

# Wild Fish Conservancy

N O R T H W E S T

S C I E N C E   E D U C A T I O N   A D V O C A C Y

## Wild Fish Conservancy Watertype Assessment Project Summary

### West Sound Watersheds Phase II

<http://www.wildfishconservancy.org/maps>

October 2014

Water typing is the state-sanctioned process of mapping the distribution of fish and fish habitat. Regulatory water type maps are used to regulate land use decisions adjacent to streams, ponds, and wetlands. Because existing (modeled) regulatory maps often significantly misrepresent the presence, location, and extent of fish habitat, the effectiveness of state and local government fish habitat protection regulations is compromised. More information about the water typing process and its significance is available at: <http://wildfishconservancy.org/resources/maps/what-is-water-typing>

### West Sound Watertype Assessment Project –Phase II

During the 2011-2013 water type field seasons, Wild Fish Conservancy crews performed water type assessments on 40 streams that flow directly into Puget Sound at the north end of the Kitsap Peninsula between Indianola, WA and Port Gamble, WA. Also included were Blackjack Creek near Port Orchard and portions of lower Chico Creek near Bremerton, WA (Figure 1). The survey encompassed 128 miles of streams.

WFC conducted water type surveys using the protocols and definitions provided in WAC 222-16-031 and Section 13 of the Forest Practices Board Manual. WFC collected data only on properties where permission to do so was granted. During this phase of the project WFC requested permission from property owners to access 1425 parcels. Of these, access for the WFC staff to perform the survey on their property was granted for 406 (28.5 percent) parcels.

WFC documented stream channel location and characteristics, fauna, riparian condition, and restoration opportunities via GPS and photographs. Wetted width, bankfull width, channel gradient, and other data were recorded at each GPS point and are visible, with photographs, by clicking on the points in the interactive map. We present more than 2,660 photographs (with associated channel condition descriptions) on the interactive web-based GIS.

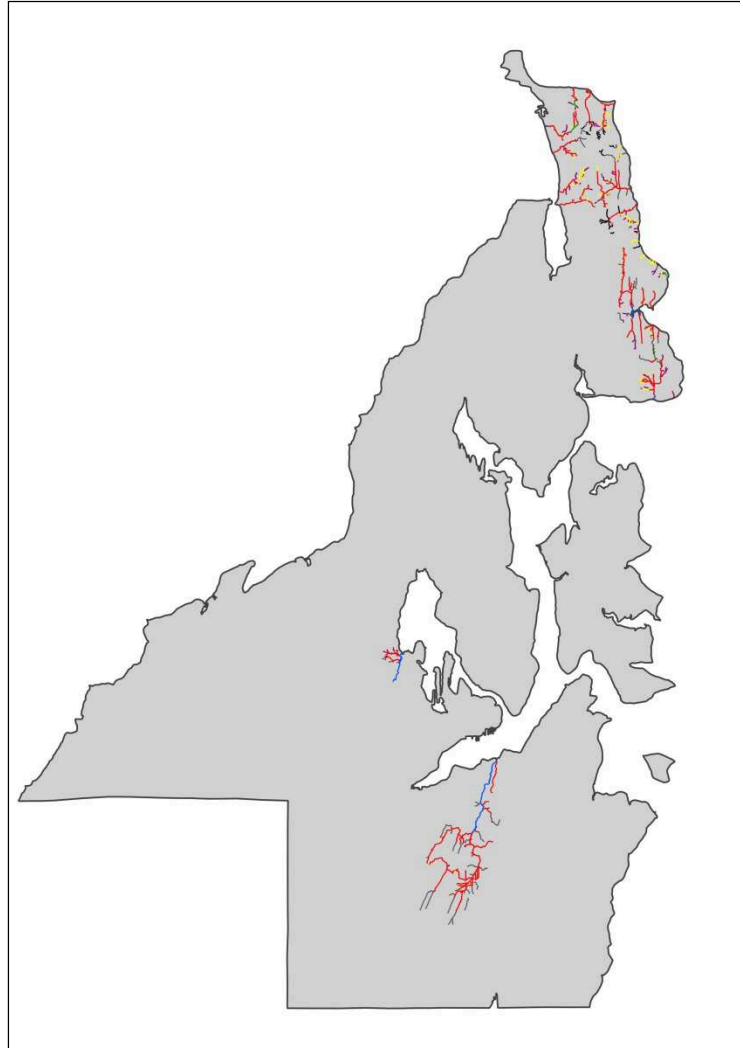


Figure 1. Geographic extent of WFC's West Sound Watersheds Assessment - Phase II in Kitsap County.

Fauna that WFC encountered during the surveys included cutthroat trout, possible rainbow trout, coho salmon, chinook salmon, sculpin, brook lamprey, 3-spined stickleback, and northwestern salamanders. Non-native species encountered included bullfrogs. Habitat features and fauna were documented via GPS and photographs that are viewable in the interactive GIS located on the WFC website at: <http://wildfishconservancy.org/resources/maps>.

As expected based on previous Wild Fish Conservancy water type assessments, significant discrepancies existed between the Washington Department of Natural Resources (WDNR) regulatory maps and what we found on the ground. For example, over the study area WDNR had identified 88.8 miles of streams. WFC found that 19.3 miles of those WDNR mapped channels did not exist, but that an additional 39.8 miles of stream channels did exist that were not on the official WDNR water type maps.

