

Seahorse Siesta Shoreline Barge and Armor Removal ESRP Pre-Proposal

Project Narrative:

The project is located along Saratoga Passage on the east side of Whidbey Island, north of Langley in a community known as Seahorse Siesta. The project will remove a large barge and bulkhead from the base of a feeder bluff. The bulkhead (including the barge, which is part of the shore armor) extends 98 feet onto the beach from the toe of the bluff and 136 feet alongshore. The project will also construct a small rockery above elevation +13 MLLW to allow for continued access to the beach by the community. The project includes final design, bidding, construction, and pre and post construction monitoring.

The barge/bulkhead was placed at the site in either the late 1960's or early 1970's by a former resident of the community for the purpose of creating an elevated lawn area near the beach. The structure has since deteriorated creating a safety hazard for the residents as well as an impediment to shoreline processes and habitats. Removal of the barge structure will restore feeder bluff and sediment transport processes, uncover potential Pacific sand lance spawning habitat, and recover 0.25 acres of intertidal habitat.

Criteria for Ecological Importance and Project Benefits:

The shore armor (bulkhead and barge) is one of the larger protruding structures in the residential portions of Island County and is located along a bluff-backed beach which is mapped as a feeder bluff. The derelict barge comprises the outer approximately one-half of the filled and bulkheaded area. This site is within net shore-drift cell WHID-1, which originates about 1.4 miles northwest of the site and continues to Sandy Point, east of Langley, approximately 2.4 miles east of the site. Approximately 61% of the drift cell is downdrift of the site, ensuring that sediment transport restoration will benefit a significant amount of shoreline.

Within Shoreline Process Unit 6002, degradation for sediment input was ranked as low, with sediment transport and accretion both noted as having medium degradation. Physical disturbance is also indicated as a medium level of degradation, although nearly one quarter of the drift cell is armored or modified. The current degradation level for the beaches within the SPU are indicated as medium, however, they have high potential to provide ecosystem goods and services and the recommended management strategy is "Restore High". Given that most of the armoring is concentrated within the shoreline of the Town of Langley, this project represents a good opportunity to remove armor within the process unit and benefit downdrift habitats.

The total beach area covered waterward of the bluff toe is 10,800 square feet (SF). A concrete bulkhead generally 9 FT high and 8 inch (IN) thick surrounds the barge and fill area. The bulkhead toe extends to 8 FT mean lower low water (MLLW) elevation which is 2.6 FT below local mean higher high water (MHHW) and 5 FT lower than the average bluff toe elevation. There is a significant difference in beach elevation on the updrift side from the downdrift side. Sediment builds up on the updrift side due to the extent to which the barge sits waterward of the high tide line. There should be a lowering of the beach on the updrift side with the removal of the barge.

The project will target a variety of species and their habitats including Pacific salmonids, forage fish, marine and shore birds. The removal of the barge will expose a sandy beach suitable for forage fish spawning (Pacific sand lance) and will improve nearshore habitats useful for migrating juvenile salmonids. Sand lance spawn on mid-intertidal sandy beaches and spawning has been mapped both

updrift and downdrift of the site. Residents also noted that there are populations of sand shrimp on site and gray whales are present in the area. This is verified by WDFW's Priority Habitat and Species information.

Healthy trees and vegetation exist shoreward of the riprap. This line of vegetation is important for helping to maintain healthy temperature and moisture conditions for summer spawning forage fish. Recruitment of large woody debris will also be improved as the backshore will not be obstructed by the barge. The overhanging vegetation and eventual LWD recruitment will provide a source of insects critical in the diet of migrating juvenile salmonids.

The project addresses the PSNERP beach restoration strategy targeting sediment supply restoration. Armor removal from feeder bluffs is the primary restoration management measure required to effectively restore sediment supply. The project is consistent with one of the broad PSNERP objectives to restore the size and quality of beaches and bluffs in Puget Sound; and the process for selecting the site is consistent with PSNERP beach restoration strategies that aim to restore the ecosystem processes that most strongly control structure and services by proactively focusing resources on the development of projects at high priority sites, rather than using limited resources to implement un-prioritized, opportunistic projects.

The tidelands of the site below MHHW are owned by Washington Department of Natural Resources. This ownership would likely guarantee that no future development of the site would occur following removal of the structure. Additionally, permitting rules for Island County through the Shoreline Management Program would not permit future bulkheading.

