



Kelsall Tributary Restoration

Post-construction Monitoring Report - September 27, 2022

Stacie Evans & Derek Poinsette



Project Goal: Improve fish passage on an unnamed tributary of the Kelsall River (AWC listed stream 115-32-10250-2143-3001) by raising the water surface to resolve a perched culvert.

Project Background: Takshanuk Watershed Council (TWC) identified a culvert that was an impediment to fish on the Kelsall Road in an Anadromous Waters Catalog (AWC) listed stream, where coho, Dolly Varden, and cutthroat trout have been documented. The culvert was classified as red due to a perch of 19 inches and gradient of 2.5% (last measured in September 2020). Due to the difficulty and expense of replacing the culvert, as well as the stability of streamflow throughout the season, TWC opted to install a series of log weirs and step pools to backwater the perched culvert. TWC received funding from the US Fish and Wildlife Service to complete this project and restore fish habitat.

Permits: ADFG Aquatic Resource Permits

-SF2018-196
-SF2019-061
-SF2020-167
-SF2022-169d

ADFG Fish Habitat Permit

-FH22-I-0046

Location: 59.538092, -136.099986



Meridian	Township	Range	Section
Copper River	27 South	55 East	17





Project site from road to downstream reach.



Pre-construction perch causing a barrier to fish passage.

Fish Trapping: Minnow traps were set above and below culvert on 10/25/2018, 9/12/2019, 5/15/2020, and 9/21/2022.

Date	Species	Fork Length (mm)
10/25/2018	Dolly Varden	90
10/25/2018	coho salmon	60
10/25/2018	coho salmon	50
10/25/2018	coho salmon	40
10/25/2018	coho salmon	50
10/25/2018	Dolly Varden	70
10/25/2018	coho salmon	
10/25/2018	Dolly Varden	130
10/25/2018	trout-unspecified	110
10/25/2018	trout-unspecified	120
10/25/2018	Dolly Varden	
10/25/2018	trout-unspecified	60
10/25/2018	trout-unspecified	70
6/20/2018	Dolly Varden	
6/20/2018	Dolly Varden	
5/15/2019	Dolly Varden	70
5/15/2019	Dolly Varden	90
5/15/2019	Dolly Varden	90
5/15/2019	Dolly Varden	80
5/15/2019	Dolly Varden	70
5/15/2019	Dolly Varden	65

Date	Species	Fork Length (mm)
5/15/2019	Dolly Varden	60
5/15/2019	Salmonid-unspec	20
9/12/2020	coho salmon	40
9/12/2020	coho salmon	40
9/12/2020	trout-unspecified	50
9/12/2020	trout-unspecified	55
9/12/2020	Dolly Varden	80
9/12/2020	Dolly Varden	70
9/21/2022	Dolly Varden	140
9/21/2022	Dolly Varden	65
9/21/2022	Cutthroat	90
9/21/2022	Dolly Varden	95
9/21/2022	Dolly Varden	65
9/21/2022	Dolly Varden	90
9/21/2022	Dolly Varden	70
9/21/2022	Dolly Varden	90
9/21/2022	Dolly Varden	85
9/21/2022	Dolly Varden	90
9/21/2022	Dolly Varden	95
9/21/2022	Dolly Varden	140



Above: coho juvenile captured on 9/12/20.

