receiving 45-day response. In the event the Seattle District Corps does not issue a NWP authorization letter within 45 calendar days of receipt of a complete construction notification, the applicant must contact Ecology for Section 401 review prior to commencing work.

The purpose of the PCN is to notify the District Engineer of a project and allow his or her evaluation of the proposed project. The Seattle District Engineer will review the project in its entirety prior to construction through review of the final Environmental Assessment and the completion of the NEPA process.

The Corp's Conclusion

The Corps concludes that the Lord Hill Levee Rehabilitation project on the Snohomish River is functionally analogous to NWP 3. Furthermore, the Corps analyzed the project pursuant to the conditions attached to NWP 3 and concludes that the project satisfies the conditions and qualifies for the State's pre-certification for Section 401 of the Clean Water Act and pre-determined consistency concurrence for the Coastal Zone Management Act.

ATTACHMENT A

PROJECT LOCATION, PLANS, AND PHOTOS

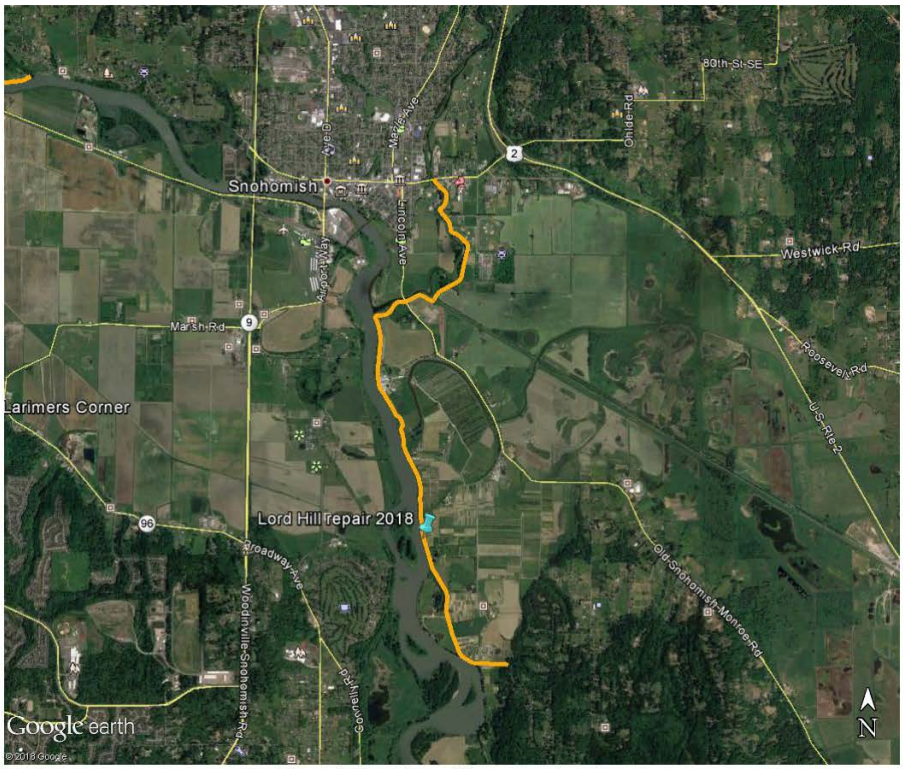

Figure 1. Overview of the project location.