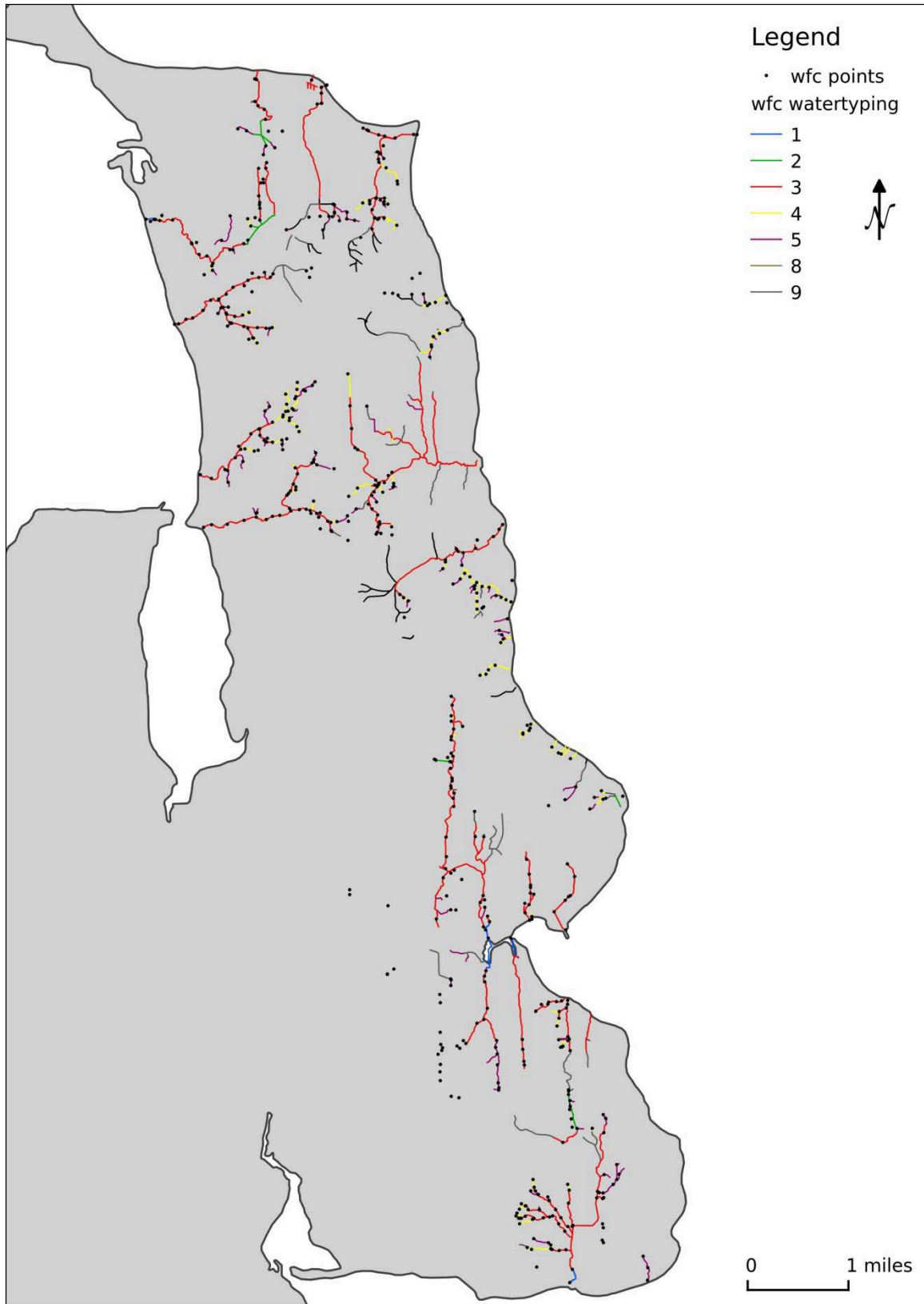


Figure 2. Survey extent in north Kitsap County.

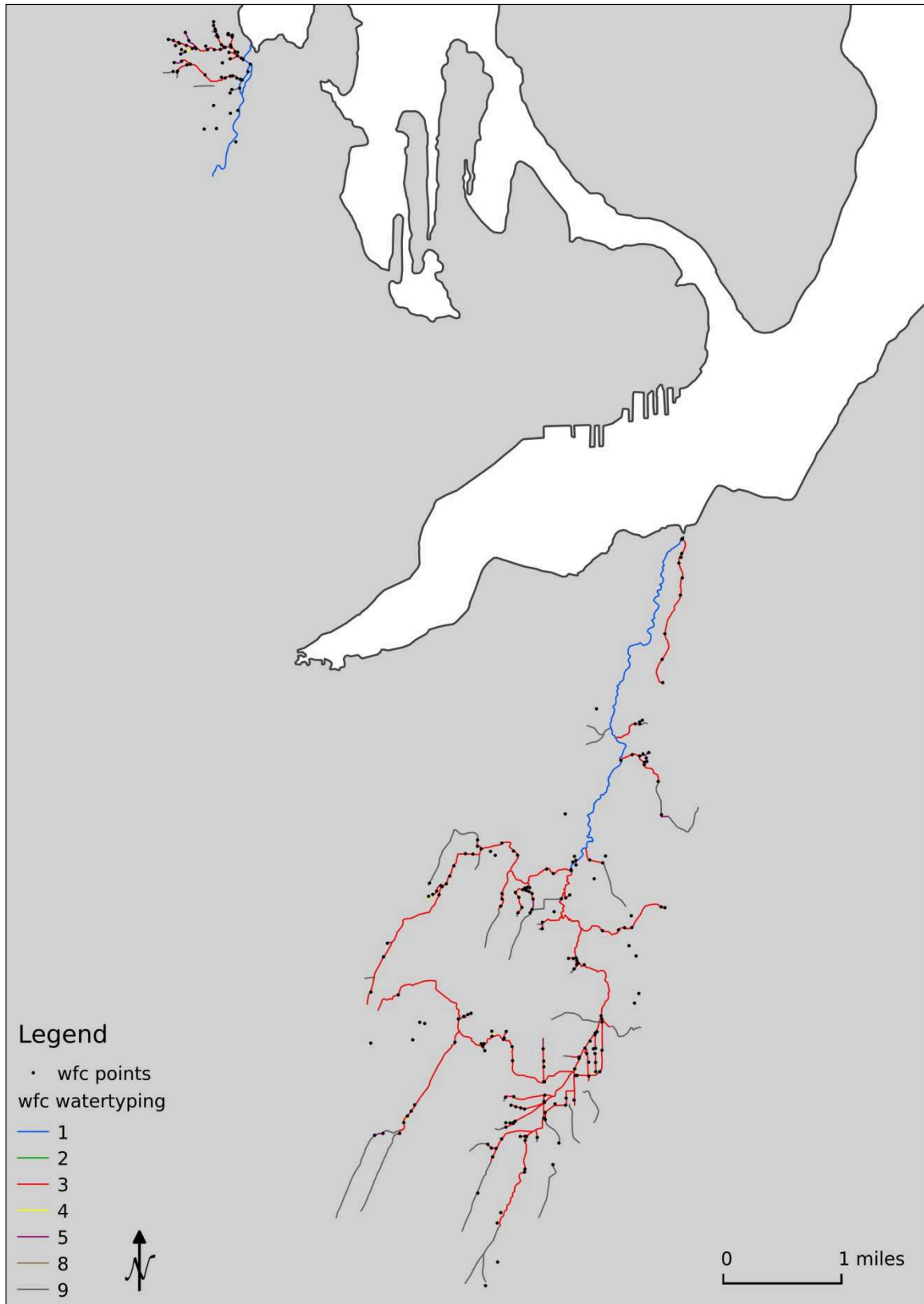


Figure 3. Survey extent near Bremerton and Port Orchard (Chico and Blackjack Creeks).

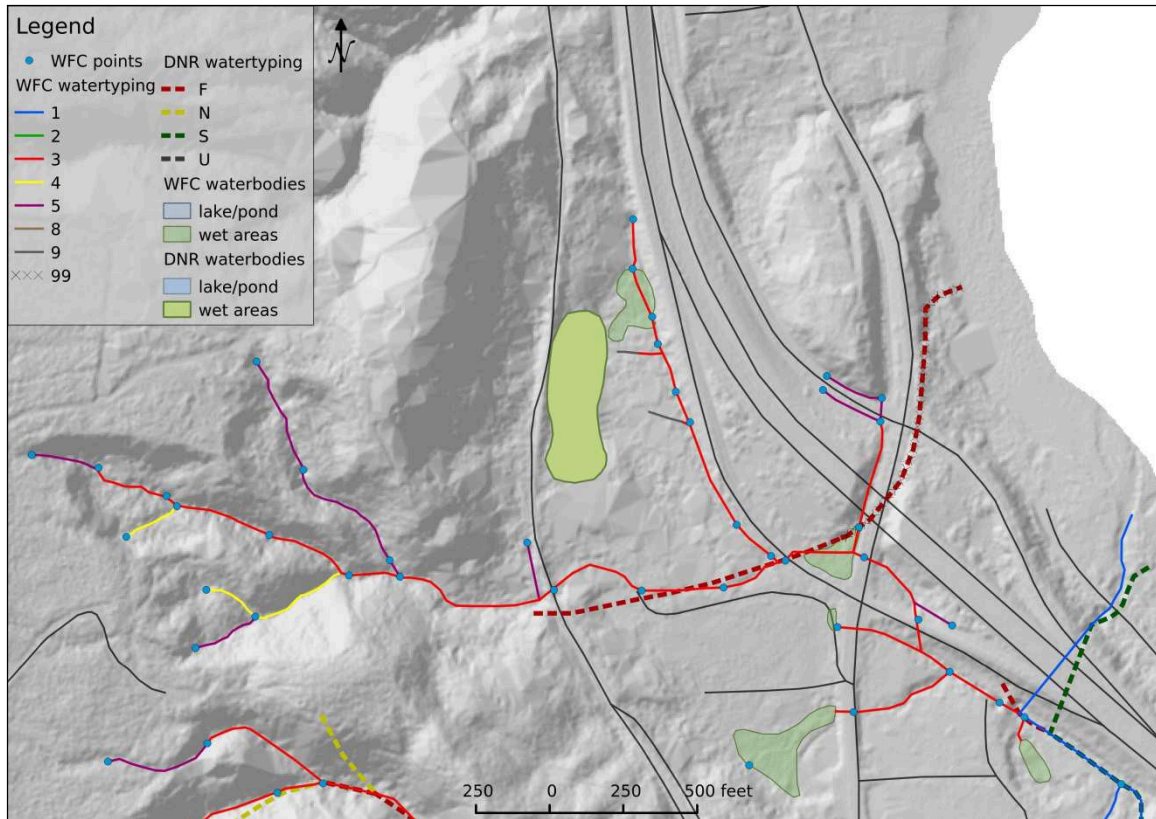


Figure 4. Example of discrepancy between DNR modeled stream channel location and classification, and WFC field observations. This is an unnamed left-bank tributary at the mouth of Chico Creek near Bremerton.

