

Attachment D
Shoreline Narrative



Shoreline Development and Conditional Use Permit Application Narrative – Satsop Right Bank Conservation Project

Prepared for
Gray's Harbor Conservation District

August 2021

Prepared by
Parametrix

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Prepared for

Grays Harbor Conservation District

330 Pioneer Ave. W.
Montesano, WA 98563

Michael Nordin
plutroll2005@gmail.com
360.208.4451

Prepared by

Parametrix

1019 39th Avenue SE, Suite 100
Puyallup, WA 98374
T. 253.604.6600 F. 1.855.542.6353
www.parametrix.com

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ATTACHMENTS

This attachment list mirrors the attachments for the Joint Aquatic Resource Permit Application (JARPA). Refer to the complete JARPA application for attachments.

- Attachment A. Property Owners Signature Pages (4)
- Attachment B. Figures
- Attachment C. Adjoining Property Owners List
- Attachment D. Shoreline Narrative
- Attachment E. Critical Areas Compliance Narrative
- Attachment F. Floodplains Compliance Technical Memorandum
- Attachment G. Critical Areas Report and Mitigation Plan
- Attachment H. Cultural Resources Summary
- Attachment I. SEPA Checklist
- Attachment J. Hydraulics Technical Memorandum
- Attachment K. Representative Photographs

1. INTRODUCTION

1.1 Background

The Satsop River is located in Grays Harbor County, where the main stem originates at the confluence of the East and West Forks, flows south through Satsop, and continues south until it meets the Chehalis River. The main stem of the Satsop flows through a valley, which is predominantly used for farming.

The banks of the Lower Satsop River are eroding in many places as part of the natural channel migration process. Some of the factors that affect rates of bank erosion include soil composition, bank slope, land cover, and stream power. The characteristics of the bank at the project site consists of a slope close to vertical with highly erodible Chehalis and Humptulips silt loam soils completely void of riparian vegetation, aside from on the northernmost portion of the bank.

Multiple projects have recently been completed along the Lower Satsop River, focusing on flood protection and restoration. In 2019 and 2020, WDFW completed substantial restoration projects in the floodplain to remove dikes, revetments, and return river flows to floodplain areas previously inaccessible for decades. In 2020, Grays Harbor County constructed the Keys Road Flood Protection Project (i.e., Phase I of the Lower Satsop Restoration and Protection Program) that involved installation of engineered log jams and setback log structure revetments to protect Keys Road and associated infrastructure. Phase II of the Lower Satsop Restoration and Protection Program is currently in design and will be constructed in summer 2022. Recent significant bank erosion within the right bank project area has occurred, resulting in current and anticipated future loss of riparian habitat and adjacent farmland. Construction of this project in fall 2021 is intended to slow the rate of erosion until the Phase II project can be constructed.

The project area is located within unincorporated Grays Harbor County, Washington. Project activities will occur in the following parcel locations:

Parcel ID	Section	Township	Range
170701440010 (Contreras)	01	17N	7W
170701440020 (Chapman)	01	17N	7W
170701440030 (Chapman)	01	17N	7W
170701440040 (Chapman)	01	17N	7W
170712120030 (Willis)	12	17N	7W
170607220010 (Olympic View Dairy)	07	17N	6W

1.2 Future Development Proposal

The project proposes to provide protection of approximately 1,950 feet of riverbank along the lower Satsop River needed for erosion control until the Keys Road Flood Protection Phase II project can be constructed and to protect adjacent farmland.

The project design has avoided and minimized adverse environmental effects to the aquatic environment and riparian zone through analysis of channel migration and erosion to focus bank conservation actions in the most effective areas. Construction activities will be set back from the bank to

avoid and minimize potential for bank failure. During excavation, topsoil will be stockpiled and replaced in-kind.

The project will use engineered log structures (log jacks, log row bundles, and log jack spurs) to reduce stream power and stabilize banks. Large, rounded boulders (ballast), steel cable, steel chain, and all-thread rods use will be minimized and only used where necessary to provide ballast and connect logs. Rock will be sourced from local quarries within the lower Chehalis River basin and will be rounded (not angular) to the extent feasible. Disturbance to the limited remaining riparian vegetation at the upstream end of the project area will be avoided by placing continuous log rows on more stable land above the top of bank beyond the limits of riparian vegetation and by designating temporary access routes and staging areas away from riparian vegetation.

The project will consist of installation of four log jack spurs, continuous log rows, and multiple groupings of log jacks installed in uplands set back 5 to 6 feet from the top of bank. Continuous log rows and individual or small groupings of log jacks will be placed in 5-foot-deep excavated trenches, whereas log jack spurs will be in trenches up to approximately 20 feet deep. Log rows will consist of two bundles of four logs each with ballast rocks secured on each end with cable or other suitable material. Log jacks will consist of a six-log tetrahedral structure with a ballast boulder contained inside. Structures will be bound together using all-thread rods to connect logs, and the ballast boulder will be contained within the structure using a cable sling. Slash material will be inserted within jacks to provide potential for trapping sediment and providing fish habitat. Log jack spurs will consist of widely spaced structures made of dense groupings of log jacks. Spurs are intended to redirect the river away from the eroding bank. The log rows, log jacks, and tails of the spurs will be mostly buried with excavated soil.

The project will result in a total of approximately 23,000 square feet of excavation of native soil material (approximately 17,500 cubic yards), placement of approximately 23,000 square feet of rock and log material (approximately 5,300 cubic yards), and backfilling with native soil. All excavated soil will remain on-site and will be backfilled directly into excavated areas or spread and graded in upland areas adjacent to the completed installation. Excavation will occur to a depth of up to 20 feet below ground surface. Ground disturbance will occur only within approximately 200,000 square feet of farmed uplands. No grading or structure placement will occur in the staging and access areas. No impacts will occur waterward of the bank or below the ordinary high water mark (OHWM) of the Satsop River.

The upland staging area (partially within the shoreline jurisdiction area) will be approximately 13.25 acres including staging, access, and project area. The access road (to be located outside of the 150 foot shoreline buffer) is proposed to provide a stabilized surface for on-site construction traffic and access for adaptive management activities. The road will be 15 feet wide and will include 80-foot diameter turn-arounds near each end, for a total area of approximately 1.43 acres (62,260 square feet) square feet. The road will consist of geotextile and/or geogrid laid on the existing ground surface, with approximately 1 foot of hog fuel (wood chips) placed on top, for a total volume of approximately 2,400 cubic yards. The hog fuel and geotextile/geogrid will be removed prior to the end of the 3-year maintenance period, and the area will be restored to pre-existing conditions by seeding with grass seed and/or mulch (unless another cover crop is selected for installation by the farmers). No long-term adverse environmental effects will occur from this activity.

A 3-year adaptive management plan will be implemented, including (1) maintenance of structures within the channel to ensure they function properly, (2) shoreline planting of willow wattles or other bioengineering techniques as the bank erodes and structures sluff into the river, and (3) continued monitoring.

2. SMP COMPLIANCE

The Grays Harbor Shoreline Environment Designations Map shows the project area designated as Rural Development. The project proposes installing log/ballast structures for riverbank conservation and erosion control. Table 1 from the Grays Harbor County Shoreline Management Plan lists shoreline structural stabilization as a conditional use for a Rural Development designation. Under the Grays Harbor County (GHC) Shoreline Management Plan (SMP), this project requires a shoreline substantial development permit and in addition requires a shoreline conditional use permit.

2.1 Goals and Policies

Chapter 3 of the GHC SMP provides general policies and regulations. This section of the application narrative describes how the proposed project complies with the applicable goals, policies, and regulations.

Section 3.2 Archaeology, Historic, and Scientific Resources

3.2.1 Goal

Encourage the identification, protection, and restoration of sites within the county's shorelines that have archeological and historic importance to the public.