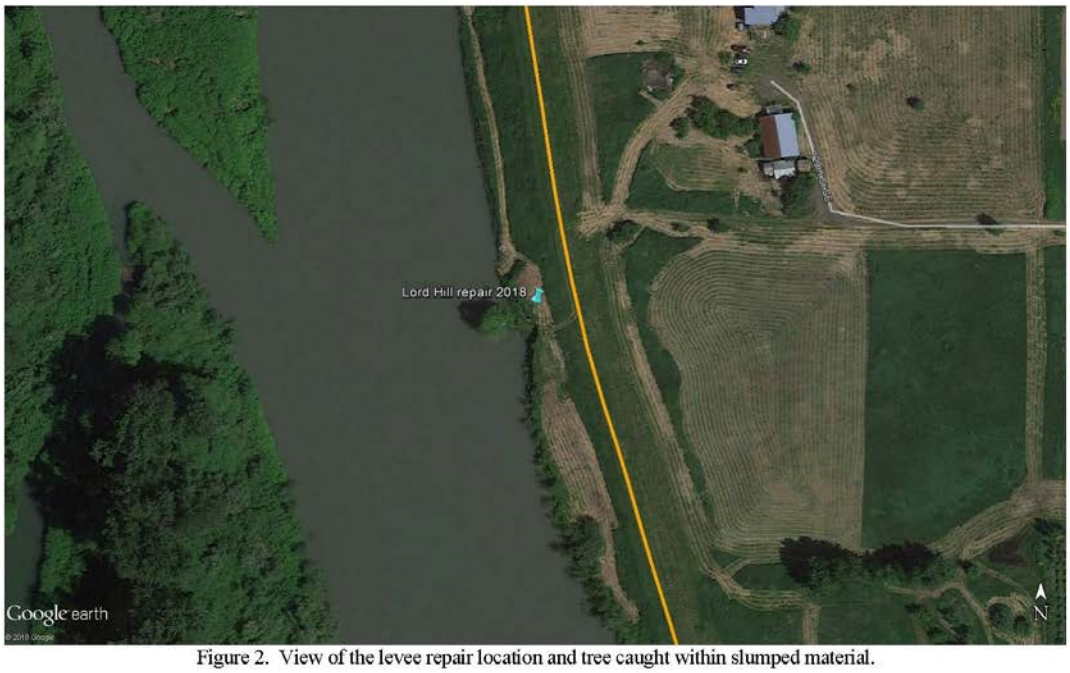

Figure 2. View of the levee repair location and tree caught within slumped material.

Figure 3. Lord Hill Levee 2018 repair project footprint showing the construction limits and proposed access and staging area.

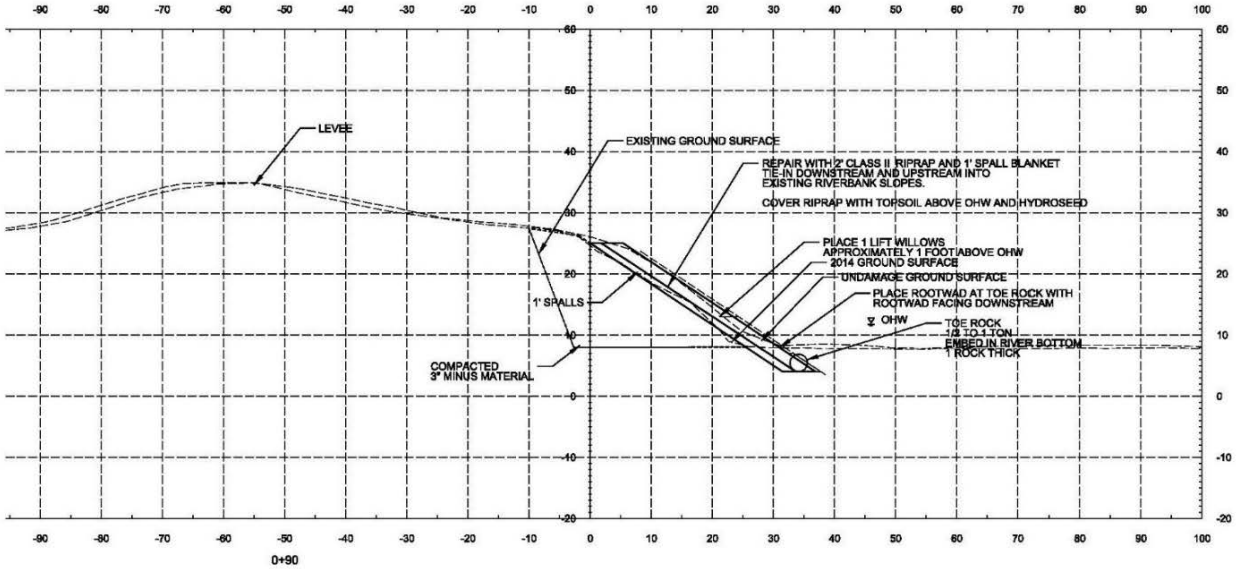

Figure 4. Cross section design for the 2018 repair in the project location.

Figure 5. Red alder within slumped material at damage site (photo taken Jan 2018).

ATTACHMENT B

CONSISTENCY DETERMINATION

Coastal Zone Management Act Consistency Determination
Lord Hill Levee Repair 2018

1. Introduction
The proposed Federal action applicable to this consistency determination is the rehabilitation activities on the Lord Hill levee on the Snohomish River. This determination of consistency with the Washington Coastal Zone Management Act is based on review of applicable sections of the State of Washington Shoreline Management Program and policies and standards of the Snohomish County Shoreline Management Use Regulations.

2. State Of Washington Shoreline Management Program (SMP). The Snohomish River constitutes a shoreline under Washington Administrative Code (WAC) 173-18-310. Primary responsibility for implementation of the State of Washington Shoreline Management Act (SMA) of 1971 (Revised Code of Washington [RCW] 90.58) is with local governments. The applicable local government office responsible for Snohomish County is the Snohomish County Department of Planning and Development Services.

The proposed project is a repair of an existing levee built in 1962, which do not require substantial development permits. The Revised Code of Washington (RCW) 90.58.030, SMA of 1971, states "The following shall not be considered substantial developments for the purpose of this chapter: …(x) Operation and maintenance of any system of dikes, ditches, drains, or other facilities existing on September 8, 1975, which were created, developed, or utilized primarily as a part of an agricultural drainage or diking system." The Washington Administrative Code (WAC) 173-27-040, section titled 'Developments exempt from substantial development permit requirement', reiterates the policy with "(2) The following developments shall not require substantial development permits: (k) Operation and maintenance of any system of dikes, ditches, drains, or other facilities existing on September 8, 1975, which were created, developed or utilized primarily as a part of an agricultural drainage or diking system."