### Restoration Opportunities

During the course of the field surveys, Wild Fish Conservancy staff observed and documented habitat restoration and protection opportunities; these are presented in Appendix A. This prioritized list of opportunities was presented to the West Sound Watersheds Technical Advisory Group at a Lead Entity meeting during fall 2014; WFC is coordinating with potential project sponsors to develop restoration and protection projects based on these observations. Initial WFC prioritization of the projects was based on the area and quality of habitat affected, and the number and ESA-status of species likely to be impacted. Discussion with the Lead Entity Technical Advisory Group led to the final prioritization (Appendix A) and included consideration of benefit (high priority habitat features or processes, high priority geographic area, species affected, life history stage affected, reasonable cost per gain) and certainty (project is consistent with scientific methods, appropriate sequencing, addresses a high potential threat, and likelihood of willing landowners).

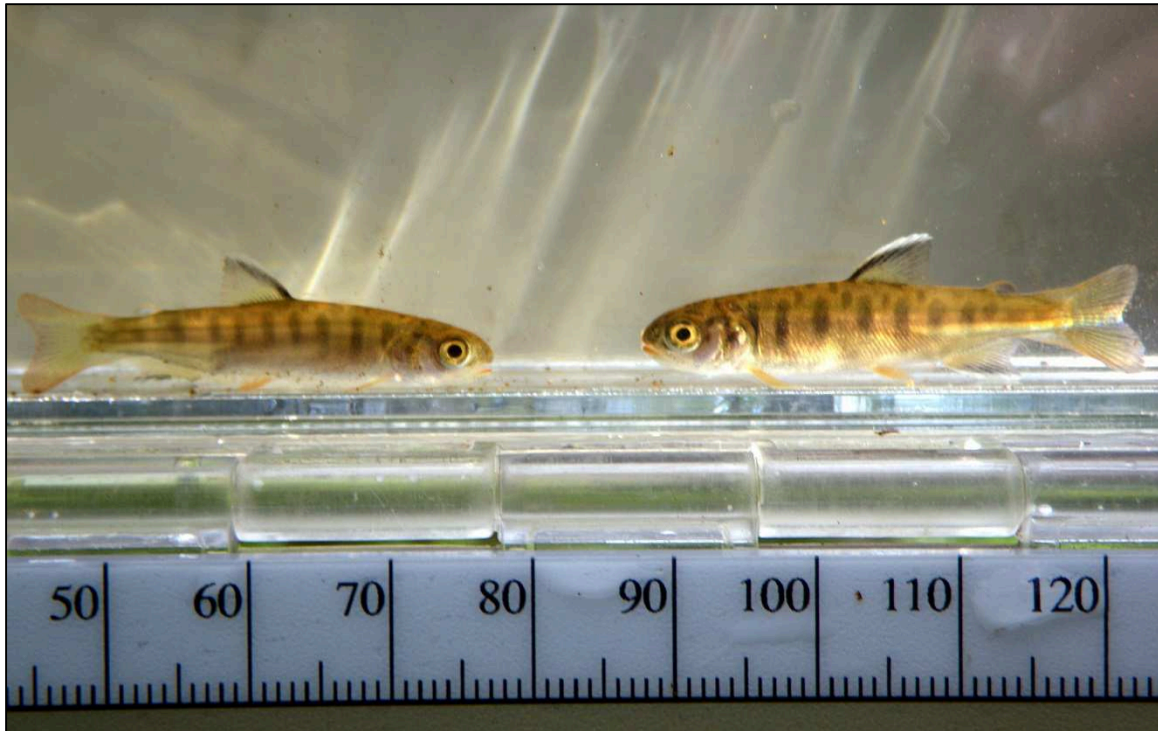


Figure 5. Juvenile coho salmon brought to hand during the Kitsap Phase II Water Type Assessment.

The West Sound Watertype Assessment is described on Wild Fish Conservancy's web site at: <http://wildfishconservancy.org/projects/west-sound-watertype-assessment>

Additional project-related outreach:

- Article in North Kitsap Herald: <http://www.northkitsapherald.com/news/126844703.html>
- Article in Kitsap Sun: [http://www.kitsapsun.com/news/local-news/protecting-salmon-habitat-first-requires-a-good-map\\_91618117](http://www.kitsapsun.com/news/local-news/protecting-salmon-habitat-first-requires-a-good-map_91618117)

- Two oral presentations at the 2014 Salish Sea Conference:  
<http://www.wvu.edu/salishseaconference/index.shtml>
- Project result-related meetings with Kitsap County staff including the Planning and Environmental Programs Division Manager, Development Services Senior Planner, GIS Analyst for Kitsap County Dept. of Community Development, and Suquamish Tribe Fisheries Department staff.

WFC's Water Type Assessment project is ongoing; in 2015 Wild Fish Conservancy crews will be performing field surveys in additional Puget Sound drainages in Kitsap and Pierce Counties (WRIA 15), the Snohomish Basin (WRIA 07), and other regions of the state.

Funding for this project was provided by the Puget Sound Acquisition and Restoration Fund. Wild Fish Conservancy would also like to acknowledge the support and assistance provided to this project by the West Sound Lead Entity process, including but not limited to the Suquamish Tribe, Kitsap County, Stillwaters Environmental Center, and WA Dept. of Fish and Wildlife.

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**Appendix A. Restoration and Protection Opportunities observed during WFC’s West Sound Watertype Assessment Project –Phase II**