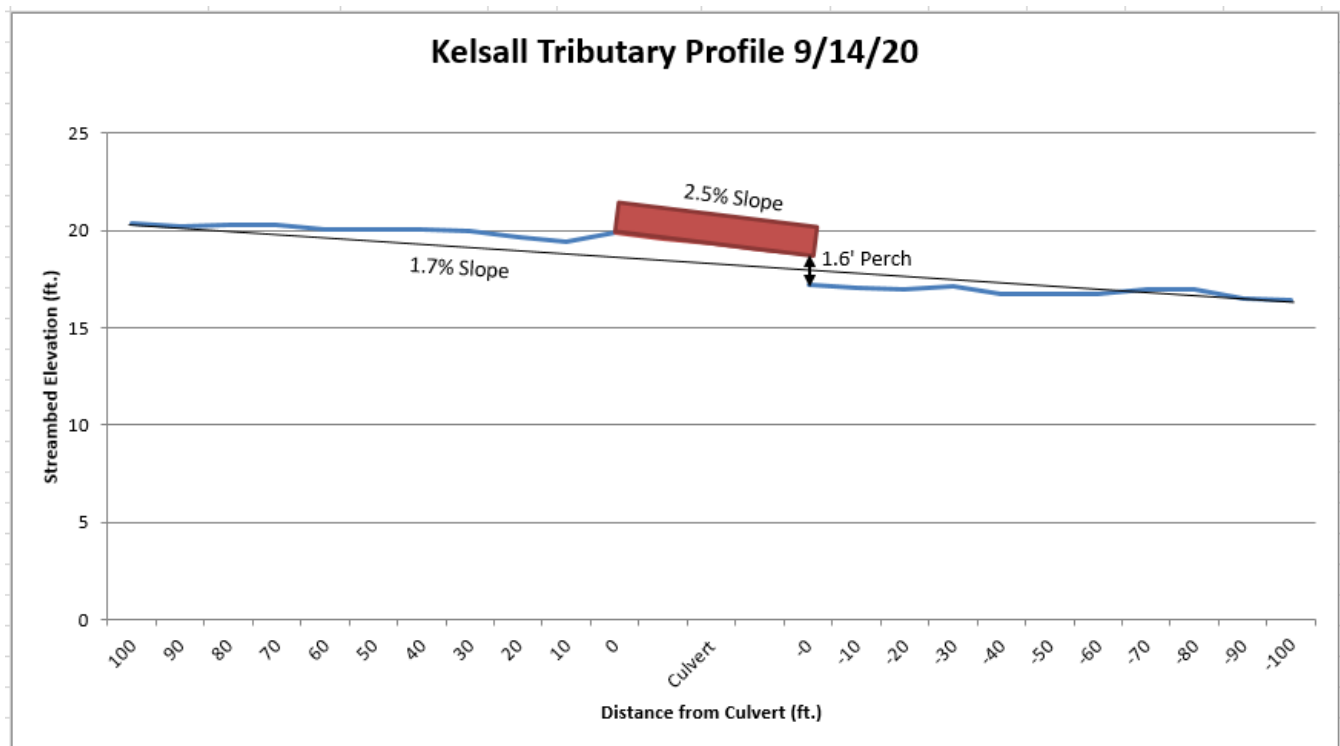


Above right: Dolly Varden juvenile captured above culvert on 9/21/22 indicating upstream fish passage through the culvert.

Below right: cutthroat and Dolly Varden juveniles captured above first weir log on 9/21/22 indicating upstream fish passage over all weirs.