3. Description of Snohomish County SMP. The following outlines pertinent sections of the Snohomish County program (Snohomish County Code, Title 30 Unified Development Code, Chapter 30.44 Shoreline Management, available at https://snohomishcountywa.gov/documentcenter/view/7973).

The Snohomish County Shoreline Management Program is available online at https://snohomishcountywa.gov/DocumentCenter/View/7612. The Corps consistency determination is indicated in ***bold italics*** beneath the relevant section and code.

Snohomish County SMP, 2. Designation of Resources/2.2 Environment-specific Policies & Designation Criteria;2.2.3 Resource

Snohomish County Shoreline Environmental Designations map was accessed on 9 April 2018 (https://snohomishcountywa.gov/DocumentCenter/View/7613) and the shoreline within the project area is "Resources". The "Resource" environment shoreline designation is intended for areas within shoreline jurisdiction that are currently utilized or planned for agriculture or commercial forest practices. The intent is to conserve existing natural resources and valuable historic and cultural areas in order to provide for sustained resource use. The project site is in an area of active agricultural activities.

Management Policies:
9. Construction of new structural shoreline stabilization and flood control works should only be allowed where there is a documented need to protect an existing structure or protect ecological functions and where mitigation is applied. New development should be designed and located to preclude the need for such work.
11. New shoreline stabilization, flood control measures, vegetation removal, and other shoreline modifications should be designed and managed to ensure that the natural shoreline functions are protected.

Consistent. The proposed action area is designated as "Resource" and the proposed action is the repair of an existing flood control structure. No new structures will be constructed. Additionally, the proposed work limits the amount of vegetation removal, brings the levee back to pre-flood conditions, and is only being conducted due to the existing flood damage and need to restore the level of flood protection offered by the levee.

Snohomish County SMP, 3. Shoreline Goals, Policies and Regulations/3.2 Shoreline Goals, Policies and Regulations

3.2.3.1 Shoreline Use Element: Goals and Policies
Goal 3. Preserve, protect and restore Snohomish County's unique, valuable and nonrenewable natural resources while encouraging the best management practices for the continued sustained yield of renewable resources of the shorelines.

Policy 1. All uses should be located and designed to avoid impacts to shoreline natural resources and the functions provided by these resources. Where there is no feasible alternative, require that adverse impacts be mitigated to achieve no net loss of shoreline ecological functions.

Policy 9. Uses and modifications that cause significant adverse impacts to the functions of critical saltwater and freshwater habitats should not be allowed except as required to provide for reasonable new uses of private property and protection of existing uses.

Consistent. The proposed action is the repair of an existing flood control structure. No new structures will be constructed. The proposed work limits the amount of vegetation removal and shoreline modification to the extent possible. Additionally plantings will be included to mitigate for the impact to vegetation. The plantings will replace the tree that must be removed for construction

and will reduce the time lag before the vegetation restores the habitat and water quality functions of the project area.

Snohomish County SMP, 3.2.5 Specific Shoreline Uses & Modifications

- Allow structural shoreline modifications only where they are demonstrated to be necessary to support or protect an allowed primary structure or a legally existing shoreline use that is in danger of loss or substantial damage or are necessary for reconfiguration of the shoreline for mitigation or enhancement purposes.
- Reduce the adverse effects of shoreline modifications and, as much as possible, limit shoreline modifications in number and extent.
- Allow only shoreline modifications that are appropriate to the specific type of shoreline and environmental conditions for which they are proposed.
- Assure that shoreline modifications individually and cumulatively do not result in a net loss of ecological functions. This is to be achieved by giving preference to those types of shoreline modifications that have a lesser impact on ecological functions and requiring mitigation of identified impacts resulting from shoreline modifications.
- Avoid and reduce significant ecological impacts according to the mitigation sequence in WAC 173-26-201(2)(e).

Consistent. The proposed action is the repair of an existing flood control structure. The project has been designed by professional engineers to ensure that the proposed design is appropriate to the specific conditions of the shoreline at the damaged locations. The design also includes plantings to replace the tree that must be removed for construction. Plantings will reduce the time lag before the vegetation restores the habitat and water quality functions of the project area.

Snohomish County SMP, 3.2.5.8 Flood Protection Measures

Goals

1. Prevent and minimize flood damage without decreasing fish and wildlife habitat.
2. Manage floodplains in a manner that supports agricultural uses wherever possible.