Response: The project is intended to stabilize the existing bank of the Satsop River by installing log jack spurs, continuous log rows, and multiple groupings of log jacks in uplands, set back 5 to 6 feet from the top of the bank. The project anticipates 23,000 square feet of excavation of native soil materials. All soil will remain on-site and will be backfilled directly over excavated areas. In the event any artifacts are uncovered during any construction activity, all construction would stop and the County, the Washington State Department of Archaeology and Historic Preservation (DAHP), and affected tribes would be contacted.

3.2.2 Policies:

Response: In June 2021, cultural resource specialists from the environmental consulting firm, Dudek excavated 21 shovel probes along the eroding bank on the Willis and Chapman parcels within the proposed API/APE for another project along the Satsop river (ASRP Lower Satsop Phase II). No cultural resources were identified. The lower Satsop Right Bank Conservation project area extends west from the bank outside of ASRP's previously tested and surveyed API/APE. A pedestrian survey and additional subsurface testing will need to be conducted for these areas for the project.

During excavation, topsoil will be stockpiled and replaced in-kind. In the event any artifacts are uncovered during any construction activity, all construction would stop and the County, DAHP, and affected tribes would be contacted.

3.2.3 Regulations:

A. The Administrator shall review all permit applications for shoreline development or statements of exemption on any project site that is shown on the Washington State Department of Archeology and Historic Preservation's current predictive model as "survey recommended: moderate risk," "survey highly advised: high risk, and "survey highly advised: very high risk".

B. All applications meeting the criteria under A in this section shall require a site survey or assessment, unless the Washington State Department of Archaeology and Historic Preservation (DAHP)

waives or modifies this requirement. C. Any required site assessment shall be conducted by a qualified professional, as applicable, to determine the presence of the resource or resources. The permit applicant shall pay the cost for the qualified professional.

D. If the site assessment identifies the presence of archaeological, historic, or scientific resources, a qualified professional shall prepare appropriate recommendations as part of the survey or assessment. The permit applicant shall pay the cost for the services of the qualified professional. In the preparation of such plans, the qualified professional shall solicit comments from the DAHP, affected tribal governments, or other appropriate state and federal agencies. The conclusions and recommended conditions of the survey or assessment shall incorporate comments received from all reviewers to the maximum extent practicable.

E. A survey or site assessment shall be prepared in accordance with guidance for such studies. The county, in consultation with DAHP or other affected tribal, state, or federal agencies, shall determine whether the research design or study is adequate.

F. Based upon consultation with DAHP or other affected tribal, state, or federal agencies, the Administrator may reject or request revision of the conclusions reached in a survey or assessment when there is inaccurate or incomplete measures to address the management concerns involved with the archeological, historic, or scientific sites.

G. Whenever granting shoreline permits or statements of exemption for development, the Administrator may attach conditions of approval to assure the protection of archeological, historic, or scientific sites.

H. Whenever a property owner inadvertently discovers archeological, historic, or scientific sites or artifacts in the process of development on shorelines, work on that portion of the development site shall stop immediately and the property owner shall report the finding as soon as possible to the Administrator, DAHP, and affected tribes.

I. When discoveries are made, after consulting with DAHP, affected tribes, and any other appropriate agencies, the Administrator may require an immediate site assessment conducted by a qualified professional pursuant to subsection E of this section to determine the extent of damage to the resource. Upon completion of the assessment or survey, the Administrator shall distribute it to DAHP, affected tribes, or other appropriate agencies for a 15-day review period. If the above listed agencies or governments have failed to respond within the applicable review period following receipt of the site assessment, work on the development may resume.

J. If there is a discovery of human remains on the property, all activity shall cease immediately and the property owner shall report the finding to the County Sheriff.

Response: The project site is located in an area identified on the DAHP current predictive model as Very High Risk with “Survey Highly Advised” status. Although the DAHP predictive model maps this area as considered “very high risk for cultural resources,” the local landform is flooded regularly 5 months of the year (November–March), and based on Dudek’s previous study, the landform is not as likely to yield archaeological deposits as the model indicates. The additional survey and subsurface testing fieldwork to sample the Right Bank project API/APE is forthcoming, and a cultural resources technical survey report will be submitted for this permitting process.

Section 3.3 Protection of Shoreline Ecological Functions

3.3.1 Goal

Protect shoreline resources by ensuring no net loss of existing ecological functions by providing buffers for critical area buffers and conserving native shoreline vegetation while maintaining property rights of owners within the shoreline.

Response: The project proposes to provide protection of approximately 1,950 feet of riverbank along the lower Satsop River to control erosion until the Keys Road Flood Protection Phase II project can be constructed and to protect adjacent farmland. The engineered log structures will be maintained within the channel to ensure they function properly, and shoreline willow wattles will be planted (or other bioengineering technique will be used) for added bank conservation once the structures are sluffed into the river. Work will be performed upland from the bank to conserve riparian vegetation. These approaches will ensure no net loss of ecological functions within the shoreline.

3.3.2 Policies:

Response: Recent significant bank erosion within the Right Bank project area has occurred, resulting in current and anticipated future loss of riparian habitat and adjacent farmland. The project is designed to minimize impacts to the aquatic environment and is intended to be self-mitigating, resulting in minimal adverse environmental effects. The log/ballast structures will provide erosion control to conserve the riverbank and improve fish and riparian habitat. Existing conditions of and potential impacts to critical areas are described in the Critical Areas Report (see Attachment G). The project has been designed to avoid impacts, minimize impacts, and ensure no net loss of ecological function.

3.3.3 Regulations:

A. Shoreline development, uses, and activities shall be located and designed to ensure no net loss of ecological function unless authorized otherwise under this Master Program.

Response: Recent significant bank erosion within the Right Bank project area has occurred, resulting in current and anticipated future loss of riparian habitat and adjacent farmland. The project is designed to minimize impacts to the aquatic environment and is intended to be self-mitigating, resulting in minimal adverse environmental effects. No net loss of ecological functions is anticipated. The project is intended to improve riparian and fish habitat while conserving the riverbank.

B. Ecological functions existing at the time of the adoption of this Master Program shall serve as the baseline for evaluating new development and its effect on ensuring no net loss of ecological functions.

Response: The proposed project will provide erosion control on the lower Satsop River's riverbank protecting adjacent farmland. As erosion continues, log/ballast structures will sluff into the river channel to conserve the riverbank. Slash materials will be inserted within jacks to provide potential for trapping sediment and fish habitat.

C. Development and uses shall protect existing shoreline ecological functions. However, if avoidance is not possible, mitigation is required to address impacts in accordance with the following order of priority:

- i. Avoiding the impact altogether by not taking a certain action or parts of an action;*
- ii. Minimize impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology or by taking affirmative steps to avoid or reduce impacts;*
- iii. Rectify the impact by repairing, rehabilitating, or restoring the affected environment;*
- iv. Reduce or eliminate the impact over time by preservation and maintenance operations*

v. Compensate for the impact by replacing, enhancing, or providing substitute resources or environments; and

Response: The project design has avoided and minimized adverse environmental effects to the aquatic environment and riparian zone through analysis of channel migration and erosion to focus bank conservation actions in the most effective areas. Construction activities will be set back from the bank to avoid and minimize potential for bank failure. During excavation, topsoil will be stockpiled and replaced in-kind.

The project will provide erosion control and provide improved fish and riparian habitat along the riverbank utilizing log/ballast structures. The structures will be installed upland and set back 5 to 6 feet from the top of the bank to minimize potential bank failure during construction. The staging area will be located in an upland field. No impacts will occur waterward of the bank or below the OHWM of the Satsop River.

A 3-year adaptive management plan will be implemented, including (1) maintenance of structures within the channel to ensure they function properly, (2) shoreline planting of willow wattles or other bioengineering techniques as the bank erodes and structures sluff into the river, and (3) continued monitoring.