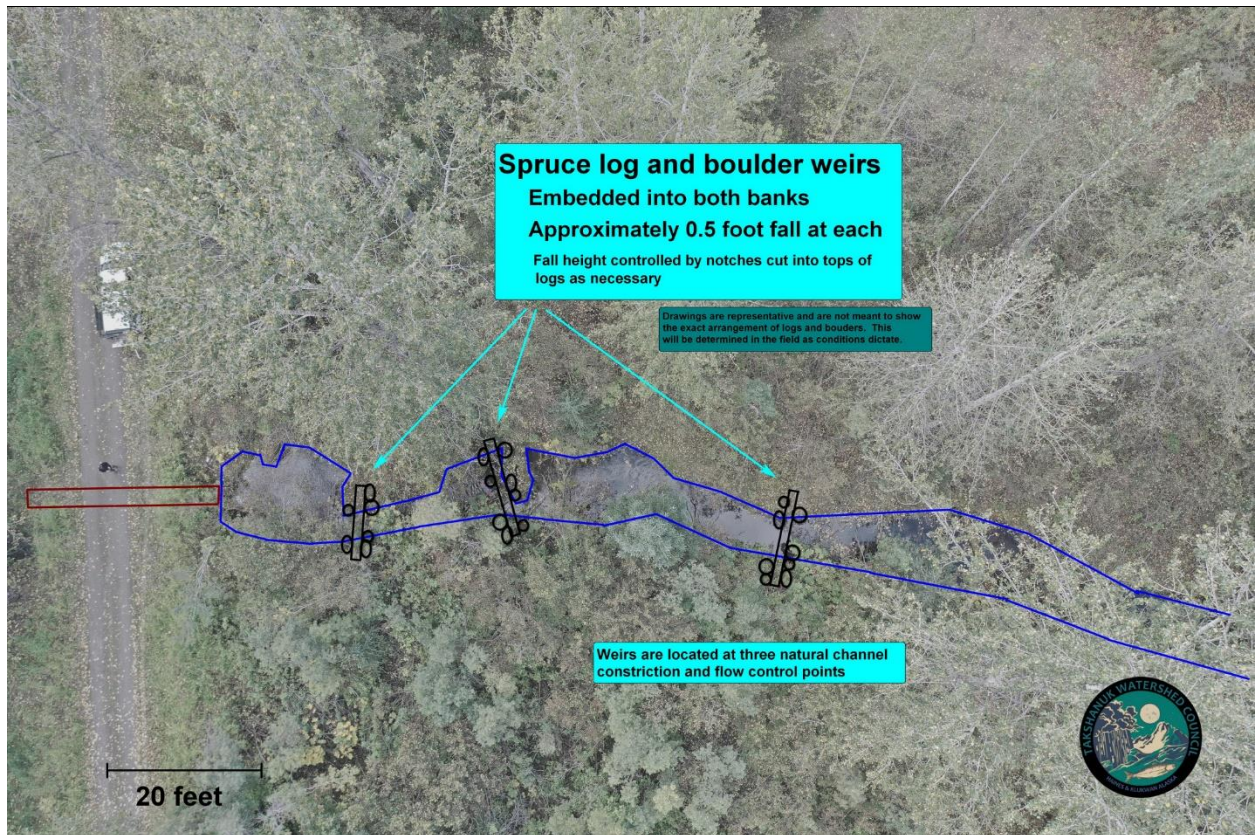
Longitudinal Streambed Profile Survey: Streambed elevation was measured at estimated center of thalweg on 9/14/2020 before step pools were built. This survey was repeated to monitor post construction changes.



Step Pool Construction: Haines State Forester Greg Palmieri delivered the weir logs to the restoration site and acquired the ADFG Fish Habitat Permit. Construction occurred on June 21 and 22, 2022 when streamflow was low and spawning salmon were not present. An existing road alongside the creek allowed for easy access to the site and for minimal removal of riparian vegetation. Only alder and other brushy materials were removed, leaving all spruce and large cottonwood standing.

Working from the streambank, a small excavator was used to place three 24+ inch diameter logs at 22', 60', and 83' downstream of the culvert. Local materials, sand, gravel, and rock, were used to embed the logs and reconstruct the banks. Riffles were constructed below each weir to provide for immature fish migration. A notch was cut into each log to direct flow and to ensure that during very low flows a single consolidated channel will remain to provide fish passage over the log.

After the farthest upstream weir was placed, the water surface raised sufficiently to resolve the perched culvert. The subsequent weirs provide step pools and riffles to allow fish passage and provide habitat. Willow cuttings and other local vegetation were planted along disturbed areas to revegetate disturbed stream banks.



Project site diagrams.





Resulting pool after first log is placed, embedded, and notched. Perch is resolved immediately!



Placing second log.



Embedding second log.



Resulting pool after second log is placed, embedded, and notched.



Placing third log



Shoring up weirs with hand tools.