Policies

1. Encourage the removal of artificial restrictions to natural channel migration if feasible and recognize that seasonal flooding is a natural process.
2. Give preference to nonstructural flood hazard reduction measures over structural measures.
3. When evaluating alternate flood control measures, consider the removal or relocation of structures in flood prone areas.
4. Assure that flood hazard reduction measures do not result in a net loss of ecological functions associated with rivers and streams
6. Avoid development and shoreline modifications that would result in interference with the process of channel migration.
9. When shoreline stabilization and flood protection structures are rebuilt, construct structures that protect or enhance wildlife habitats and are vegetated with native shrubs and trees.
10. Encourage bio-stabilization methods for erosion damage repair whenever possible.
19. All flood protection measures, including repair and maintenance, should conform to standards set forth in county and/or state approved floodplain management plans, when applicable.

20. When emergency repair of flood protection structures is necessary, permits for the work, including mitigation, shall be obtained in a reasonable timeframe or the structure shall be removed.

Consistent. The proposed action is the repair of an existing flood control structure. Setting back the levee is not feasible for this small emergency repair due to the increased time and cost required for real estate acquisition and construction. The nonstructural alternative was also explored, but is similarly infeasible for this emergency repair due to the increased time and cost required. The proposed work does not increase the amount of shoreline modification as it repairs the levee structure into its pre-flood event condition. The project has been designed by professional engineers to ensure that the proposed design is appropriate to the specific conditions of the shoreline at the damaged locations. The proposed action is being completed under an emergency authority, however all necessary permits, if required, will be in place prior to construction.

Snohomish County SMP, 3.2.5.15 Shoreline and Bank Stabilization
Policies
1. Permit the construction of structural shoreline stabilization only when non-structural methods of shoreline protection are not feasible to protect a primary structure and/or pre-existing, legally established access from erosion caused by tidal action, currents, or waves.
2. Locate and construct shoreline stabilization structures in a manner which will not result in adverse effects on downdrift, downstream and adjacent properties and will result in no net loss of shoreline ecological functions.
5. When possible, design structural shoreline stabilization to blend in with the surroundings and to not detract from the aesthetic qualities of the shoreline.
6. Permit the construction of shoreline stabilization structures only where they are necessary to protect primary structures, designated agricultural land and pre-existing, legally established access from natural processes, not for the indirect purpose of creating land by filling behind the bulkhead.
8. Allow new bank stabilization of shorelines only after a geotechnical or hydrologic analysis demonstrates an imminent threat to an existing primary structure or essential public facility.
9. Bioengineering techniques utilizing vegetation, logs or rootwads shall be the preferred method of permitted structural shoreline stabilization except in those cases where a geotechnical or hydrologic analysis determines that such methods are not feasible.

Consistent. The proposed action is the repair of an existing flood control structure. Setting back the levee and nonstructural alternatives were explored. These alternatives were determined to be infeasible for this emergency repair due to the increased time and cost required for real estate acquisition and increased construction cost. The proposed work does not increase the amount of shoreline modification. The project has been designed by professional engineers to ensure that the proposed design is appropriate to the specific conditions of the shoreline at the damaged locations. The proposed action is being completed under an emergency authority, however all necessary permits, if required, will be in place prior to construction.

SCC 30.44.110 – Shoreline substantial development, conditional use, and variance permits.
Except as provided under SCC 30.44.020, a shoreline substantial development, conditional use or variance permit is require prior to development with the county's shoreline jurisdiction as follows:

(1) A shoreline substantial development permit is required for shoreline development in conjunction with allowed uses and modifications pursuant to the SMP unless exempt pursuant to SCC 30.44.120;

Consistent. See SCC 30.44.120 below.

SCC 30.44.120 – Exemptions from shoreline substantial development permits.
(1) The following types of development must be consistent with the policies and provisions of the SMA and the SMP, but are not considered shoreline substantial developments for purposes of this chapter and are not required to obtain a shoreline substantial development permit:
(b)) Normal maintenance or repair of existing structures or developments, including damage by accident, fire, or elements;
(k) Operation and maintenance of any system of dikes, ditches, drains, or other facilities existing on September 8, 1975, which were created, developed, or utilized primarily as a part of an agricultural drainage or diking system;

Consistent. The proposed action area is the repair of a levee built in 1962. The repair would restore to the pre-damaged level of protection.

SCC 30.44.125 – Application of the permit system to shoreline substantial developments undertaken prior to the act.
(1) Shoreline substantial development, as determine by actual construction or development begun upon the shoreline, as opposed to preliminary engineering or planning, undertaken on shorelines of the state prior to the effective date of the SMA, and continuing thereafter, shall not require a permit, except under certain circumstances.

Consistent. The proposed action area is the repair of a levee built in 1962, which when built wa; lawful, has been actively used since inception, and was completed in its entirety before the effective date of the SMA.

SCC-30.67.540. Flood protection measures
(1) The following general regulations apply to flood protection measures within shorelines:
(g) Normal maintenance or repair of flood protection measures is allowed.

Consistent. The proposed action area is the repair of a levee built in 1962. The repair would restore the pre-damaged level of protection.