D. Requirements for mitigation shall be consistent with Section 18.06.080 GHCC.

Response: GHCC Section 18.06.080 Administrative procedures states, “The administrator is authorized to adopt such administrative rules and regulations as necessary and appropriate to implement these chapters, and to prepare and require the use of such forms as necessary for its administration.” The applicant is developing an adaptive management plan and will work with the County on additional mitigation requirements if needed.

E. Shoreline buffers shall be maintained along all Type S shorelines to protect and maintain ecological functions and to minimize risks to public safety. The width of the shoreline buffer shall be measured horizontally from the site’s ordinary high water mark. The width of the shoreline buffer shall be consistent with the following:

vii. Rural Development Environment adjacent to the Aquatic Environment: 150 feet

Response: The project is located in a Rural Development designated area and proposes installing log/ballast structures upland approximately 5 to 6 feet from the top of the riverbank. This will provide bank conservation, erosion control, and protect adjacent farmland which is consistent with the Rural Development designation. Staging will occur in an upland field out of the 150-foot buffer.

G. Primary uses and structures that meet the definition of water-dependent may locate within a shoreline buffer when consistent with the mitigation requirements under Section 3.3.3 C and D.

Response: The project is water dependent because its main purpose is to prevent further erosion for flood control and shoreline retention. The structure is consistent with Sections 3.3.3 C and D by providing riverbank erosion control and protecting adjacent farmland.

I. Removal of vegetation within the shoreline buffer shall be avoided except under the following conditions:

i. Where removal of native vegetation cannot be avoided, it shall be mitigated consistent with the requirements under Section 3.3.3 C and D.

ii. Property owners may do limited and selective pruning for views within the shoreline buffer that does not compromise slope stability and ecological functions. View maintenance techniques shall preserve plant composition and structure by removing no more than 25 percent of the canopy cover of any individual tree and no more than 20 percent of the canopy cover in any single stand of trees in a given five-year period. Pruning shall comply with the National Arborist Association pruning standards.

iii. Projects that eradicate invasive species, including noxious weeds and non-native species, are allowed. Removal of non-native vegetation shall be replaced with native vegetation.

iv. A landowner may remove a hazard tree in a shoreline buffer if it poses an immediate threat or danger to health, safety, property, or environmental degradation caused by pest or disease infestation.

v. A private dock or pier; a six-foot pedestrian pathway leading to the shoreline; and a cleared recreation area may be permitted as accessory to a single-family residence provided that impacts are fully mitigated. Cleared recreation areas may not be located in a landslide hazard area and may not exceed 15% of the total area of the shoreline buffer. If there is a category 4 wetland between the water body and the uplands, a path may be constructed through the wetland if there is no alternative route and the impacts are fully mitigated.

Response: Vegetation removal will be minimal (see Attachment B). Topsoil removed during excavation will be stockpiled and replaced in-kind. Engineered log structures will be used to stabilize banks. Disturbance to the limited remaining vegetation at the upstream end of the project area will be avoided by placing continuous log rows on more stable land above the top of the bank, beyond the limits of the riparian vegetation. A mitigation plan has not been prepared, but a 3-year adaptive management plan will be implemented that includes structure maintenance, willow plantings, monitoring, and coordination with WDFW. Entire project will be constructed upland and will only affect farmlands. Riparian and in-stream habitats will be avoided during construction.

Section 3.4 Flood Hazard Reduction

3.4.1 Goal

Promote public health, safety, and general welfare by minimizing the location of development and uses within flood-prone areas that require the need for future structural flood hazard reduction measures.

Response: The banks of the Lower Satsop River are surrounded by existing farmland. Erosion rates along the right bank of the Satsop River are estimated at up to 300 feet of bank loss over the next 2 years without the implementation of bank protection. The proposed project will provide riverbank conservation, and the engineered structures will reduce westward channel migration providing erosion control to protect adjacent farmland. The proposed project will result in minimal floodplain encroachment limited to a small portion of the exposed wood.

3.4.2 Policies:

Response: The project is located in a FEMA floodway Zone A, and there is no floodway determined by a detailed study. The Satsop River has no detailed flood study and is subject to backwater effects from the Chehalis River in the project area. The backwater results in a level pool at the Satsop River mouth, therefore any modeling of the Satsop River to evaluate encroachment of any type would show no change in the base flood stage because the level is solely established by the Chehalis River.

The proposed log jacks will result in minimal floodplain encroachment that is limited to a small portion of the exposed wood. The position of the log jacks in this backwater area is not possible to evaluate for change because the flood stage is established by the Chehalis River, not the Satsop River, and it is unlikely to have any effect on the base flood elevation. The project will not have an adverse effect of more than one foot of rise (Attachment F).

3.4.3 Regulations:

A. The following development or uses may be appropriate and/or necessary within channel migration zones or floodways:

- i. Actions that are protecting or restoring shoreline ecological functions;*
- vii. Development with a primary purpose of protecting or restoring shoreline ecological functions;*
- ix. Measures to reduce shoreline erosion if a qualified professional demonstrates that:
 - a. Erosion rates exceed those occurring under natural conditions;*
 - b. The measure does not interfere with fluvial hydrological geomorphological processes normally acting in natural conditions; and*
 - c. The measure includes appropriate mitigation of impacts to ecological functions associated with shorelines of the state.**

Response: The project is consistent with Regulations 3.4.3 (A)(i) and (A)(vii) by protecting and improving shoreline functions through erosion control and improving fish and riparian habitat.

Regarding 3.4.3 (A)(ix), the current rate of erosion is projected as 115 feet per year for June 2021–2022 and June 2022–2023. This equates to a loss of 4.39 acres of land between June 2021 and June 2022 and 5.06 acres of land between June 2022 and June 2023. This is an accelerated rate of erosion and bank conservation is endorsed by the Chehalis Basin Strategy.

The proposed project will not interfere with fluvial hydrological geomorphological processes normally acting in natural conditions based on a hydraulic analysis performed by NW Hydraulic Consultants (Attachment J).

The project design has avoided and minimized adverse environmental effects to the aquatic environment and riparian zone through analysis of channel migration and erosion to focus bank conservation actions in the most effective areas. Construction activities will be set back from the bank to avoid and minimize potential for bank failure. During excavation, topsoil will be stockpiled and replaced in-kind. The project is designed to minimize impacts to the aquatic environment and intended to be self-mitigating resulting in minimal adverse environmental effects. The log/ballast structures will provide erosion control to conserve the riverbank and improve fish and riparian habitat. Existing conditions of and potential impacts to critical areas are described in the Critical Areas Report (Attachment G) and Critical Areas Compliance Narrative (Attachment E). The project has been designed to avoid impacts, minimize impacts, and ensure no net loss of ecological function.

B. Allow new structural flood hazard reduction measures in shoreline jurisdiction only when it can be demonstrated by a scientific and engineering analysis that they are necessary to protect existing development, that nonstructural measures are not feasible, that impacts on ecological functions and priority species and habitats can be successfully mitigated to assure no net loss, and that appropriate vegetation conservation actions are undertaken consistent with WAC 173-26-221(5).

Response: The banks of the Lower Satsop River are eroding in many places as part of the natural channel migration process. Recent significant bank erosion within the Right Bank project area has occurred, resulting in current and anticipated future loss of riparian habitat and adjacent farmland. The characteristics of the bank at the project site consist of a slope close to vertical with highly erodible Chehalis and Humptulips silt loam soils completely void of riparian vegetation, aside from on the northernmost portion of the bank.

The current rate of erosion is projected as 115 feet per year for June 2021–2022 and June 2022–2023. This equates to a loss of 4.39 acres of land between June 2021 and June 2022 and 5.06 acres of land between June 2022 and June 2023. This is an accelerated rate of erosion and is part of the actions endorsed by the Chehalis Basin Strategy.

