

# Nearshore Sediment Assessment Project



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## Overview

This project is jointly funded by the Salmon Recovery Funding Board and a grant to the Snohomish County Marine Resources Committee. In the Snohomish River Basin, the restoration of Chinook Juvenile rearing habitat in the nearshore has been identified as high priority action needed to recover Chinook salmon. The project study area stretches approximately 4 miles from Mukilteo to Everett.

Nearshore restoration, especially along the railroad impounded areas, is difficult due to a number of factors. Full process-based restoration is not possible, technical knowledge is limited, infrastructure concerns are high, and potentially restored sites are generally highly visible and used by the public.

This project will help address the need to identify, locate, and advance restoration in the nearshore area. Potential projects will be located south of the Snohomish River mouth, along the railroad impounded shoreline. A technical assessment will be used to evaluate the physical characteristics and biological potential of proposed sites. A stakeholder process will be used to identify and address potential project concerns, leverage regional technical expertise, and incorporate socio-economic perspectives into the project prioritization process.

Given that complete restoration through the re-establishment of sediment delivery processes is not possible along railroad-impounded sections of the shoreline, process substitution needs to be carefully considered as a restoration strategy. Therefore, restoration options should not just include an evaluation of engineering options available to recreate habitat (e.g., engineered beach habitat) but also ongoing maintenance activities. As a primary project outcome, Snohomish County will lead the effort to identify and prioritize potential restoration projects that provide benefit to Chinook salmon and forage fish within the project study area.

## Overall Project Goals and Objectives

1. Appropriately place and design restoration projects based-on increased understanding of nearshore processes.
2. Develop consensus recommendations for restoration action through a stakeholder process.
3. Prioritize and sequence actions along the reach to maximize efficient and effective use of available resources.

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*Railroad bulkhead during low tide.*



*The study area stretches about 4 miles.*



*Blue heron fishing in nearshore waters along study site.*

4. Develop a long-term sediment strategy to maintain beach function; based on processes for sediment supply, delivery and sorting throughout the nearshore marine drift cells.
5. Complete preliminary project design for one project site.

## Background

The railroad located along the nearshore (locally spanning 26 miles of nearshore from Seattle to Everett) causes habitat loss both through direct fill and by disrupting the habitat-forming processes of sediment delivery and transport. Extensive loss of mid-upper-beach habitat and a shift in the sediment composition of remaining beach habitat impacts forage fish dependent on these areas for spawning grounds. The disconnection of riparian areas from the beach and shallow marine waters degrades nearshore food-webs. Low-gradient shoreline loss negatively impacts salmon that use these areas for migration.

The protection and restoration of nearshore habitat is recognized as a key component of juvenile salmon marine survival and overall species recovery. Given that the railroad is now an integral feature of much of our nearshore (and removal is highly unlikely), these shorelines cannot be overlooked as we move forward to restore Puget Sound Habitat in support of salmon recovery and broader ecosystem recovery. Nonetheless, the need for improved nearshore habitat has motivated interest in restoration along the railroad-impounded shoreline. Potential restoration actions will likely create ultimate shoreforms (e.g. beach creation) or replicate processes that have been disrupted (e.g., develop a sediment management policy for landslide material on the rail lines).

An understanding of both upfront costs and long-term investments will be necessary to evaluate the viability of habitat rehabilitation and functional substitution along this stretch of nearshore.

An assessment is proposed to identify the highest priority sites for restoration efforts, taking into consideration:

- physical features that influence the long term sustainability of the site
- biological potential
- spatial connectivity and distribution of potential restoration sites
- local sediment sources for nourishment