

Harper Estuary Restoration Project Update

December 1st, 2016



Southworth Drive Culvert Improvement

The installation of the replacement culvert under Southworth Drive was completed in early November 2016. The new 16-foot box culvert replaces an undersized 24-inch concrete culvert. This new culvert will allow fish access and more tidal influence to Harper Creek upstream of the road crossing. In addition to environmental benefits, larger culverts provide better conveyance of floodwaters, sediment and wood during winter storms.

The photos below show the transformation that took place in just a few weeks from mid-September through mid-October. Within days construction workers started reporting sightings of salmon at the entrance of the culvert.



Salmon Spawning Surveys - Upstream of Southworth Drive Culvert

Starting November 9th, employees with the Washington Department of Fish & Wildlife (WDFW) began conducting salmon spawning surveys upstream of the newly upgraded culvert. The observations from the construction workers and residents were confirmed, salmon were indeed utilizing habitat upstream of the culvert. During the first survey, WDFW biologists observed six coho salmon and two redds (disturbed gravel where females have laid eggs). During subsequent surveys, thirteen Coho and thirteen redds have been observed. In the weeks prior to the replacement of the culvert, salmon were not observed upstream by WDFW staff.



Photo: Female coho looking for the right spot to build a redd.

Table: Results from spawning surveys

Date	Redds	Coho	
		Live	Dead
11/9	2	6	0
11/16	2	13	2
11/22	13	0	7
11/29	1	3	0

The observations from the spawning surveys have been interesting and exciting. It wasn't clear how quickly or what species were going to take advantage of the newly available spawning habitat upstream of the new culvert. Coho had been observed in other streams in the area before the installment of the new culvert and there were coho observed during the first survey. The storms that produce

large rain events in November are often the peak spawning times in many streams. Harper was no different. The 13 coho observed on the 16th was just following a rain event. The following week had far less rain and the creek's flow had dropped accordingly. This discouraged salmon from migrating up the creek but did give observers a better view of the redds that had been built the previous week but were unable to be identified by the higher flow and decreased visibility. The fish were back again this week but in lower numbers than the peak on the 16th. We would assume that numbers will taper off as we move through December but it is not unlikely that we see coho spawning through December.

Estuary Fill Removal

Background: Harper Estuary has been impacted by fill associated with former development activities. During the 1900's a brick mining and manufacturing facility was located in the southwest portion of the estuary. In the 1940's the factory was abandoned, the buildings were demolished, and much of the material was pushed into the estuary.

The estuary's natural functions have also been impacted by road fill, both historic and current. The estuary is bisected by SE Olympiad Drive Road, with tidal influence restricted by an undersized culvert under Olympiad Drive. Prior to Olympiad Drive, fill and piling associated with a drawbridge road approach and shoreline road also filled portions of Harper Estuary.

Work has begun on the removal of industrial fill including bricks, gravel, and extra fill placement. Some of the fill is quite deep, such that elevations will be restored following excavation with clean fill to re-establish estuarine habitat. In a few locations, the soil associated with this material was found to have slightly elevated levels of arsenic and cPAHs (Polycyclic Aromatic Hydrocarbons) during testing. This fill is being removed as part of the project and taken to approved disposal locations.

Current activity: WDFW hired Orion Marine as the construction contractor. Work began on the estuary restoration in late October and will continue through January. As of this update, the contractors have;

- Removed industrial fill on the north side of the estuary, including the informal boat landing and relict roadways
- Removed the concrete bulkhead and restored the beach at the northern end of the estuary
- Built a setback berm along the east side of the estuary (to be planted with native plants)
- Started shaping the former spit that was under the relict roadway
- Tested for contaminants remaining after the fill removal
- Transported fill material to approved disposal sites

Much of the work is taking place at night due to take advantage of favorable low tides (see night work update). Additional work to be accomplished in coming months include removal of industrial fill on the south side of Olympiad Drive, excavation of a tidal connection to the wetland to the east of the Olympiad culvert and placement of logs and native plants. Water quality and sediment testing will continue throughout the project.

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