Several alternatives to the proposed project were considered including using riprap, excavating a new channel, and placing structures in-stream outside of the in-water work window. These alternatives were discussed with the Lower Satsop Restoration and Protection Program Advisory Committee (July 2021), which included all permitting agencies. It was determined that these alternatives were not practicable due to the potential for adverse effects to fish life and to fish habitat.

The project is designed to minimize impacts to the aquatic environment and intended to be self-mitigating, resulting in minimal adverse environmental effects. No impacts will occur waterward of the bank or below the OHWM of the Satsop River. Work will be performed upland from the bank to conserve riparian vegetation. Log structures located in areas near riparian vegetation will be placed above the top of the bank to not interfere with riparian vegetation.

Because the project will use natural materials and has been designed to be compatible with in-stream habitat, the project is considered self-mitigating. A mitigation plan has not been prepared, but a 3-year adaptive management plan will be implemented that includes structure maintenance, willow plantings, monitoring, and coordination with WDFW. The entire project will be constructed upland and will only affect farmlands. Riparian and in-stream habitats will be avoided during construction. No net loss of ecological functions is anticipated. The project is intended to improve riparian and fish habitat while conserving the riverbank.

C. Place new structural flood hazard reduction measures landward of the associated wetlands, and designated vegetation conservation buffers, except for actions that increase ecological functions, such as wetland restoration. Flood hazard reduction projects may be authorized if it is determined that no other alternative to reduce flood hazard to existing development is feasible. The need for, and analysis of feasible alternatives to, structural improvements shall be documented through a geotechnical analysis.

Response: The project is a flood hazard and erosion reduction project designed to protect further riverbank erosion affecting neighboring farmland and to preserve the aquatic environment. Project work is located upland and set back from the bank to minimize effects on the bank. Please see the response to Section 3.4.3 (B) for a discussion of need, alternatives, and feasibility.

D. Structural flood hazard reduction measures shall be consistent with an adopted comprehensive flood hazard management plan approved by the department that evaluates cumulative impacts to the watershed system.

Response: The proposed project supports the flood hazard reduction measures in the Chehalis Basin Strategy. The proposed log jacks will result in minimal floodplain encroachment that is limited to a small portion of the exposed wood. The position of the log jacks in this backwater area is not possible to

evaluate for change because the flood stage is established by the Chehalis River, not the Satsop River, and it is unlikely to have any effect on the base flood elevation. The project will not have an adverse effect of more than one foot of rise.

F. The removal of gravel for flood management purposes shall be consistent with an adopted flood hazard reduction plan and allowed only after a biological and geomorphological study shows that extraction has a long-term benefit to flood hazard reduction, does not result in a net loss of ecological functions, and is part of a comprehensive flood management solution. Removal of sand and gravel within an active channel located waterward of the ordinary high water mark of a river shall not be permitted unless consistent with all of the following provisions:

Response: Dredging or discharge of materials into waters of the U.S. is not anticipated during construction. Excavated soil will remain on-site and will be backfilled directly over excavated areas. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared prior to starting construction, which will include appropriate upland erosion and sediment control measures to ensure prevention of runoff from excavated material into the river. No impacts will occur waterward of the bank or below the OHWM of the Satsop River.

Section 3.5 Public Access

3.5.1 Goal

Increase the ability of the public to enjoy the water's edge, travel on the waters of the state, and to view the water and shoreline from adjacent locations.

Response: The project is not increasing the ability to access the Satsop River, rather it is protecting adjacent farmland via riverbank erosion control. The project will not impact nearby public access sites, Double Bridges and Wharton. Signage will be posted at local boat access points and along the bank warning recreational river users of the presence of the log structures and advising them to stay back from the bank.

3.5.2 Policies:

Response: The project is not proposing development to promote or enhance public access to the river. The project area is surrounded by private farmland. Two public access sites are located nearby: Double Bridges and Wharton.

3.5.3 Regulations:

A. Shoreline development by public entities shall include public access measures unless shown to be incompatible due to reasons of safety, security, or impact to the shoreline environment.

Response: The applicant is a public entity, but due to safety concerns, public access is not compatible on this site. The site is privately owned, and the shoreline consists of a near vertical bank with no safe access to the water.

B. Except as provided in B below, substantial developments or conditional uses shall provide public access under the following circumstances:

- i. A development will create increased demand for public access to the shoreline;*
- ii. A development will interfere with existing public access;*
- iii. A development will result in a new non-water-dependent use;*

- iv. A subdivision of land adjacent to shorelines of the state that results in more than four parcels;*
- v. New multi-family residential developments adjacent to shorelines of the state; or*
- vi. A development will interfere with public use of lands or shorelines of the state.*

Response: Without the inherent safety concerns, the project would be required to provide public access by Section 3.5.3 (A), therefore no additional analysis under Section 3.5.3 (B) is necessary.

C. The Administrator may waive the requirement for on-site public access for proposed substantial developments or conditional uses under any of the following conditions:

- i. There are unavoidable health or safety hazards to the public created by the proposed use that site design cannot mitigate;*
- ii. On-site design alternatives cannot address inherent security concerns related to the proposed use;*
- iii. The cost of providing public access or an alternative amenity is unreasonably disproportionate to the total long-term cost of the proposed use;*
- iv. Public access would create adverse impacts to ecological functions;*
- v. Significant, unavoidable conflicts could occur between public access improvements, the proposed use, and/or adjacent uses that site design cannot mitigate.*

Response: The applicant recommends that the administrator waive the on-site public access requirement based on condition number (i). Creating a new public access site within the project area could create safety risks associated with the steep bank and log structures used to control riverbank erosion.

D. Exceptions to on-site public access must demonstrate that:

- i. Regulating access by use of gates or hours of use is not feasible;*
- ii. The use of fences, landscaping, or other means of separating uses is not practical; or*
- iii. Opportunities to develop access or provide improvements at alternate public access locations are not available within one-half mile.*

Response: Gates and fences to separate public access are not feasible in the project area due to safety concerns from log structures. Wharton public access is within one-half mile. It is unknown if there are opportunities for public access improvements at this site.

E. Proposed uses that are waived from providing on-site public access shall provide comparable improvements to compensate for the waiver by one of the following actions upon approval by the Administrator:

- i. Provide improvements to an existing unincorporated county public access location;*
- ii. Provide new public access at an off-site unincorporated county location; or*
- iii. Make compensatory payment to the Public Access Improvement Fund.*

Response: It is unknown which option is feasible at this time.

F. Nonwater-oriented development adjacent to shorelines of the state shall provide public access as a public benefit.

Response: This criterion does not apply.

G. County rights-of-way that abut or are adjacent to shorelines of the state shall remain accessible to the public unless such access is incompatible due to safety, security, or impact to the shoreline environment.

Response: This criterion does not apply.

H. Required public access improvements shall be fully developed and available for public use at the time of occupancy of the development.

Response: This criterion does not apply as no occupancy is proposed as part of the project.

I. The county shall not vacate a road or any portion thereof that abuts shorelines of the state unless in conformance with RCW 36.87.130.

Response: This criterion does not apply.

J. Required public access shall be commensurate with the level of shoreline development and may consist of one or more of the following physical improvements approved by the Administrator:

i. A five-foot wide walkway or trail on an easement no less than twelve feet wide that leads from a public right-of-way to shorelines of the state;

ii. Installation of amenities at an existing public access location, such as benches, picnic facilities, windbreaks, covered patios, interpretive centers, parking improvements, or restrooms;

iii. The connection or continuation of a public walkway, bike path, or trail that is equivalent in design and area;

iv. Parking, a viewpoint, park, observation tower, deck, pier, or boat launch; or

v. Mitigation at other existing sites or other improvements appropriate to the level of development.

Response: Commensurate public access is undetermined at this time. The proposed project is intended to protect shoreline functions and does not restrict any current public access.

K. Proposed shoreline uses shall record all required public access improvements with the County Auditor through a legal instrument, such as an easement or a public dedication. Recordings shall occur before approval of building permits, occupancy, or subdivision approval, whichever one happens first. Successors to the shoreline development shall not diminish the usefulness or value of required public access areas or improvements.