Snohomish County Code, Chapter 30.62A, Wetlands and Fish & Wildlife

SCC-30.62A.310 General standards and requirements.
(1) This Part establishes specific standards and requirements for protection of wetlands and fish and wildlife habitat conservation areas, and under what circumstances mitigation may be used to address the impacts of development.
(2) Any development activity action requiring a project permit or clearing occurring within wetlands, fish and wildlife habitat conservation areas, and buffers is prohibited unless conducted in compliance with this chapter.

(3) Except as otherwise provided in Part 500, all development activities, actions requiring a project permit or clearing shall be designed and conducted to achieve no net loss of critical area functions and values and comply with the following general standards and requirements:
(a)The project proponent shall make all reasonable efforts to avoid and minimize impacts to wetlands, fish and wildlife habitat conservation areas, and buffers in the following sequential order of preference:

(i) avoiding impacts altogether by not taking a certain action or parts of an action; or;

(ii)when avoidance is not possible, minimizing impacts by limiting the degree or magnitude of the action and its implementation, using appropriate technology, or by taking affirmative steps, such as project redesign, relocation, or timing, to avoid or reduce impacts; and mitigating for the affected functions and values of the critical area;

Consistent. The proposed action is the repair of an existing flood control structure. No new structures will be constructed. The proposed work limits the amount of vegetation removal and shoreline modification to the extent possible by limiting the project length while creating a stable structure. Plantings will be included to mitigate for the impact to vegetation. No wetland impacts will occur. Work will be done within the summer in-water window that is designed to limit impacts to sensitive life stages of fisheries.

Snohomish County-30.62A.320 - Standards and requirements for buffers.
Buffers shall be required adjacent to streams, lakes, wetlands and marine waters to protect the functions and values of these aquatic critical areas.
(1)Buffer Standards and Requirements—No Mitigation Required. All development activities, actions requiring project permits and clearing that comply with the buffer requirements of SCC 30.62A.320(1)(a) through (g) satisfy the avoidance criteria of SCC 30.62A.310(3) and are not required to provide mitigation.
(a)Buffer widths shall be as set forth in Table 2a or 2b below.

Table 2a—Stream, Lake and Marine Buffer Width Standards (Feet)		
Streams and Lakes		
Type S		**150**
Type F with anadromous or resident salmonids		**150**
Type F without anadromous or resident salmonids		**100**
Type Np		**50**
Type Ns		**50**
Marine Waters		
Type 1	**All marine waters**	**150**

(b)Buffer widths shall be measured as follows:

(i)the buffer for streams, lakes and marine waters shall be measured from the ordinary high-water mark extending horizontally in a landward direction and for wetlands, the buffer shall be measured from the edge of the wetland extending horizontally in a landward direction; and
(ii)provided however, where the landward edge of the standard buffer shown in Table 2a or 2b extends on to a slope of 33 percent or greater, the buffer shall extend to a point 25 feet beyond the top of the slope.

(c) Within buffers, the following restrictions on impervious surfaces apply:
(i) no new effective impervious surfaces are allowed within the buffer of streams, wetlands, lakes or marine waters; and
(ii) total effective impervious surfaces shall be limited to 10 percent within 300 feet of:
(A) any streams or lakes containing salmonids;
(B) wetlands containing salmonids; or
(C) marine waters containing salmonids.

(d) All development activities, actions requiring project permits or clearing shall be designed to avoid the loss of or damage to trees in buffers due to blow down or other causes.

(2) Buffer standards and requirements – mitigation required. All actions, structures or facilities listed in this section are allowed only when they are determined to be unavoidable pursuant to SCC 30.62A.310(3) and are conducted according to the standards and requirements identified in this section. When a permit is required, an applicant must also provide a critical area study meeting the requirements of SCC 30.62A.140 and a mitigation plan meeting the requirements of SCC 30.62A.150.

(a) New utilities and transportation structures are allowed within buffers when:
(i) no other feasible alternative exists or the alternative would result in unreasonable or disproportionate costs; and
(ii) location, design and construction minimizes impacts to the buffers pursuant to SCC 30.62A.310.

(b) Stormwater detention/retention facilities are allowed pursuant to the requirements of SCC 30.63A.240.

(c) Access through buffers is allowed provided it is designed and constructed to be the minimum necessary to accommodate the use or activity.

(d) Construction of pedestrian walkways or trails in buffers is allowed when constructed with natural permeable materials and does not exceed 6 feet in width.

(e) Trimming of vegetation for purposes of providing a view corridor in a buffer is allowed provided that:
(i) trimming shall not include felling, topping, or removal of trees and be limited to hand pruning of branches and vegetation;
(ii) trimming and limbing of vegetation for the creation and maintenance of view corridors shall occur in accordance with the pruning standards of the International Society of Arboriculture (See articles published by the International Society of Arboriculture, Consumer Information Program, updated July, 2005);
(iii) trimming shall be limited to view corridors of 30 feet wide or 50 percent of the lot width, whichever is less;
(iv) no more than 30 percent of the live crown shall be removed; and
(v) the activity will not increase the risk of landslide or erosion.