ID	Priority	Stream	GPS point	Problem/Opportunity	Potential Solution	Comments
A	High	Point No Pont Creek AT17	Wpts 907, 915, 921	Partial barrier Tide Gate, degraded channel habitat and full barrier derelict concrete dam - Potential fish habitat gain ~10,000'	Improve fish passage through tide gate, flooded field, and past derelict concrete dam	A partial barrier tide gate with a culvert outlet at the mouth of Point No Point Creek is reported to be perched up to 2' during low tide. The tide gate restricts tidal inflow upstream in what was historically an estuary and is now a freshwater pond with flows running down a ditch line. This tide gate is in need of maintenance or replacement. Above the ponded area and ditch line the channel is no longer present; instead there is a flooded field bisected by Hillview Ln NE. No culvert was found here. Upstream of the flooded field the channel runs through a forested ravine and over a derelict full barrier concrete water retention dam. Here Point no Point's flow is diverted into a 7 ft. wide by 20 ft. long concrete flume with a 3 ft. high drop onto cobble and boulders.
B	High	Finn Creek AT18	Wpts 948, 949, 951	Full barrier tide gate and ditched channel - Potential fish habitat gain ~10,000'	Improve fish passage through the tide gate, possibly by daylighting the channel, and naturalize the ditched channel	Finn Creek crosses under the Point No Point/ Hansville RD intersection in a non barrier culvert. The outlet of the culvert feeds into an 850' long ditch line running along the west side of Hansville RD. The ditched channel then empties into a tide gate which feeds into a culvert running 275' under an old parking lot.
C	High	Little Boston	Wpts 126, 127, 128	Full barrier hatchery dam at mouth of stream, full barrier water supply to hatchery, and partial barrier culvert on Little Boston Rd NW - Potential fish habitat gain 12,200'	Improve fish passage through hatchery and associated infrastructure	Point Julia Hatchery at the mouth of Little Boston creek produces Chum; unfortunately, it is also a full barrier to fish passage. A fishway outlet empties a holding pen with a debris screen blocking up stream migration. 450' further upstream is the full barrier water intake for the Hatchery. Here the flow passes through a debris screen and drops 5' into a concrete vault outleting into 2.5' culvert which is perched 2'. Above these full barriers Little Boston Creek crosses Little Boston Rd. NW in a partial barrier culvert perched 1'. WFC netted cutthroat above and below this crossing.
D	High	Doe-Kag-Wats MB14	Wpt 110	Partial barrier culvert – Improve fish passage to 4,000' of fish habitat	Improve fish passage	Doe-Kag-Wats crosses a Suquamish forest access road in a culvert perched 0.5'. This is an opportunity for a simple culvert replacement.
E	High	Ruby Creek PJ01BJ05	Wpt 083	Partial barrier culvert - Improve fish passage to 8,500' of fish habitat	Improve fish passage and restore hydrologic connectivity	Ruby Creek crosses 2 private drives off the end of Harper RD. Here, the lower culvert is perched 0.8' and both the upper and lower culverts are undersized at 2' span. They apparently are unable to carry all the flow during high rain events and have caused erosion problems to the private drives. This may be eligible for the Family Forest Fish Passage Program (FFFPP).
F	Med	Ruby Creek BJ05	Wpt 111 - 114	Ditched Ruby Creek dispersed into reed canary grass/ Improve fish passage to 11,000' of fish habitat	Improve fish passage through reed canary grass field	Ruby creek is ditched through a field with some riparian trees and shrubs. Where the ditch line ends the flows disperse into 450' of field without a defined channel. There is standing water in the field but it is choked by grasses without a defined surface connection. The Ruby Creek Marsh Wildlife Preserve is immediately downstream; here, the old ditched pasture has been restored to a beaver dam wetland complex. Constructing a naturalized, sinuous channel with LWD and a riparian corridor through the flooded section of pasture would tie surface flows into the downstream preserve.
G	Med	Chico Creek Tributary CC01	Wpts 004, 001, 006	Partial barrier culvert under abandoned road, partial barrier culvert under on ramp and full barrier culvert under off ramp- Potential fish habitat gain 5,900'	Improve fish passage under two partial barrier culverts and one full barrier culvert	CC01 crosses under Chico Way, a wetland, and an off-ramp to HWY 3, in a full barrier culvert approximately 250' in length. Just downstream of this culvert is a second culvert running under a state HWY 3 on-ramp. There were many coho found below this partial barrier crossing but none above. Then downstream from the on-ramp crossing is a 3rd crossing on an abandoned road. The culvert to the third crossing is perched 1.3' where it flows into the right bank of Chico Creek.

H	Med	Hawks Hole Creek PJ03	Wpts 137, 138	500' of ditched shoreline habitat	Possible remeander and or shrub and tree planting	Hawks Hole Creek's initial 500' of shoreline habitat is ditched without vegetation where it runs through a community park. This is an excellent opportunity for outreach and restoration, possibly a remeander, or at least a low impact willow planting.
I	Med	Buck Lake Creek AT19	Wpt 033	Full barrier culvert- Potential fish habitat gain 4,000'	Restore fish passage	The creek draining Buck Lake crosses under NE Twin Spits RD in a 3' corrugated steel culvert with a 4' perch. The downstream channel gradient may be a barrier to fish passage (requires add'l investigation)
J	Med	Ruby Creek BJ05	Wpt 082	Partial barrier culvert Improve fish passage to 16,000' of fish habitat	Improve fish passage	Ruby Creek crosses Sidney Rd. SW at this location in a partial barrier culvert with a 1' perch and no substrate throughout. WFC documented many juvenile coho above the culvert, but meets the state criteria for a partial barrier.
K	Med	Chico Creek Side Channel	Wpt 042	Partial barrier debris guard – improve important side channel habitat	Remove old debris guard	There is what appears to be an old debris guard or trash rack in the Chico Creek side channel. It may be affecting upstream and downstream fish passage, potentially trapping fish inside the side channel during low flows when upstream channel migration is dry.
L	Med	Chico Creek tributary CC02	Wpts 044-048	2 full barrier and 2 partial barrier culverts in the lower section of CC02- Potential fish habitat gain 3,600'	Improve and restore fish passage at 4 barrier culverts	A complex of 2 partial barrier and 2 full barrier culverts block the lower section of CCO2. The culverts are under Chico Way NW, the Chico Alliance Church parking lot, and an abandoned road.
M	Med	Blackjack Creek	Wpts 145-239	Ditched and straightened Blackjack Creek with multiple stagnant ditch lines along the channel's right bank	Possible remainder of mainstem incorporating right bank ditch lines	A vast 170+ acre wetland exists on what is now old pasture lands riddled with ditched channels. Theses ditched drainage channels (coho were found in almost all of them) are largely choked with grass (mostly reed canary). Approximately 80 acres of this wetland habitat is owned by <i>Blackjack Creek Holdings LLC</i> . They apparently are part of a mitigation land purchase and have already started a small restoration project (cutting in a new swale and planting native trees and shrubs). This would be an excellent location to re-meander Blackjack Creek which is ditched along the west side of the property line and naturalize the 3 adjacent ditched tributaries.
N	Med	Blackjack Creek Tributary BJ06.1	Wpts 071-073	Two full barrier culverts under Dogwood Rd. SE, and SE Cedar Rd. Potential Fish Habitat Gain 3,700'	Restore fish passage	A previously unmapped channel crosses Dogwood Rd. SE, and SE Cedar Rd. each in full barrier culverts. A partial barrier culvert running under State HWY 16 is 50' upstream from the upper culvert.

## Project A - Point No Point Creek :

Point No Point creek supports approximately 10,000 feet of fish habitat. Generated from wetland headwaters, this stream meanders down a relatively intact forested ravine and into a ditched wetland complex which feeds into Puget Sound. WFC found 3 main issues in the lower reaches of Point No Point creek which keep anadromous salmonids from accessing the streams potential spawning and rearing habitat.

The first opportunity for restoration is at the tide gate at the mouth of the creek.

Looking downstream from the tide gate to the culvert outlet buried under the high tied.