Response: This criterion does not apply at this time.

Section 3.6 Setbacks, Heights, and Building Site Provisions

3.6.1 Goal

Response: Log jacks will be placed in 5-foot-deep excavated trenches, and log jack spurs will be installed in trenches up to 20 feet deep. The project is minimizing the number of structures used to protect

shoreline aesthetic qualities. As erosion continues, the log structures will sluff down the bank into the river providing bank conservation.

3.6.2 Policies:

Response: The structures are not anticipated to unreasonably obstruct shoreline views. The structures are meant to sluff into the river as erosion continues. The structures are located upland, and no impacts will occur waterward of the bank or below the OHWM.

3.6.3 Regulations:

Response: Buildings, new lots, power poles, and transmission lines are not proposed for this project. The engineered log/ballast structures will not exceed 30 percent lot coverage and do not include impervious surfaces. The structures are located upland, 5 to 6 feet from the top of the bank, and are intended to sluff off into the river as erosion continues to aid in erosion mitigation.

Section 3.7 Shorelines of Statewide Significance

3.7.1 Goal

Manage shorelines of statewide significance in a manner that recognizes the overall best interests of the state and all of its citizens.

Response: The proposed project reduces riverbank erosion thus protecting adjacent farmland and improving fish and riparian habitat; it also supports a larger effort in the Chehalis River basin for flood protection and habitat restoration benefiting all citizens.

3.7.2 Policies:

Response: Project efforts will conserve 1,950 feet of riverbank, improve fish and riparian habitat, and protect adjacent farmland. As bank erosion continues, the log/ballast structures will sluff down the bank into the river to provide long-term bank and toe conservation conjointly with the Lower Satsop Restoration and Protection Program's Phase II project (planned for construction summer 2022).

Section 3.8 Water Quality, Stormwater, and Nonpoint Pollution

3.8.1 Goal

Protect and enhance the quality and quantity of the region's water resources that are critical for protecting the county's public health, economy, natural resources, and critical areas.

Response: The proposed project conserves 1,950 feet of riverbank, improves fish and riparian habitat, and protects adjacent farmland.

3.8.2 Policies:

Response: The proposed project does not anticipate any adverse effects on water quality. A SWPPP will be prepared prior to starting construction, which will include appropriate upland erosion and sediment control measures to ensure prevention of runoff from excavated material into the river.

3.8.3 Regulations:

Response: A SWPPP will be prepared prior to starting construction, which will include appropriate upland erosion and sediment control measures to ensure prevention of runoff from excavated material into the river. Dredging or discharge of materials into waters of the U.S. is not anticipated during construction.

Section 3.9 Existing Uses, Structures, and Parcels

3.9.1 Goal

Provide reasonable provisions to allow the continuation and use of lawfully established uses, structures, and parcels created before the adoption of this Master Program.

Response: The project will help protect adjacent farmland using erosion control methods.

3.9.2 Policies:

Response: The existing farms adjacent to the river are an allowed use in the Rural Development Environment. The engineered log/ballast structures will provide erosion control and improve fish and riparian habitat.

3.9.3 Regulations:

Response: The engineered log/ballast structures are new (not previously existing). The structures will conserve the riverbank and provide protection for adjacent farmlands.

2.2 Uses

Chapter 4 of GHC SMP provides SMP use regulations. This section describes applicability and how the proposed project complies with the applicable use regulations.

Section 4.1 Applicability

Response: The proposed project is a shoreline bank modification. The following use regulations do not apply because the proposed project does not involve these uses: Aquaculture, Boating Facilities, Commercial Development, Forest Practices, Industrial Development, and Mining, Recreational Development, Residential Development, Transportation and parking, and Utilities.

GHC SMP Section 4.8 Instream Structural Development is addressed as it is the most applicable use because, although no construction activity will occur below the OHWM, as the structures sluff down the toe of the bank (below the OHWM), the engineered log structures will engage with the stream as erosion continues. Section 4.8 criteria are therefore applicable because the ultimate anticipated result of the project involves migration of structures below OHWM.

Section 4.8 Instream Structural Development

4.8.1 Goal

Response: The proposed bank conservation project will be placed upland of the bank to minimize adverse effects to the riverbank and riparian vegetation, will not impede public access, and will improve fish and riparian habitat.

4.8.2 Policies

Response: Significant bank erosion within the Right Bank project area has occurred, resulting in current and future loss of riparian habitat and adjacent farmland. The project will conserve 1,950 feet of riverbank and provide erosion control to protect farmland. Engineered log structures and ballast will be used in the project. Rock for ballast will be rounded and sourced from local quarries within the Chehalis River basin. The engineered structures will help improve fish and riparian habitat. All materials will be installed above the OHWM.

4.8.3 Regulations

A. Permit applications for instream structural development shall be prepared by a qualified professional and address the following items:

- i. Analysis regarding the necessity of the instream structure for ensuring public safety or providing public infrastructure;*
- ii. The feasibility of nonstructural measures;*
- iii. Analysis of impacts to fish and wildlife resources, critical areas and ecological functions;*
- iv. Hydraulic analysis, including effect on water quality, water quantity, and flooding to area properties; and*
- v. Long-term management and monitoring plan.*

Response: The design is based on a hydraulic analysis performed by NW Hydraulic Consultants (Attachment J). Log structures are necessary to provide bank stability and were selected for use over riprap armored bank since they provide in-stream habitat structure and meet the purpose of bank stability. Because the project will use natural materials and has been designed to be compatible with in-stream habitat, the project is considered self-mitigating. A mitigation plan has not been prepared, but a 3-year adaptive management plan will be implemented that includes structure maintenance, willow plantings, monitoring, and coordination with WDFW. The entire project will be constructed upland and will only affect farmlands. Riparian and in-stream habitats will be avoided during construction. The Critical Areas Compliance Narrative discusses impacts to fish and wildlife resources, critical areas, and ecological functions (Attachment E).

B. New or expanded instream structural developments shall provide adequate migration for fish and avoid loss of salmonid habitat.

Response: The log/ballast structures will improve fish and riparian habitat within the project area and will not adversely impact salmonid habitat.

C. Location of instream structures shall not adversely affect existing uses or interfere with public access and navigation.

Response: The log/ballast structures will not adversely affect recreational uses in the river or adjacent farming uses. Nearby public access will not be impeded. The log structures could pose safety risks along the riverbank; signage will be posted at local boat access points and along the bank warning recreational river users of the presence of the log structures and advising them to stay back from the bank.

D. Construction and maintenance of irrigation structures, including but not limited to head gates, pumping stations, and irrigation channels necessary for farming and ranching activities are exempt.

Response: The project will not impact irrigation structures or require maintenance.

2.3 Modifications

Chapter 5 of GHC SMP provides SMP shoreline modification regulations. This section describes applicability and how the proposed project complies with the applicable shoreline modification regulations.

Section 5.1 Applicability

Response: The following sections of the Shoreline Modification regulations do not apply to the proposed project because it does not include or affect any of the associated features: Beach and Dune Management; Breakwaters, Jetties, Groins, and Weirs; Dredging and Dredge Material Disposal; and Docks, Piers, Floats, and Boat Launches.

Section 5.2 General Shoreline Modification Policies

5.2.1 Shoreline modifications should only be allowed where it can be demonstrated that the proposed activities are necessary to support or protect a legally existing shoreline use or primary structure that is in danger of loss or substantial damage, or are necessary for reconfiguration of the shoreline or bedlands for an allowed water-dependent use, or for shoreline mitigation or enhancement purposes.

Response: The proposed project will protect adjacent farmland, which is being affected by riverbank erosion. Riverbank conservation will also improve riparian and fish habitat.

5.2.2 Shoreline modifications should only be allowed when impacts are avoided, minimized, and mitigated to assure no net loss of shoreline ecological functions.