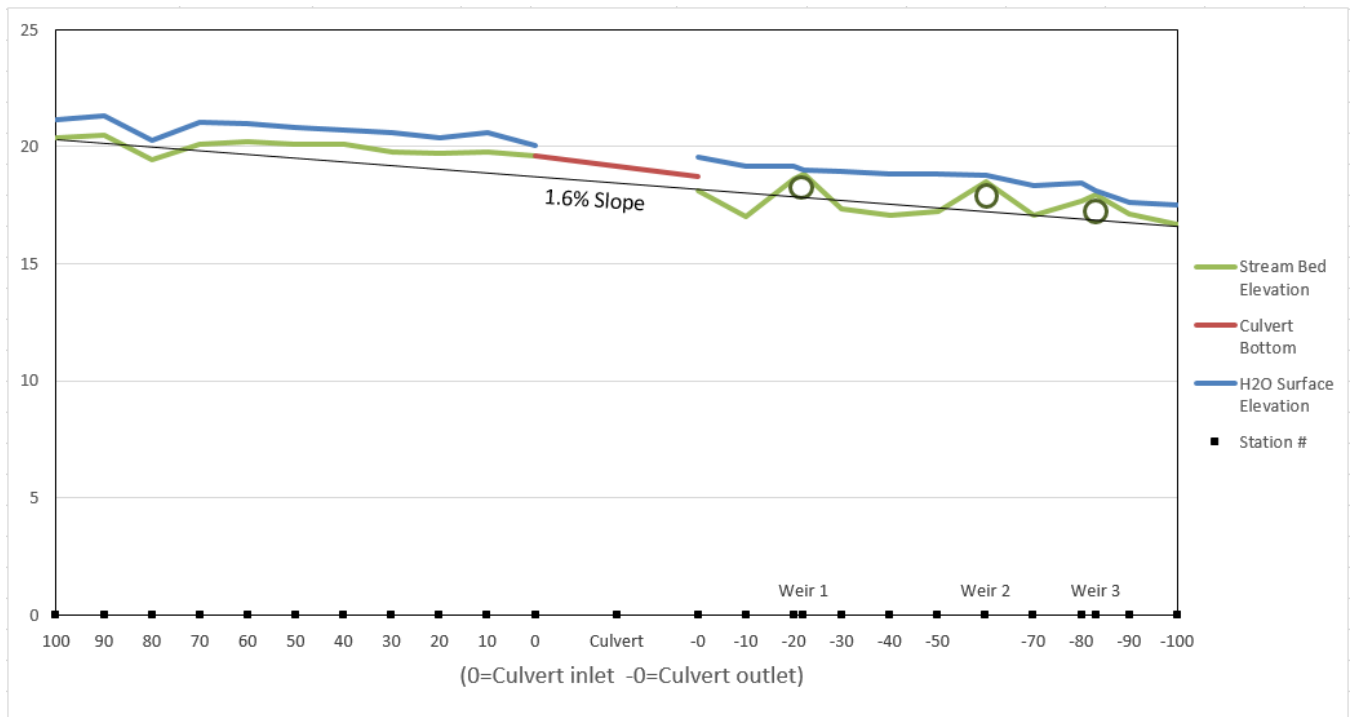


Resulting stream surface elevation after all three weirs are placed. Perch is resolved and step pools allow fish passage. Habitat is enhanced by removing silt from stream bed and creating pools.



Minnow trapping on 9/21/22 indicates adequate fish passage through project site. Streambank revegetation is occurring.

As-Built Longitudinal Streambed Profile Survey: Streambed elevation was measured at estimated center of thalweg on 9/21/2022, three months after step pools were built. Measurements were also taken from the notch on each weir log.



As demonstrated in the post construction survey, new pools were created downstream of the culvert and the water surface elevation was sufficiently raised to eliminate the perch.



Results: Access to 310 meters of upstream rearing habitat was restored for coho, cutthroat trout, and Dolly Varden. 30 meters of habitat just downstream of the culvert was enhanced by removing silt from the streambed and creating riffles and large deep pools.



Kelsall Road Culvert on 9/21/22.

Remaining Project Tasks:

- Document fish use – Additional fish trapping will be conducted to monitor fish use of the area post-construction
- Monitor site – The construction site will be photo-point monitored for five years to document success of the project, monitor vegetation regrowth, and ensure that problems are fixed if they occur.

Special Thanks:

Rob Cadmus, Southeast Alaska Watershed Coalition

Christy Cincotta, US Fish and Wildlife Service

Deborah Hart, Southeast Alaska Fish Habitat Partnership

John Hudson, Southeast Alaska Watershed Coalition

Ben Kirkpatrick, TWC Board of Directors

Sarah Markegard, US Fish and Wildlife Service

Greg Palmieri, Haines State Forest

Mark Sogge, TWC Board of Directors

Andy Stevens, US Fish and Wildlife Service

Neil Stichert, US Forest Service

Haynes and Katie Tormey, Haines Industrial Supply