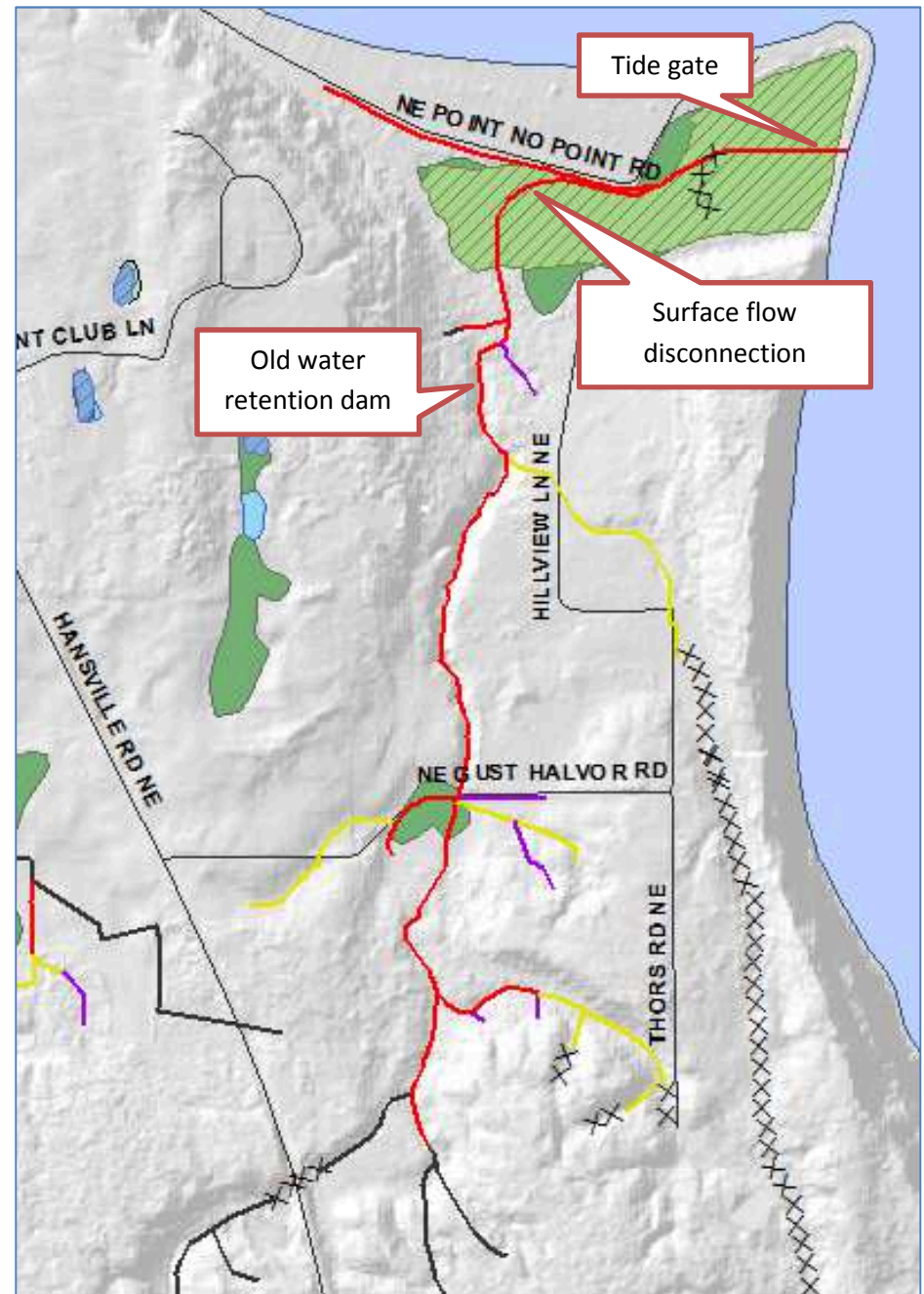


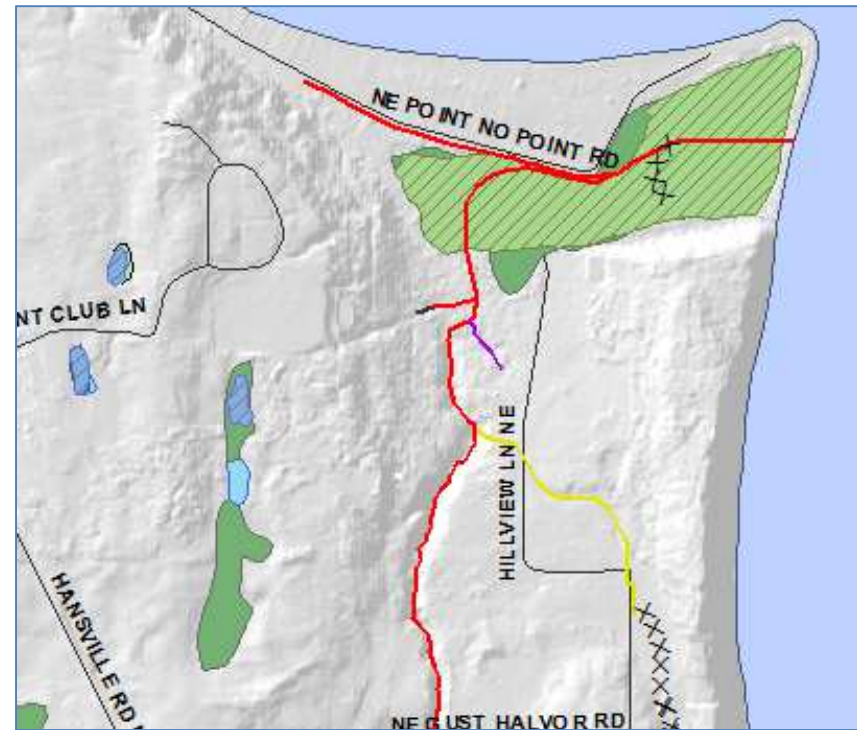
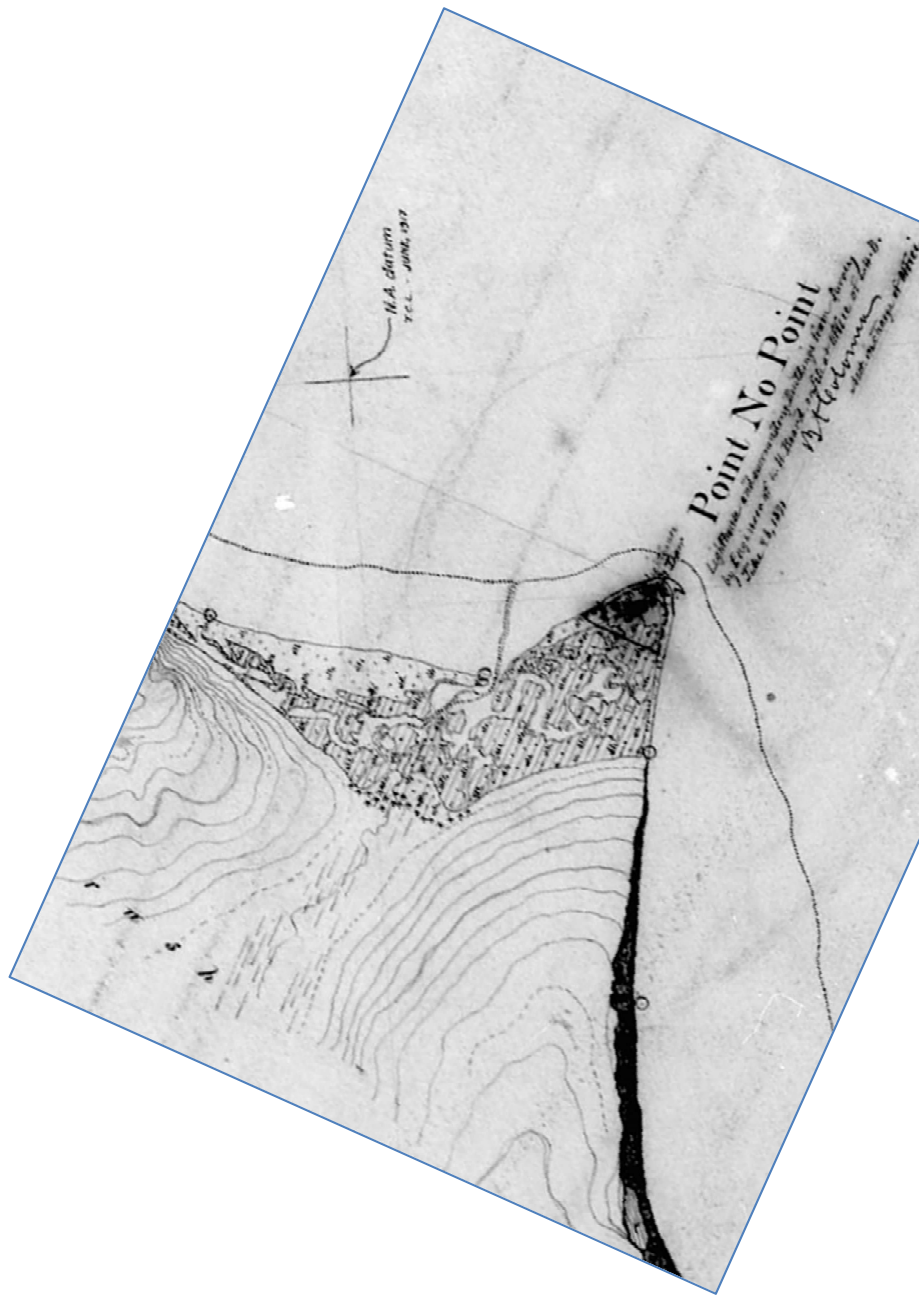
Upstream from the tide gate - ditched wetland complex



**The Problem:** The tide gate located at Point No Point Lighthouse County Park acts as a partial barrier to upstream fish migration. It compromises fish access to 10,200 feet of Type F water and disrupts estuarine function and natural water, wood, and sediment transport processes.