Response: The project design has avoided and minimized adverse environmental effects to the aquatic environment and riparian zone through analysis of channel migration and erosion to focus bank conservation actions in the most effective areas. Construction activities will be set back from the bank to avoid and minimize potential for bank failure. During excavation, topsoil will be stockpiled and replaced in-kind. The project will use engineered log structures (log jacks, log row bundles, and log jack spurs) to reduce stream power and conserve banks. Large, rounded boulders (ballast), steel cable, steel chain, and all-thread rods use will be minimized and only used where necessary to provide ballast and connect logs.

5.2.3 In-water work should be scheduled to protect biological productivity, including but not limited to, fish runs, spawning, and benthic productivity. In-water work should not occur in areas used for commercial fishing during a fishing season unless specifically addressed and mitigated for in the permit.

Response: The project cannot be constructed prior to the end of the in-water window for fish protection (by August 31), so the project will be constructed entirely in uplands in September through October 2021.

5.2.4 Shoreline modification should be limited in number and extent.

Response: The project design has avoided and minimized adverse environmental effects to the aquatic environment and riparian zone through analysis of channel migration and erosion to focus bank conservation actions in the most effective areas.

The project will consist of installing four log jack spurs, continuous log rows, and multiple groupings of log jacks installed in uplands set back 5 to 6 feet from the top of bank. As bank erosion continues, the log/ballast structures will sluff down to the bank providing bank conservation.

Section 5.6 Fill and Excavation Activities

5.6.1 Goal

Response: The project will result in a total of approximately 23,000 square feet of excavation of native soil material (approximately 17,500 cubic yards), placement of approximately 23,000 square feet of rock

and log material (approximately 5,300 cubic yards), and backfilling with native soil. All excavated soil will remain on-site and will be backfilled directly into excavated areas or spread and graded in upland areas adjacent to the completed installation. Excavation will occur to a depth of up to 20 feet below ground surface. Temporary ground disturbance will occur only within approximately 200,000 square feet of farmed uplands (see Attachment B). No grading or structure placement will occur in the staging and access areas. No impacts will occur waterward of the bank or below the OHWM of the Satsop River. The project will provide erosion control for the riverbank and protect adjacent farmland.

5.6.2 Policies

Response: Ground disturbance (see Attachment B) will occur in farmed uplands and will avoid impacts waterward of the bank. Excavated soil will remain on-site and will be backfilled into excavated areas or spread and graded upland adjacent to the installed structures. Project efforts will conserve the riverbank, improve fish and riparian habitat, and provide protection to the surrounding farmlands.

5.6.3 Regulations

A. Fill and excavation activities shall minimize impacts to soils and native vegetation.

Response: Disturbance to the limited remaining riparian vegetation at the upstream end of the project area will be avoided by placing continuous log rows on more stable land above the top of bank beyond the limits of riparian vegetation and by designating temporary access routes and staging areas away from riparian vegetation.

B. Fill and excavation activities shall use erosion control provisions during construction, and stabilize and revegetate disturbed areas immediately after completion of construction activities.

Response: Construction activities (see Attachment B) will be set back from the bank to avoid and minimize the potential for bank failure. During excavation, topsoil will be stockpiled and replaced in-kind. The project will use engineered log structures (log jacks, log row bundles, and log jack spurs) to provide erosion control and bank stabilization. Disturbance to the limited remaining riparian vegetation at the upstream end of the project area will be avoided by placing continuous log rows on more stable land above the top of bank beyond the limits of riparian vegetation and by designating temporary access routes and staging areas away from riparian vegetation.

C. Fill and excavation shall be scheduled to minimize adverse impacts, including, but not limited to damage to water quality and aquatic life.

Response: The project cannot be constructed prior to the end of the in-water window for fish protection (by August 31); the project will be constructed entirely in uplands.

D. The placement of fill waterward of the ordinary high water mark may occur only when necessary for an approved development and no other feasible alternative exists for:

- i. Water-dependent development;*
- ii. Ecological restoration or enhancement project;*
- iii. Aquaculture operations to improve production;*

Response: No impacts will occur waterward of the bank or below the OHWM of the Satsop River.

Section 5.8 Shoreline Habitat Restoration and Enhancement Projects

5.8.1 Goal

Response: The proposed project encourages shoreline restoration by improving riparian and fish habitat and provides riverbank conservation through erosion control efforts.

5.8.2 Polices

Response: This project was designed using available flood data and incorporating best management practices to minimize impacts to the aquatic environment and is intended to be self-mitigating, resulting in minimal adverse environmental effects and improved fish habitat.

5.8.3 Regulations

A. Shoreline restoration and enhancement projects shall be consistent with applicable provisions of this Master Program and the county Shoreline Restoration Plan.

Response: The proposed project is consistent with the applicable provisions of the GHC SMP and Shoreline Restoration Plan by conserving the riverbank through erosion control and using self-mitigating methods, which minimize any adverse environmental effects while improving fish and riparian habitat.

D. The creation or expansion of restoration and enhancement projects may be permitted or exempt, subject to required state or federal permits, when the applicant has demonstrated that:

- i. The project will not adversely impact spawning, nesting, or breeding within fish and wildlife habitat conservation areas;*
- ii. Upstream or downstream properties or fish and wildlife habitat conservation areas will not be adversely affected;*
- iii. Water quality will not be degraded;*
- iv. Flood storage capacity will not be degraded;*
- v. Impacts to critical areas and buffers will be avoided and where unavoidable, minimized and mitigated; and*
- vi. The project will not interfere with the normal public use of the navigable waters of the state.*

Response:

- i. The project will not adversely impact spawning, nesting, or breeding within fish and wildlife habitat conservation areas.
- ii. The project does not anticipate adversely affecting fish or wildlife habitat conservation areas or upstream or downstream properties. The project will improve fish habitat, provide erosion protection to adjacent properties, preserve previous habitat restoration projects in the vicinity, and facilitate planned future habitat restoration projects in the immediate project area.
- iii. Water quality will not be degraded. A SWPPP will be prepared prior to starting construction which will include appropriate upland erosion and sediment control measures to ensure prevention of runoff from the excavated material into the river. Dredging or discharge of materials into waters of the U.S. is not anticipated during construction.
- iv. The proposed log jacks will result in minimal floodplain encroachment that is limited to a small portion of the exposed wood. The project will not have an adverse effect of more than one foot of rise.
- v. No impacts will occur waterward of the bank or below the OHWM of the Satsop River. Disturbance to the limited remaining riparian vegetation at the upstream end of the project

area will be avoided by placing continuous log rows on more stable land above the top of bank beyond the limits of riparian vegetation and by designating temporary access routes and staging areas away from riparian vegetation. The project design has avoided and minimized adverse environmental effects to the aquatic environment and riparian zone through the analysis of channel migration and erosion to focus bank stabilization actions in the most effective areas. See the Critical Areas Compliance Narrative for additional information (Attachment E).

- vi. The project will not impact the use of the river by recreational users or boats. Signage will be installed along the upstream riverbank and at local boat ramps to notify boaters of the structures as a potential hazard.

Section 5.9 Shoreline Stabilization

5.9.1 Goal

Response: Log structures are necessary to provide bank stability and were selected for use over a riprap armored bank because the log structures will provide in-stream habitat and will meet the purpose of providing bank stability. Because the project will use natural materials and has been designed to be compatible with in-stream habitat, the project is considered self-mitigating.

5.9.2 Policies

Response: The project utilizes log structures to provide bank stability and in-stream habitat, whereas a riprap armored bank does not. The project uses natural materials and is designed to be self-mitigating, sluffing into the river as erosion continues. The project will control erosion, conserve the riverbank, protect adjacent farmlands, and improve fish habitat.