(f) New shoreline and bank stabilization measures or flood protection are allowed pursuant to 30.62A.330(2).

(g) Reconstruction or replacement of buildings may be allowed provided the new building does not encroach further into a critical area or its buffer than did the original building being reconstructed or replaced.

(3) Buffer standards and requirements – mitigation ratios. To mitigate impacts to functions and values of buffers, the ratios in Table 3 shall be required unless using the provisions of innovative development in 30.62A.350. The ratios are based upon the existing type of vegetative cover and are expressed in terms of the number of acres needed to recover the lost functions and values of one acre of buffer area. For impacts to buffers that permanently remove existing vegetation, functions and values shall be assumed to be replaced by creating or enhancing new buffers at the following ratios:

Table 3 –Buffer Mitigation Ratios

Existing Riparian habitat vegetation type	Creation	Enhancement[1]
Mature forest	6:1	12:1
Non-mature forest	3:1	6:1
Shrub	2:1	4:1
Non-woody vegetation	1.5:1	3:1
No vegetated cover	1:1	2:1

[1] enhancement of the existing buffer is allowed in lieu of creation for up to one acre of buffer loss

Consistent. The proposed action is the repair of an existing flood control structure. No new structures and no new impervious surface will be constructed. The proposed work occurs within the buffer of the Snohomish River. Temporary impacts to the buffer will occur, however the functions will be maintained in place. The buffer in the project vicinity includes managed agricultural land, the levee structure covered with grasses, blackberries, sparse trees, and willow thickets. The new work will require the removal of one 3—40 cm diameter at breast height (DBH) red alder that is caught within the slumped material. A willow lift will be planted at approximately ordinary high water at one-foot intervals along the length of the repair to replace vegetation that must be removed for construction and will reduce the time lag before the vegetation restores the habitat and water quality functions of the project area.

Snohomish County-30.62A.330 - Standards and requirements for activities conducted within streams, lakes and marine waters.

This section provides standards and requirements for activities conducted within streams, lakes and marine waters. Protection of streams, lakes and marine waters is inextricably linked to protection of the adjacent buffers. Standards and requirements for buffers adjacent to streams, lakes and marine waters are found in SCC 30.62A.320.

(1) Standards and Requirements for Streams, Lakes and Marine Waters—No Mitigation Required. Any development activity, action requiring project permit or clearing that does not encroach into

streams, lakes or marine waters and provides buffers consistent with the requirements of SCC 30.62A.320(1) satisfies the avoidance criteria of SCC 30.62A.310(3) and do not require mitigation.

Consistent. While no permit is required for this project, the proposed levee repair is consistent with this criterion. The repair does not encroach into the river beyond the toe of the original pre-damaged levee. Several alternatives have been considered by the Corps for this repair. Riprap with plantings will provide protection to the structures while providing habitat functions, and limiting impact to the river.

Snohomish County-30.65 Flood Hazard Areas

Snohomish County-30.65.010 - Purpose and applicability.
The purpose of this chapter is to protect the public health, safety and welfare in those areas subject to periodic inundation due to flooding, and to minimize losses due to flood conditions in the specific areas subject to this chapter by utilizing the methods and provisions set forth herein. The regulations set forth herein shall apply to all development in special flood hazard areas as defined in this title within the jurisdiction of the county.

30.65.020 - Intent.
This chapter restricts uses and regulates structures to those that are consistent with the degree of flood hazard. The intent of this chapter is:
(1) To minimize loss of life and property by restricting uses and regulating development in special flood hazard areas;
(2) To alert the county assessor, appraisers, owners, potential buyers and lessees to the natural limitations of the flood plain;
(3) To meet the minimum requirement of the national flood insurance program; and
(4) To implement state and federal flood protection programs.

Snohomish County-30.65.220 - Floodways—Permitted uses.
The following uses are allowed in the floodway when permitted by the applicable zone in accordance with chapter 30.22 SCC, provided the use is in compliance with the applicable general and specific floodproofing standards of SCC 30.65.110 and 30.65.120, and other applicable provisions of this chapter and will have a negligible effect upon the floodway in accordance with the floodway encroachment provisions of SCC 30.65.230(1):
(10) Water-dependent utilities and other installations which by their very nature must be in the floodway. Examples of such uses are: Dams for domestic/industrial water supply, flood control and/or hydroelectric production; water diversion structures and facilities for water supply, irrigation and/or fisheries enhancement; flood water and drainage pumping plants and facilities; hydroelectric generating facilities and appurtenant structures; structural and nonstructural flood damage reduction facilities, and stream bank stabilization structures and practices. The applicant shall supply convincing evidence that a floodway location is necessary in view of the objectives of the proposal and that the proposal is consistent with other provisions of this chapter and the shoreline management master program. In all instances of locating utilities and other installations in floodway locations, project design must incorporate floodproofing.