**Proposed Solution:** Restore fish (and other) passage at the tide gate.





T-sheet (on left) showing location of salt marsh and contributing watershed in 1857.

The second opportunity for restoration ties in directly to the ditched wetlands upstream from the tide gate.

**The Problem:** Where Point No Point creek leaves its forested ravine it distributes across a reed canary grass field with no defined channel. The saturated field then drains into a ditchline to the north. This disconnect is likely a result of wetland degradation, channel ditching and flow modification around Hillview Ln. NE.

**Proposed Solution:** Naturalize the channel. This would entail reconstructing a sinuous channel, installing LWD, and planting native riparian corridor to restore natural processes and improve upstream and downstream connectivity.



Looking upstream where the ravine distributes into wetland habitat



Looking downstream at the reed canary grass wetland habitat

The third opportunity is a derelict water retention dam in the forested ravine

**The Problem:** The old water retention dam diverts Point No Point Creek into a 7' wide by 20' long concrete flume with a 3' high drop onto cobbles. The dam structure blocks fish migration and sediment transport.

**Proposed Solution:** Remove the dam structure and restoring fish passage and natural stream processes



Looking upstream at the old dam structure outfall



Point No Point creek below the old dam

## Project B - Finn Creek

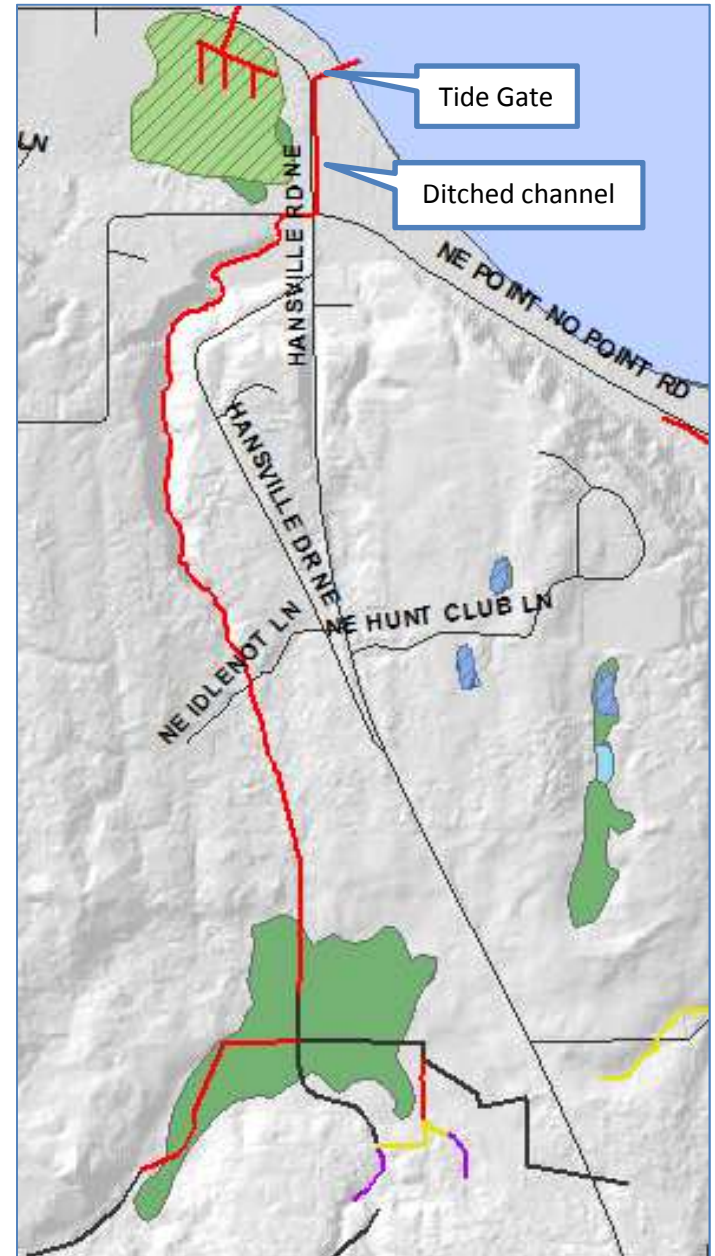
Finn Creek supports approximately 10,000 feet of fish habitat. Generated from wetland headwaters, this stream meanders down a lush forested ravine and into a 900 foot long ditch line before passing through a tide gate and into the Puget Sound. The mouth of Finn Creek holds great potential for restoration.

The first opportunity for restoration is the tide gate



**The Problem:** The tide gate located at Norwegian Point County Park acts as a partial if not full barrier to upstream fish migration. It compromises fish access to 10,000 feet of Type F water and disrupts estuarine function and natural water, wood, and sediment transport processes.

**Proposed Solution:** Restore fish (and other) passage at the tide gate.



The second opportunity for restoration is the ditched channel

**The Problem:** Finn Creek has been ditched along the east side of Hansville Rd. NE.

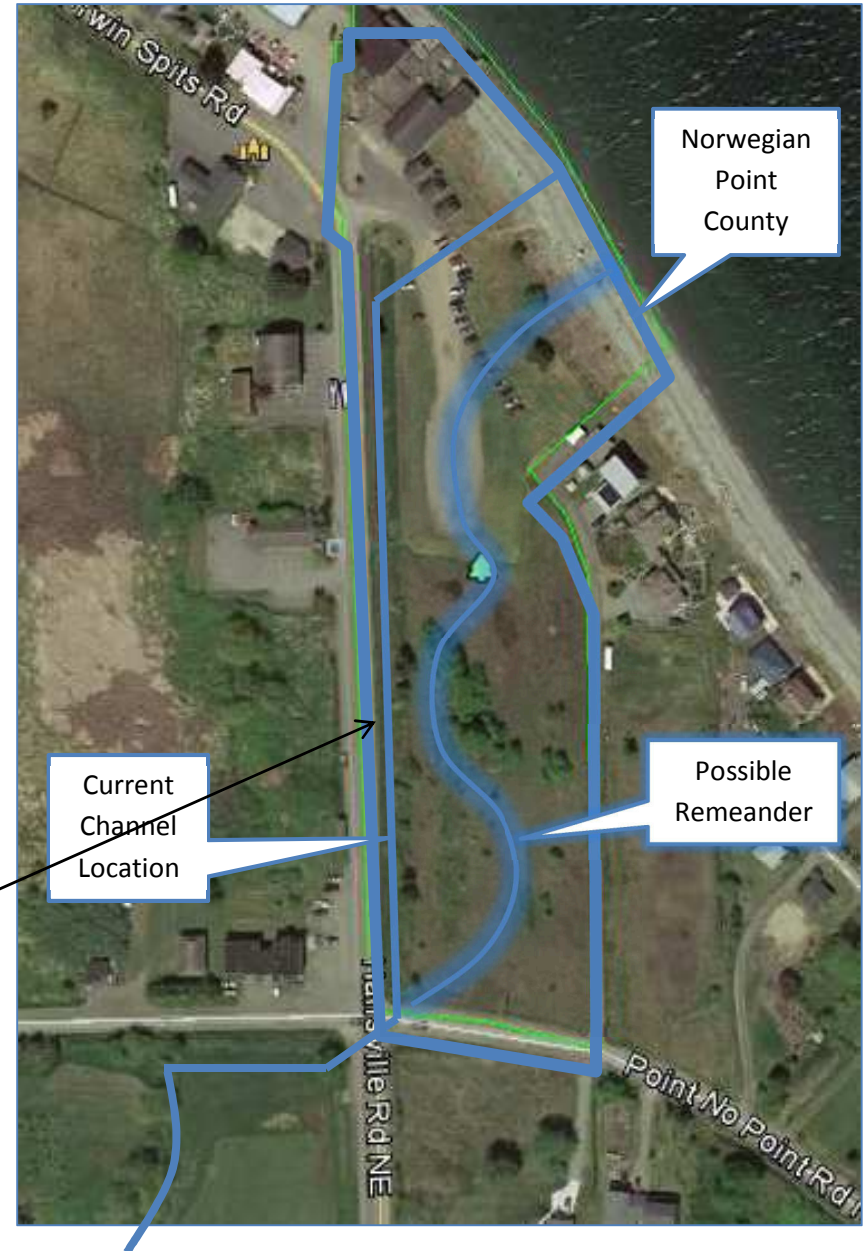
**Proposed Solution:** Naturalize the channel within the Norwegian Point County Park. This would entail reconstructing a sinuous channel, installing LWD, and planting native riparian corridor to restore natural processes and improve upstream and downstream connectivity.