5.9.3 Regulations

A. New structural shoreline stabilization measures shall not be allowed except when necessity is demonstrated in the following manner:

i. To protect existing primary structures:

a) There is conclusive evidence, documented by a geotechnical analysis that the structure is in danger from shoreline erosion caused by tidal action, currents, waves, or flood events. Normal sloughing, erosion of steep bluffs, or shoreline erosion itself, without a scientific or geotechnical analysis, is not demonstrated need. The geotechnical analysis should evaluate on-site drainage issues and address drainage problems away from the shoreline edge before considering structural shoreline stabilization; and

b) The erosion control structure will not result in a net loss of shoreline ecological functions.

Response: A private residence exists on the property in the path of the eroding bank. The proposed project will provide protection for approximately 1,950 feet of riverbank along the lower Satsop River in order to reduce the current aggressive rate of erosion outside the river's historical meander belt, conserve the right bank line, and generally preserve the river's migration corridor until the Lower Satsop Restoration and Protection Program's Phase II project is constructed (summer 2022). Through extensive coordination with WDFW, the project has been designed to be self-mitigating and will provide enhanced habitat structure for fish.

A hydraulic analysis is provided in Attachment J. No geotechnical analysis will be completed for the project since the design includes allowing soils to fail under the structures as erosion occurs, ultimately resulting in bank conservation and stability. The structures to be placed within the shoreline area have been designed to be self-mitigating and will ultimately provide an increase in in-stream habitat functions.

ii. In support of new nonwater-dependent development, including single-family residences, when all of the following conditions apply:

Response: A single-family residence is not proposed, this criterion does not apply.

iii. In support of water-dependent development when all of the following conditions below apply:

Response: The project does not propose water-dependent development; this criterion does not apply.

iv. To protect projects for the restoration of ecological functions or hazardous substance remediation projects pursuant to RCW 70.105D when all of the conditions below apply:

a) Nonstructural measures, planting vegetation, or installing on-site drainage improvements, are not feasible or insufficient; and

b) The erosion control structure will not result in a net loss of shoreline ecological functions.

Response: The proposed project will reduce the current aggressive rate of erosion, conserve the right bank line, and generally preserve the river's migration corridor until the Lower Satsop Restoration and Protection Program's Phase II project is constructed (summer 2022). Through extensive coordination with WDFW, the project has been designed to be self-mitigating and will provide enhanced habitat structure for fish.

v. To reduce accelerated erosion along resource lands of long-term commercial significance when the following conditions apply:

a) There is conclusive evidence documented by geotechnical analysis that shows excessive shoreline erosion is:

1. Impacting fish and wildlife habitat by contributing to reduced water quality, loss of riparian habitat, decreased channel complexity, and/or increased sedimentation; and/or

2. Contributing to a significant loss of shoreland that is impacting the use and/or economic viability of the property;

Response: Productive agricultural lands exist within the path of erosion and the Chehalis Basin Strategy has demonstrated the need for fish and wildlife habitat restoration. Rates of erosion along the right bank of the Satsop River are estimated at up to 300 feet of bank loss over the next 2 years (see Attachment J). Post-project conditions will provide bank stability, and engineered structures will reduce westward channel migration resulting in reduced erosion rates. The structures will also improve fish and riparian habitat. This will protect adjacent farmland from property loss due to erosion.

A hydraulic analysis is provided in Attachment J. No geotechnical analysis will be completed for the project since the design includes allowing soils to fail under the structures as erosion occurs, ultimately resulting in bank conservation and stability. The structures to be placed within the shoreline area have

been designed to be self-mitigating and will ultimately provide an increase in in-stream habitat functions.

b) Nonstructural measures, planting vegetation, or installing on-site drainage improvements, are not feasible or insufficient;

Response: The characteristics of the bank at the project site consist of a slope close to vertical with highly erodible Chehalis and Humptulips silt loam soils completely void of riparian vegetation, aside from the northernmost portion of the bank. Nonstructural measures are insufficient for the aggressive rate of erosion within the Right Bank project area.

c) The stabilization measure(s) will not interfere with normal hydrological and geomorphologic processes;

Response: The stabilization measures will not interfere with normal hydrological and geomorphologic processes (Attachment J). The project will conserve the right bank line and preserve the river's migration corridor until the Lower Satsop Restoration and Protection Program's Phase II project is constructed (summer 2022).

d) The erosion control structure will not result in a net loss of shoreline ecological functions.

Response: The log/ballast structures will aid in erosion control while conserving the riverbank and improving fish and riparian habitats. A net loss of shoreline ecological functions is not anticipated.

B. A property owner may replace an existing shoreline stabilization structure with a similar structure if there is a demonstrated need to protect primary uses or structures from erosion caused by currents, tidal action, waves, or flood events. Replacement may occur in accordance with the following provisions:

Response: There are no existing structures that will be replaced; this criterion does not apply.

C. For purposes of this section, "replacement" means the construction of a new structure to perform a shoreline stabilization function of an existing structure that can no longer adequately serve its purpose. Additions to or increases in size of existing shoreline stabilization measures shall be considered new structures.

Response: The project is not replacing any existing structures. The project proposes constructing new log/ballast structures to control erosion.

D. Construction of a normal protective bulkhead common to a single-family residence shall meet the following requirements:

Response: The project does not propose a protective bulkhead. This criterion does not apply.

E. Beach nourishment and bioengineered erosion control projects may be considered a normal protective bulkhead when any structural elements have been approved by the Washington Department of Fish and Wildlife.

Response: This project does not include beach nourishment. This criterion does not apply.

F. When allowed pursuant to the provisions of this Master Program, structural shoreline stabilization must meet all of the following requirements:

i. The impacts can be mitigated in accordance with the mitigation sequencing established under Section 3.3.3.C to ensure there is no net loss of ecological functions;

Response: Impacts can be mitigated in accordance with Section 3.3.3 C. The project design has avoided and minimized adverse environmental effects to the aquatic environment and riparian zone through analysis of channel migration and erosion to focus bank stabilization actions in the most effective areas. The project will provide erosion control, conserve the right bank line, and provide improved fish and riparian habitat along the riverbank utilizing log/ballast structures. The structures will be installed upland and set back 5 to 6 feet from the top of the bank to minimize potential bank failure during construction. The staging area will be located in an upland field. No impacts will occur waterward of the bank or below the OHWM of the Satsop River.

ii. The size of a shoreline stabilization structure shall be limited to the minimum necessary to protect the primary structure or use. Shoreline stabilization shall be designed by a state licensed professional geotechnical engineer and/or engineering geologist, and constructed according to applicable state and federal laws;

Response: The project design has avoided and minimized adverse environmental effects to the aquatic environment and riparian zone through analysis of channel migration and erosion to focus bank stabilization actions in the most effective areas. The stabilization structure was designed by Vaughn Collins, PE, with Northwest Hydraulic Consultants.

iii. The shoreline stabilization shall be constructed and maintained in a manner that does not degrade the quality of affected waters; and

Response: The project will be constructed entirely in uplands. Construction activities will be set back from the bank to avoid and minimize potential for bank failure. During excavation, topsoil will be stockpiled and replaced in-kind. Dredging or discharge of materials into waters of the U.S. is not anticipated during construction. Log structures and rounded boulders sourced locally will provide bank conservation. Disturbance to the limited remaining riparian vegetation at the upstream end of the project area will be avoided by placing continuous log rows on more stable land above the top of bank beyond the limits of riparian vegetation and by designating temporary access routes and staging areas away from riparian vegetation.

An adaptive management plan will be developed and implemented including (1) maintenance of structures within the channel to ensure they function properly and (2) shoreline planting of willow wattles or other bioengineering techniques as the bank erodes and structures are sluffed into the river.

iv. No demolition debris or other solid waste shall be used for shoreline stabilization.

Response: The project does not propose using demolition debris or other solid waste for shoreline stabilization.

2.4 Approval Criteria

2.4.1 Shoreline Substantial Development

Section 7.4.B of the GHC SMP states that all proposals for shoreline substantial development must be consistent with the criteria in WAC 173-27-150. Those criteria are addressed below.

