

## Item 4.2 of “Adapting Woodstock” Charrette “Site Planning Topics & Reference Items”

### The BNSF Railway Causeway & Its Potential Modification

Text and recent photos by Tim Wahl, July 2008

Also see Item 4.3



#### **HISTORICAL BACKGROUND**

The BNSF causeway has dramatically altered the ecosystem of NE Chuckanut Bay and its historic human resource uses and has greatly quieted human recreational uses in recent years. During the 1950s and 1960s the author (and many others) used to harvest crabs in an eelgrass meadow formerly within the causeway and dig butter clams in sandbanks near the trestle. These species, and the eel grass beds are no longer significant inside the causeway. Because the causeway is constructed on public land, because humans value hard-packed sand and deeper water for their recreational enjoyment and because resource managers are highly interested in restoring and augmenting eelgrass meadows for fishery purposes there is increasing interest in examining how the causeway might be altered to enhance these functions and values and how they might or might not complement one another.

Today's BNSFRW causeway was built predominantly as open trestle between 1902 and 1904. During the 1920s it was replaced with rock causeway, except for the small trestle opening now in place toward its NW end. The structure was built on public land, in a street right-of-way controlled by the City, as established in the State constitution. No leases and permits were secured. An early franchise for the line appears never to have been perfected or conveyed to the railroad company who actually built the line. Several major property owners indemnified the railroad for loss of riparian rights and navigation convenience, but not all of them and notably not the City's predecessors in interest at Woodstock Farm or at other upland properties with bay shore riparian rights.

The causeway structure has contributed to the shoaling and of NE Chucknaut Bay, the migration of the Chuckanut Creek channel away from the Woodstock shore (traditionally a canoe beach associated with the ancient processing and some-time dwelling site) and perhaps salinity changes landward of the causeway. (See Charrette Topic/Reference Item 4.3 for a brief illustrated description of how the railroad changed the area's shoreline processes.) Fine sediments associated with urban and road system development, notably I-5 in the Chuckanut Creek watershed, have accumulated in the quieted "Mud Bay"

basin NE of the railroad causeway. ("Mud Bay" was originally a cartographic label describing conditions of navigability and anchorage, not a designated placename.) Eelgrass observed during the lifetime of the writer has now been extirpated in the inner bay and its historic plant and animal communities have been greatly changed with accumulation of fine sediments and colonization by exotic and indigenous species favoring muddy substrates. The ongoing change in the inner bay habitat has benefited many species and reduced or eliminated others. The present ecological functions of the bay's mudflats have not been systematically compared with those of the basin's original, deeper, sandier and gravellier state. Mudflats are rich sources of food for a wide array of marine, avian and terrestrial species, although providing very different resources for salmonids, for instance, than eelgrass meadows. Human use of the intertidal surface and flooded basin has been greatly reduced by the impoundment and accumulation of the muddy shoals, resulting in a quieter and more passive public environment and a pleasant rural character for Woodstock, Chuckanut Village and the Edgemoor neighborhoods. Rowing and boating access are restricted due to this shoaling and small boat trips must be carefully planned to allow departures and returns with tide elevations in the 5.5 to 6-foot range.



The Item 4.3 poster presents several historic records reflecting NE Chucakanut Bay's original depth, beach and substrate composition. Before the railroad, the bay's cul-de-sac opened directly into the regions most powerful storms which blow from the SW and generate waves over a fetch up to 9 miles in length extending across Samish and Bellingham Bays. For thousands of years the shore opposite Woodstock to the N experienced high energy wave action, which is readily evident in the accompanying pictures.

The mapped location of the original creek channel and mouth, the existence of shell middens (at least 3,100 years old) and the remains of a prehistoric house site at Woodstock and historic photographs of the Boathouse Beach suggest that heavy wave energy combined with flood-energized creek flows kept sediment and the creek channel essentially stacked against the S bay shore, perhaps in the form of a clockwise eddy entraining material E along the N shore, perhaps forming the apparently prehistoric beach berm formation extending across the peat-containing Chuckanut Village Marsh, and then returning W along the S shore. Sediment descriptions from the 1850s and 1880s indicate sand and gravel deposits (now covered with mud) were extensive.

The loss of wave energy reflected from the N Bay shore, whether in the form of a clockwise an eddy or as direct counter waves, or both, is apparently the main reason the midden bluff at the Lee boathouse is eroding. Historic photographs show a more gradually sloping, vegetated bluff at the boathouse and eyewitnesses over the past 40-50 years report a significant increase in undercutting and sloughing of the culturally deposited bank material. Perhaps a shoaling of the adjacent basin due to sediment accumulation has also changed the way wave energy affects the shell midden deposit.



**NOTES CONCERNING FISHERY AND WILDLIFE MANAGEMENT IMPLICATIONS, FOLLOWING DISCUSSIONS WITH BOB BARNARD, WA DEPT. OF FISH & WILDLIFE, AND OTHERS. SUBMITTED TO BARNARD AND OTHERS FOR ADDITIONAL COMMENTS, JULY 08.**

A clear comparison of historic and current habitat functions of pre- and post-causeway NE Chuckanut Bay is desirable, one addressing features, functions and values associated with both commercially desired species and other species of interest or species potentially indicative of ecosystem health or function.

Key questions include:

1. What are the present resources and functions supporting a stated set of wildlife management and fishery management objectives? How do these compare with comparable historic fisheries and wildlife utilization, based on what we can determine about original conditions?
2. Does the current single causeway opening expose salmonids and other stated commercially or aesthetically valued species to undesirable levels of predation? Or, is the opposite true for some species? Would additional openings decrease mortality of desired species?
3. Given the profile of the submerged causeway opening, see photo, and any other relevant factors, is modification of the existing causeway or its associated shoals desirable to enhance target species survival?
4. Given desires for improved small boat access, notably to and from Woodstock's Boathouse Beach, could a second causeway opening near Woodstock Farm enhance both small boat access and survival of desired fishery stocks and wildlife? What might such an opening and any associated channel or submerged habitat features consist of?