Finn Creek ditched along the east side of Hansville Rd. NE



Non barrier field access road culvert outlet on the ditched Finn Creek

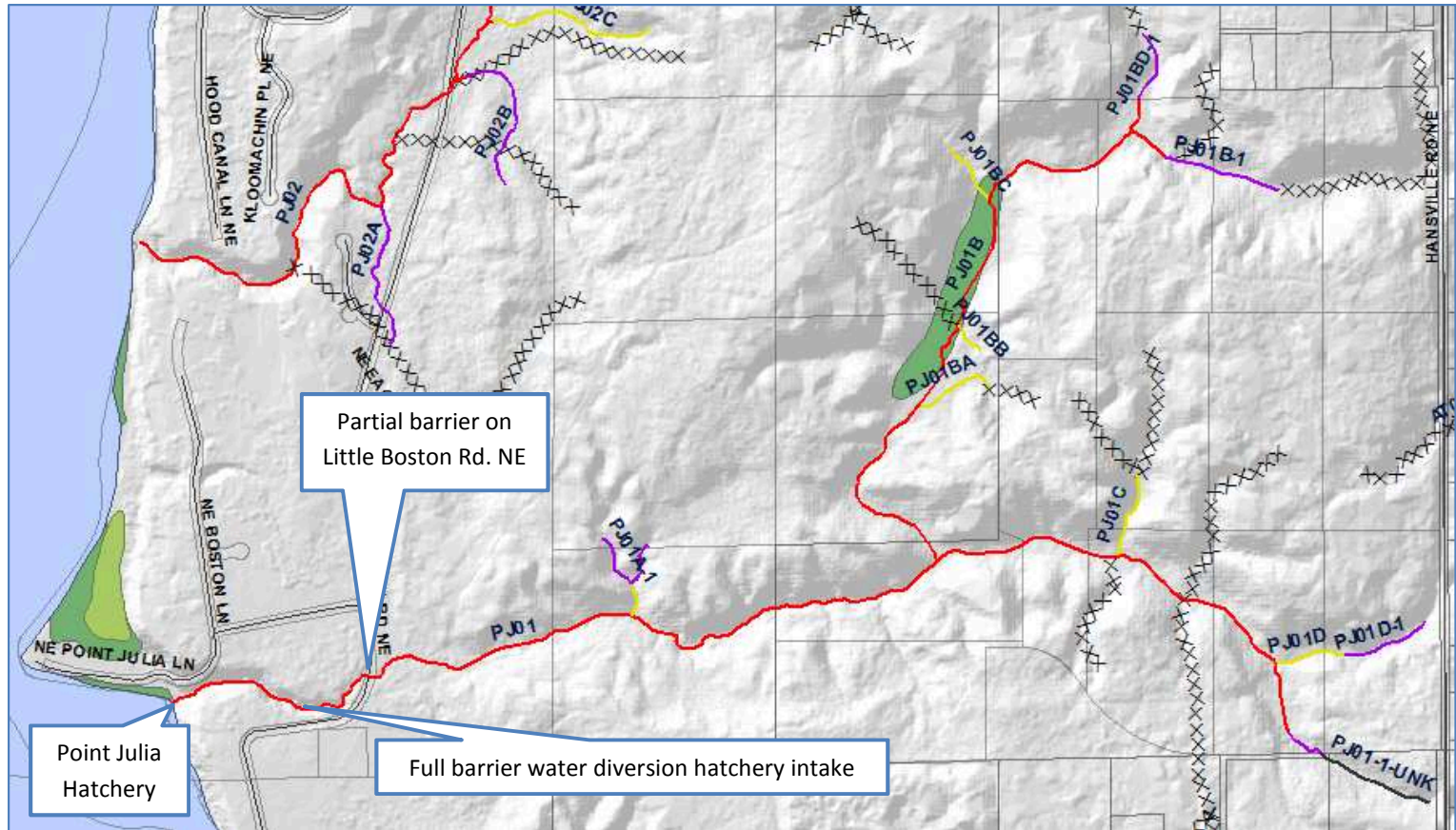


## Project C – Little Boston Creek

Little Boston creek supports approximately 12,200 feet (2.3 miles) of fish habitat. Generated from numerous small tributaries, this stream meanders down a forested ravine through the Point Julia Hatchery and into Puget Sound. WFC found 3 significant passage issues in the lower reaches of Little Boston Creek which keep salmon and steelhead from accessing spawning and rearing habitat.

The first Issue is the Hatchery at the mouth

**The Problem:** Little Boston Creek is screened off where its flows enter a holding pen. The flows are then passed through a fishway and into the Puget Sound.



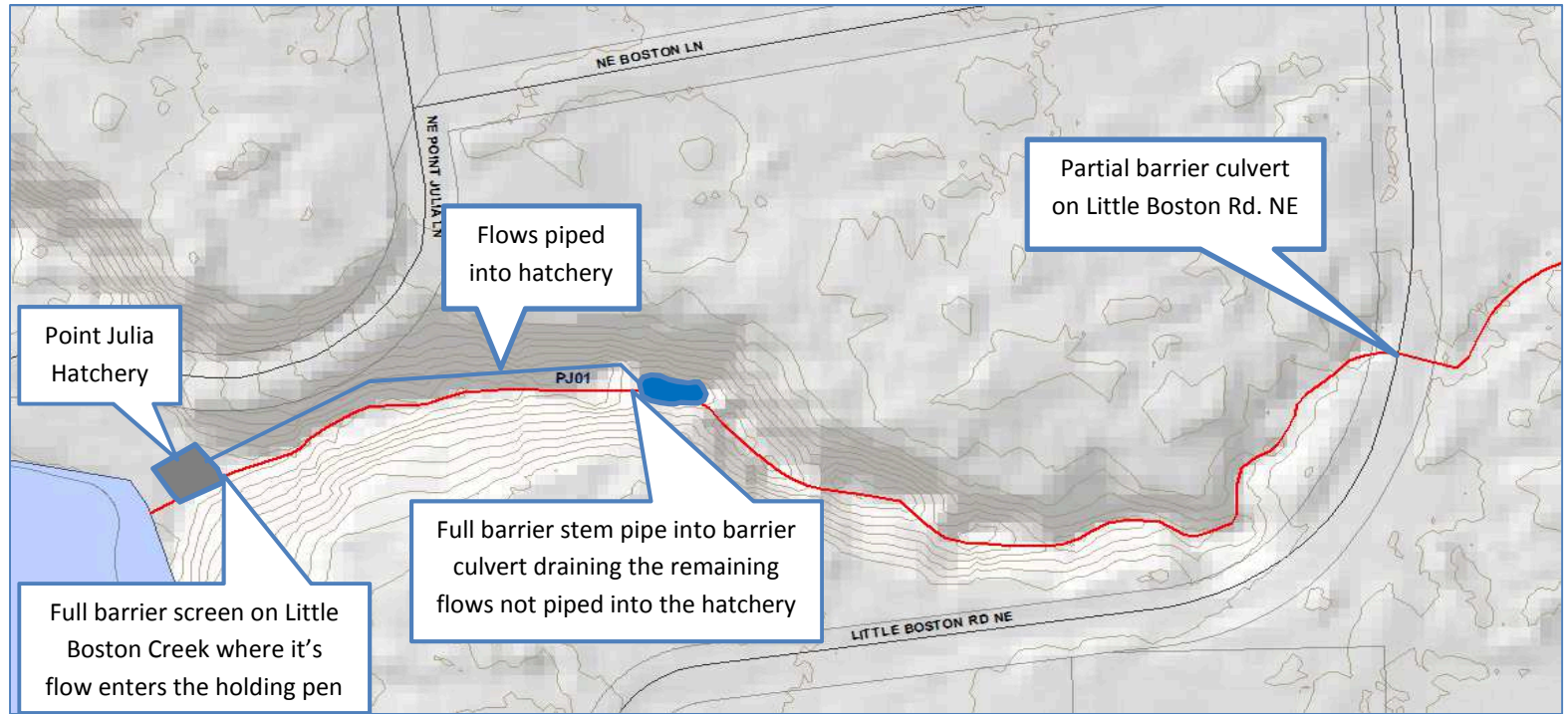
**Proposed Solution:** Restore wild fish passage around the hatchery.