WAC 173-27-150

(1) A substantial development permit shall be granted only when the development proposed is consistent with:

(a) The policies and procedures of the act;

Response: The proposed project, which is subject to a substantial development permit, is consistent with the Shoreline Management Act (SMA) policies and procedures as demonstrated by its compliance with the policies and procedures of the GHC-approved SMP. The Department of Ecology acknowledges that approved SMPs are consistent with the SMA, including their implementing policies and procedures, and that the GHC SMP was comprehensively updated and adopted in May 2020. Thus, consistency with the SMP's policies and procedures, as demonstrated in this application and as processed through the GHC Planning Department, demonstrates consistency with the SMA.

(b) The provisions of this regulation; and

Response: The proposed project, which is subject to a substantial development permit, is consistent with the SMA regulations as demonstrated by its compliance with the goals, policies, and regulations of the GHC-approved SMP. The Department of Ecology acknowledges that approved SMPs are consistent with the SMA and that the GHC SMP was comprehensively updated and adopted in May 2020. Thus, consistency with the SMP as demonstrated in the application demonstrates consistency with the SMA.

(c) The applicable master program adopted or approved for the area. Provided, that where no master program has been approved for an area, the development shall be reviewed for consistency with the provisions of chapter 173-26 WAC, and to the extent feasible, any draft or approved master program which can be reasonably ascertained as representing the policy of the local government.

Response: Sections 2.1–2.3 of this application provide responses for each applicable section of the GHC SMP, thus demonstrating how the proposed project is in compliance with the SMP.

(2) Local government may attach conditions to the approval of permits as necessary to assure consistency of the project with the act and the local master program.

Response: The proposed project acknowledges that GHC may attach conditions of approval to any decisions or staff reports for this project.

2.4.2 Shoreline Conditional Use

Section 7.4.2.B of the GHC SMP states that all proposals for a shoreline conditional use permit must be consistent with the criteria in WAC 173-27-160. Those criteria are addressed below.

WAC 173-27-160

(1) Uses which are classified or set forth in the applicable master program as conditional uses may be authorized provided that the applicant demonstrates all of the following:

(a) That the proposed use is consistent with the policies of RCW 90.58.020 and the master program;

Response: See the discussion of project compliance with all applicable sections of the GHC SMP, which is consistent with the RCW 90.58.020 as approved by the Department of Ecology, above.

(b) That the proposed use will not interfere with the normal public use of public shorelines;

Response: No change in use is proposed, and no portion of the proposed development would change how or where the public currently accesses or uses public shorelines.

(c) That the proposed use of the site and design of the project is compatible with other authorized uses within the area and with uses planned for the area under the comprehensive plan and shoreline master program;

Response: There is no change in use proposed. The primary use of the site will continue to be agricultural with a residence. The proposed project is designed to prevent further erosion of the Satsop River riverbank which is at risk of failing further. If no bank modification were to occur, the erosive forces would reduce the area of the agricultural land, which would not be consistent with planned uses in the area. As such, the shoreline modification is consistent with other authorized uses within the area and with uses planned for the area under the comprehensive plan.

(d) That the proposed use will cause no significant adverse effects to the shoreline environment in which it is to be located; and

Response: The project design has avoided and minimized adverse environmental effects to the aquatic environment and riparian zone of the shoreline through analysis of channel migration and erosion to focus bank conservation actions in the most effective areas. Construction activities will be set back from the bank to avoid and minimize potential for bank failure.

The project will use engineered log structures (log jacks, log row bundles, and log jack spurs) to reduce stream power and stabilize banks. Large, rounded boulders (ballast), steel cable, steel chain, and all-thread rods use will be minimized and only used where necessary to provide ballast and connect logs. Rock will be sourced from local quarries within the lower Chehalis River basin and will be rounded (not angular) to the extent feasible. Disturbance to the limited remaining riparian vegetation at the upstream end of the project area will be avoided by placing continuous log rows on more stable land above the top of bank beyond the limits of riparian vegetation and by designating temporary access routes and staging areas away from riparian vegetation (Attachment B).

The project will result in a total of approximately 23,000 square feet of excavation of native soil material (approximately 17,500 cubic yards), placement of approximately 23,000 square feet of rock and log material (approximately 5,300 cubic yards), and backfilling with native soil. All excavated soil will remain on-site and will be backfilled directly into excavated areas or spread and graded in upland areas adjacent to the completed installation. Excavation will occur to a depth of up to 20 feet below ground surface. Temporary ground disturbance will occur only within approximately 200,000 square feet of farmed uplands. No grading or structure placement will occur in the staging and access areas. No impacts will occur waterward of the bank or below the OHWM of the Satsop River.

A 3-year adaptive management plan will be implemented including (1) maintenance of structures within the channel to ensure they function properly, (2) shoreline planting of willow wattles or other bioengineering techniques as the bank erodes and structures sluff into the river, and (3) continued monitoring.

Without this project, further bank failure and erosion would likely occur leading to significant loss of shoreline environment. Thus, although the project introduces structural stabilization, it minimizes impacts, utilizes natural materials to the maximum extent possible, and includes adaptive management and planting native vegetation, and on balance, will cause no significant adverse effects to the shoreline.

(e) That the public interest suffers no substantial detrimental effect.

Response: Recent significant bank erosion within the Right Bank project area has occurred, resulting in current and anticipated future loss of riparian habitat and adjacent farmland. Construction of this project in fall 2021 is intended to slow the rate of erosion. The ultimate goal of the project is to protect

the shoreline until the Keys Road Flood Protection Phase II project can be constructed and to protect adjacent farmland. Both flood protection and retention of farmland provide benefits to the public.

(2) In the granting of all conditional use permits, consideration shall be given to the cumulative impact of additional requests for like actions in the area. For example, if conditional use permits were granted for other developments in the area where similar circumstances exist, the total of the conditional uses shall also remain consistent with the policies of RCW 90.58.020 and shall not produce substantial adverse effects to the shoreline environment.

Response: This project is considered a conditional use because it uses structural components (engineered log jacks, log row bundles, and log jack spurs and some use of steel cable, steel chain, and rods) to provide bank stabilization, and the GHC SMP Table 2, Shoreline Modifications by Environment, indicates structural stabilization in any Shoreline Environment Designation is a conditional use.

Multiple projects have recently been completed along the lower Satsop River focusing on flood protection and restoration, several of which included structural components. In 2019 and 2020, WDFW completed substantial restoration projects in the floodplain to remove dikes, revetments, and return river flows to floodplain areas previously inaccessible for decades. In 2020, GHC constructed the Keys Road Flood Protection Project (i.e., Phase I of the lower Satsop Restoration and Protection Program) that involved installation of engineered log jams and setback log structure revetments to protect Keys Road and associated infrastructure. Phase II of the lower Satsop Restoration and Protection Program is currently in design and will be constructed in summer 2022.

The Keys Road projects are part of the Chehalis Basin Strategy that aims for flood protection and habitat restoration. The Chehalis Basin Strategy is a 10-year partnership of agency, tribal, and independent scientists, private landowners, utility managers, fishers, farmers, and foresters, and local leaders who are imagining and examining new paths forward.

Cumulatively, the proposed project will work in concert with the other structural projects along the Satsop River within the Chehalis River basin to provide flood protection and habitat restoration with ultimately overall beneficial effects.

(3) Other uses which are not classified or set forth in the applicable master program may be authorized as conditional uses provided the applicant can demonstrate consistency with the requirements of this section and the requirements for conditional uses contained in the master program.

Response: This criterion does not apply as the proposed project is a structural shoreline stabilization project which is classified in Table 2 of the GHC SMP.

(4) Uses which are specifically prohibited by the master program may not be authorized pursuant to either subsection (1) or (2) of this section.

Response: The proposed project is not a use that is specifically prohibited. This criterion does not apply.