(11) Dikes, when the applicant can provide clear and convincing evidence that:
(a) Adverse effects upon adjacent properties will not result relative to increased floodwater depths and velocities during the base flood or other more frequent flood occurrences;
(b) Natural drainage ways are minimally affected in that their ability to adequately drain floodwaters after a flooding event is not impaired; and
(c) The proposal has been coordinated through the appropriate diking district where applicable, and that potential adverse effects upon other affected diking districts have been documented.

Consistent. Levees are flood control structures that are by definition located within floodplains. The project repairs an existing levee (dike) to its pre-damaged condition without raising the height or encroaching into the river. The project is being completed with the French Slough Flood Control District as the local sponsor and a public notice will be issued. The project has been designed with vegetated riprap to provide protection to the adjacent protected structures while providing habitat function and limiting impact to the river.

5. The project complies with the following enforceable policies of the Coastal Zone Management Program:
1. Shoreline Management Act: As per RCW 90.58.030 and WAC 173-27-040, maintenance of existing levees is exempt. This consistency determination will be submitted to Washington Department of Ecology for concurrence.
2. State Water Quality Requirements: The Corps concludes that the project is subject to regulation under Sections 401 and 404 of the Federal Water Pollution Control Act. The repair at the damaged area is a Repair-in-Kind to return to the pre-flood condition. While the project does not expand outside of the original constructed prism, the repair requires a deviation in the composition of the levee at the project location. This repair will be analogous to a Nationwide Permit (NWP) 3, which authorizes the repair, rehabilitation, or replacement of any currently serviceable structure, provided that the structure or fill is not to be put to a different use. Necessary minor deviations in the structure's configuration are authorized.
3. State Air Quality Requirements: This project does not require air quality permits.
4. State Environmental Policy Act: Corps Civil Works projects comply with NEPA and are not subject to SEPA.

The remaining two policies, the Energy Facility Site Evaluation Council law and the Ocean Resources Management Act are not applicable to this project.

6. Consistency Determination. Based on the above evaluation, it is determined that the proposed rehabilitation activities comply with the policies, general conditions, and activities as specified in the Snohomish County Unified Development Code. The proposed action is considered to be consistent to the maximum extent practicable with the State of Washington Shoreline Management Program and policies and standards of the Snohomish County Shoreline Management Program.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office • 3190 160th Ave SE • Bellevue, WA 98008-5452 • 425-649-7000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

April 26, 2018

Evan Lewis, Deputy Chief
Planning, Environmental, and Cultural Resources Branch
U.S. Army Corps of Engineers, Seattle District
PO Box 3755
Seattle, WA 98124

RE: 2018 Lord Hill Levee Rehabilitation Project, Snohomish River, King County, Washington

Dear Mr. Lewis:

Ecology has determined the above project meets the requirements for Washington State Section 401 Water Quality Certification under Nationwide Permit #3, based on the application submitted by the U.S. Army Corps of Engineers (Corps). Any changes to your project that would impact water quality should be submitted in writing to Ecology before work begins for additional review.

An individual 401 certification will not be required for this project; however, this letter does not exempt the Corps from other requirements of federal, state, and local agencies.

Please contact me if you have any questions regarding this letter at (425) 649-7129 or email Rebekah.Padgett@ecy.wa.gov.

Sincerely,

Rebekah R. Padgett
Federal Permit Manager
Shorelands and Environmental Assistance Program

E-cc: Vanessa Pepi, Corps
Amanda Ogden, Corps
Chad Yunge, Ecology
Loree' Randall, Ecology
ecyrefedpermits@ecy.wa.gov

Water Quality Monitoring Plan (WQMP)

Lord Hill Levee Rehabilitation

Prepared by

Vanessa Pepi

U.S. Army Corps of Engineers

March 2018

Revised May 2018

PURPOSE

The Water Quality Monitoring Plan (WQMP) will be used to track the performance of Best Management Practices (BMPs) used during in-water work within the project limits of the Lord Hill Levee Rehabilitation project.

This WQMP includes a monitoring schedule that identifies the appropriate parameters to be monitored, locations, monitoring and sampling procedures, and frequency.

OBJECTIVES

This WQMP will:

- Document the performance of BMPs used within waters of the state,by conducting water quality monitoring and sampling.
- Determine if Water Quality Standards are being met at the edge of the point of compliance.

Any changes to monitoring must be approved by Ecology prior to making the changes.