The second fish passage issue is found at the hatchery intake reservoir.

**The Problem:** The outlet of the intake reservoir for the downstream hatchery is a full barrier to fish passage. The diversion partially de-waters 450 feet of the mainstem channel. The flow which is not piped into the hatchery runs out the overflow structure to continue downstream the mainstem. This overflow passes through a debris screen and drops 5' into a concrete vault. The vault then drains into a 2.5' culvert which is buried under the downstream bank and is perched 2' at its outlet.



**Proposed Solution:** Restore fish passage around the reservoir.



Reservoir where surface water is diverted into the hatchery. Remaining flows feed through 2.5' culvert and into the downstream channel.

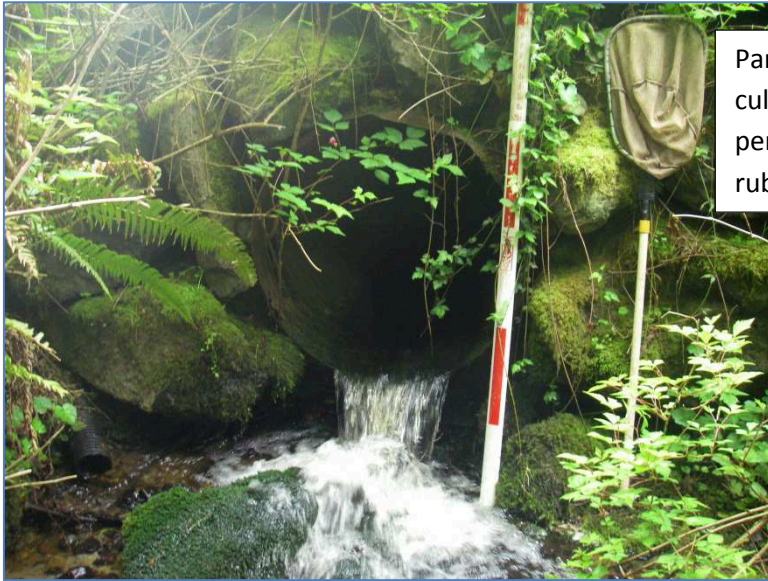


2.5' culvert outlet feeding into the downstream channel

There third restoration opportunity is on the Little Boston Rd. NE crossing.

**The Problem:** Little Boston Creek crosses Little Boston Rd. NE in an undersized culvert perched 1'. Cutthroat trout were netted above and below this partial barrier culvert.

**Proposed Solution:** If downstream habitat is restored this culvert may be a good candidate for replacement, improving fish passage.



Partial Barrier culvert outlet perched 1' onto rubble.



180 mm cutthroat trout netted below the culvert



Channel upstream Little Boston Rd. NE.



133 mm cutthroat trout netted above the culvert

## Project D – Doe-Kag-Wats Creek

**The Problem:** The upper reaches of Doe-Kag-Wats Creek crosses a Suquamish forest access road in a partial barrier culvert with a 0.5' perch. The culvert affects access to 4,000 feet of fish habitat.

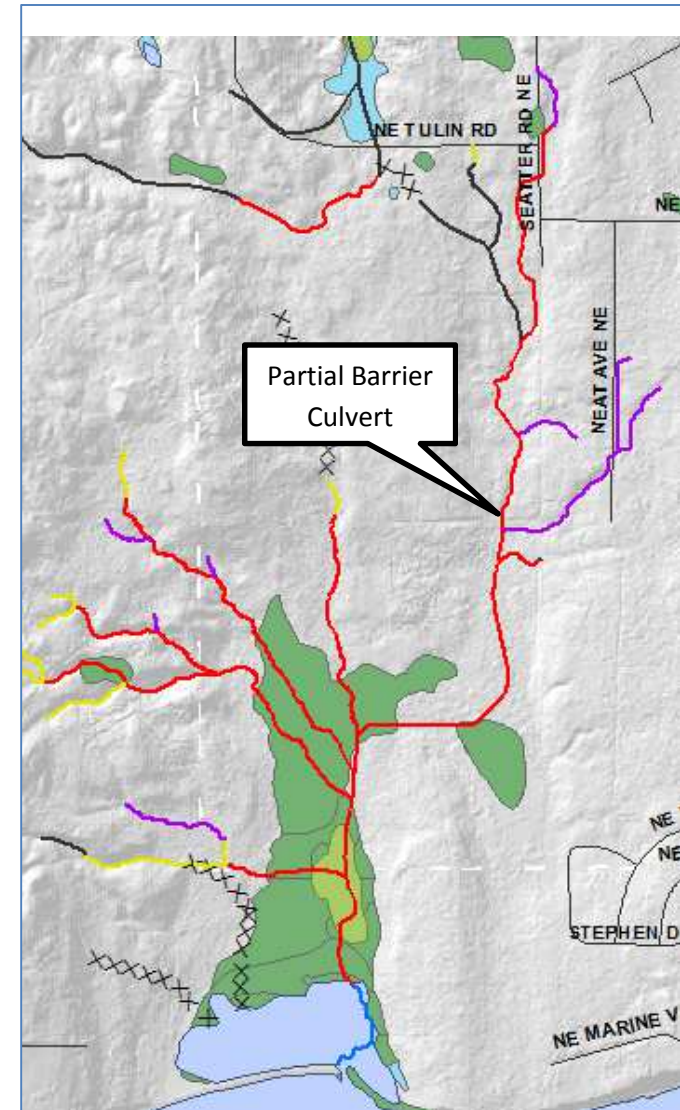
**Proposed Solution:** Replace culvert to improve fish passage



98 mm cutthroat trout caught above the partial barrier culvert



118 mm cutthroat trout caught in the plunge pool at the culvert outlet



## Project E – Ruby Creek

**The Problem:** Ruby Creek crosses 2 private drives off the end of Harper RD. The lower culvert is a partial barrier and is perched 0.8'. Both the upper and lower culverts are undersized at 2' span and are unable to carry flows generated by high rain events. The undersized culverts have caused scour along the private drive. This could be an excellent FFFPP project.

**Proposed Solution:** Replace the culverts with structures large enough to pass high flows and improve fish passage.