Technical merit and readiness:

The project addresses Habitat Sub Strategy B2.3 of the Puget Sound Action Agenda by removing over 10,000 square feet of armoring and fill on an ecologically important feeder bluff in an area with otherwise minimal stressors and process and habitat degradation. The project was included in the recent Near Term Action updates for the 2016 Puget Sound Action Agenda and received a ranking of 20th amongst all projects. Shoreline hardening is also identified as a stressor (STR-03) within WRIA 6: Change of shoreline habitat or features to conditions that reduce habitat extent and/or disrupt shoreline processes. The primary source of this stressor is the construction of shoreline infrastructure that produces a hard linear surface along the beach or stream bank to reduce erosion (e.g., sea walls, revetments, rip-rap, and rock piles). The Seahorse Siesta project is also included on the four-year salmon recovery workplan for WRIA6.

This site was identified through an assessment funded by the ESRP grant program and Puget Sound Marine and Nearshore grant program. NWSF commissioned Coast Geologic Services to analyze feeder bluff sites in Island and Jefferson Counties to identify sites where sediment transport processes could be restored through armor removal without jeopardizing structures.

This funding request includes final design, bid development, construction, and pre and post construction monitoring. Design drawings were completed to 30% level in 2015 by Coastal Geologic Services (CGS) and are ready for submittal to the permitting agencies. Biological and archaeological reviews are currently being completed and will be submitted by the end of May 2016. Final design will be completed following issuance of permits and any changes that need to be addressed as a result of the permit process. We anticipate being ready for construction during summer of 2017.

Several design options were assessed, with the preferred alternative to completely remove the structure with no other actions other than regrading. The community association, however, was concerned that they would lose access to the beach with the removal of the barge. They were not willing to have the structure removed if some form of protection was not included in the project. The small rockery serves this purpose and is allowing the project to move forward with the approval and willingness of the community.

Scope of Work (Construction Phase): Bulkhead, Barge, and Fill Removal All access to the site will be conducted by barge. The entirety of the vertical concrete wall and footing will be removed from the project site through direct excavation. The total amount of concrete to be removed is on the order of 70-100 cubic yards (CY).

Following vertical wall removal, the barge within the outer portion of the fill area will be removed and disposed of properly off-site. Wood in the barge will likely need to be tested to determine if it is creosoted or treated with other harmful materials. This will dictate specific handling and disposal needs. The barge measures 136 by 40 FT, resulting in uncovering of 5,440 SF through its removal.

Approximately 2,000 CY of fill in the landward half of the bulkhead area will be excavated uncovering an additional 4,050 SF of beach. It is anticipated that a moderate amount of this fill however could be left in place to be incorporated into the drift cell, as it appears the sediment came from the bank and can provide benefit down-drift. A portion of this fill may also be placed immediately west of the project on the upper beach away from the drainage lines if acceptable and approvable through the design and permitting process. Additionally, scattered quarry spall lines the edges of either side of the barge; these materials will also be removed.

Rockery Wall to Protect Beach Access

Shore armor can be used to maintain long-term access of the lower portion of the beach access ramp. The groin function of the current bulkhead will be removed through the project and the western up-drift beach is anticipated to lower by 1-2 FT. Therefore, for this option, a rockery wall is proposed starting 30 FT east of the southwest corner of the bulkhead running eastward as seen on the Partial Armor Removal Preliminary Design Plans Sheets 2-5. The rockery wall will extend to 15 FT west of the northwest corner of the bulkhead for a total length of 60 LF as seen on the attached Partial Armor Removal Preliminary Design Plans Sheets 2-5.

The rockery is anticipated to require a 4 FT depth of burial below beach grade and extend up to approximately +17 FT MLLW with an exposed toe above MHHW. The rockery will extend to defend the lower portion of the beach access ramp, curving landward at this location. A portion of the rockery will be constructed using precise placement of slab-like armor stones to create steps within the structure.

Monitoring:

A monitoring plan will be developed and will follow protocols outlined in the Shoreline Monitoring Toolbox, Washington Fish and Wildlife's forage fish sampling protocols, and other methods commonly used throughout Puget Sound. Monitoring parameters include both biological and physical elements and is being implemented by both citizen-science volunteers as well as support through WDFW's nearshore monitoring program that is assessing armored sites pre and post construction. Parameters include: forage fish spawning surveys, nearshore fish use (beach seining), large woody debris accumulation, beach wrack composition, beach elevations, insect fallout, and intertidal surface epifauna and algae. WDFW is also collecting data on sediment composition and percent shade. Volunteers have contributed over 90 hours of time at the site to date.