IN-WATER/OVER WATER ACTIVITY DESCRIPTION

The Lord Hill Levee Rehabilitation project will include the repair of approximately 170 feet along the bank of the Snohomish River.The following activities will occur below the OHWM and/or above surface waters:

1. Removal of the alder tree.

2. Replacement of the levee toe using rock below the summer low water level.

3. Lay-back grading of the levee bank above summer low water level and placement of quarry spalls and riprap.

WATER QUALITY STANDARDS FOR SURFACE WATERS

This project is located in Water Resource Inventory Area (WRIA) 07, on the Snohomish River

The Water Quality Standard for the following parameter(s) is:

- Turbidity- Maximum turbidity criteria will be the Washington State Code 173-201A-200 which states: Turbidity shall not exceed 5 NTU over background when the background is 50 NTU or less, or a 10 percent increase in turbidity when the background turbidity is more than 50 NTU
    - turbidity point of compliance will be 300 feet downstream.
- Oil and Grease- No Visible Sheen

pH- no impact to pH is anticipated, therefore this parameter will not be monitored.

MONITORING PLAN

Monitoring Contacts

If required, Vanessa Pepi will be responsible for providing Ecology with the necessary notifications and results of the water quality monitoring.

Corps staff will be conducting the 401 water quality monitoring. Phone number is 206-764-5524 (office). Several levee repairs will be ongoing simultaneously throughout Western Washington. Staffing availability for each particular project has not yet been defined, however Emergency Management staff will have construction oversight at each location and will be conducting the onsite monitoring.

Monitoring Schedule

Sediment generating activities triggering monitoring efforts:

-
- In-water rock placement
- Potential: tree removal

Monitoring Frequency/Duration:

- Point of compliance monitoring will occur once per hour for the first three hours after the commencement of each new sediment generating activity and then once every 3 hours, if no exceedance is noted, until the end of the work day.
- Background samples will be taken on the same frequency as the compliance samples.
- If, after a minimum of one full day, the monitoring results verify that turbidity levels from a certain sediment-generating activity is remaining consistently below the stated water quality standards, physical monitoring monitoring may be reduced or stopped for that activity. Physical monitoring

would be resumed during new sediment-generating activities or if precipitation events or any other changes would result in higher or lower project-related turbidity.
- Visual monitoring will be done continuously for all work below the OHWM.
- Maximum turbidity levels will meet WAC 173-201A-200. Turbidity must not exceed 5 NTU over background when the background is 50 NTU or less; or a 10 percent increase in turbidity when the background turbidity is more than 50 NTU.

Contingency Sampling

If sample results confirm that water quality is out of compliance with water quality standards, the Project will modify or stop the activity causing the problem and commence the contingency sampling requirements until standards are met for two consecutive sample periods.

Parameter	Contingency Sampling Location	Contingency Frequency	WQ Standard
Turbidity	Point of Compliance	Hourly	See above
Oil/Grease	Throughout project area	Continuous-Visual	No Sheen

Once compliance with water quality standards is achieved, the project shall return to its standard sampling schedule.

Non Compliance

If either visual or physical monitoring indicates that water quality standards have been exceeded, the required reporting will be initiated.

SAMPLING PROTOCOL

Sampling Locations

Sampling locations are:

- Background – 100 feet upstream of the project site.
- Point of Compliance site – 300 feet downstream of the project site.

Sampling Procedures

Water samples will be collected and analyzed for the appropriate parameters, per the Monitoring Schedule above, following the equipment and sampling guidelines below:

Turbidity will be monitored using a Hach turbidimeter.

A portable turbidity meter will be used in the field. A representative sample should accurately reflect the true condition of the water source from which the sample was taken. The following protocol will be used to ensure a representative sample is analyzed:

- Use a clean container to obtain a grab sample from the source;
- Collect sample with care to avoid disturbance of sediments and collecting surface contaminants;
- Gently but thoroughly mix the sample before pouring it into the small vial used to read the sample in the turbidimeter; and
- Without allowing the sample to settle, take turbidity reading according to turbidimeter manufacturer's instructions.
- Several measurements can be taken, with the average used as the data for comparison.

A calibration check of the turbidimeter using secondary standards will be carried out regularly (at least once per week). The instrument will be recalibrated using primary standards at least once every 3 months, or more when a calibration check indicates there is a problem. The manufacturer's calibration procedures will be followed.

Oil and Grease is a continuous visual monitoring for a visible sheen on the water's surface.

REPORTING

All water quality monitoring results (visual and physical) will be recorded on the monitoring form attached (Attachment A).

All sample results will be submitted to the Ecology Federal Permit Manager/Coordinator per the frequency specified in the 401.

If sample results or visual monitoring indicate an exceedance of water quality standards, notification shall be made within 24 hrs to Ecology's Federal Permit Manager/Coordinator.

ATTACHMENTS

Attachment A - Sample Monitor Results Reporting Form

Lord Hill Levee Repairs 2015

Date:			Weather:		In-water work start time:
Time of day	**Construction activity**	**Background Sample** (NTU) Please note location	**Point of compliance Sample** (NTU) Please note location	**Change** (NTU)	**Description of visible plume** (length downstream, width as % of channel)
Example: 0800	*Rock Placement at Site 1*	*20.2 (BKG Sno)*	*21.1 (POC1)*	*+0.9*	*visible plume 50 ft in length, < 10% of channel in width*

Notes: