

**Asotin Creek Intensively Monitored Watershed:
Summary of Monitoring October 31, 2015
Final Progress Report: 14-2229
Stephen Bennett, Eco Logical Research Inc., Providence, Utah**

Introduction

The Asotin Creek Intensively Monitored Watershed (IMW) is located in southeast Washington and began in 2008. The Asotin Creek IMW is determining the effectiveness of large woody debris treatments at increasing the productivity and capacity of Snake River Evolutionary Significant Unit (ESU) wild steelhead. Asotin Creek is a tributary of the Snake River within the Columbia Plateau and Blue Mountains level III ecoregions. These ecoregions are dominated by deep narrow canyons cut into underlying basalt lithology and surrounded by semi-arid sagebrush steppe and grasslands at lower elevations and open conifer dominated forests at higher elevations (Figure 1). Monitoring and restoration is taking place in the lower 12 km of three study streams (Charley, North Fork, and South Fork Creeks) – total study area length 36 km (Figure 2). Pre-treatment monitoring has been conducted from 2008 to 2012. Post-treatment monitoring is ongoing and expected to run until at least 2019. Restoration treatments began in 2012 and will be finalized by September 2016. One 4 km long treatment section was treated in each study stream (2012-2014). We are planning one final ~ 2 km treatment in South Fork Creek in 2016. Upon completion of the 2016 restoration, 14 km (39%) of the study area will be treated with 22 km remaining as control areas. The following is a progress report for the period July 1, 2015 to Oct 31, 2015.

• Monitoring

- We PIT tagged juvenile steelhead in the summer (July) and fall (late September-October) at the 12 permanent sites (four in each study stream). We have analyzed these data and now have a time series of abundance, growth, and survival from 2008-2015 and will be working to assess the effectiveness of restoration actions this winter.
- We conducted the Columbia Habitat Monitoring Protocol (CHaMP) at 16 sites. These sites are within the fish sites mentioned above to allow us to determine the effect of various habitat variables on fish abundance, growth, movement, survival, and production. All the habitat data are QAQC'd and loaded to champmonitoring.org.
- We maintained and downloaded two IMW water height gages and loaded these data into an IMW discharge database for use in analysis of habitat use and movement of both adult and juvenile steelhead.

- We downloaded ~ 25 temperature loggers and loaded these data into an IMW temperature database and we began to download. Much of this temperature data is also uploaded to champmonitoring.org.
 - PIT tag interrogation sites at the town of Asotin, Cloverland Bridge, the confluence of North Fork and South Fork Asotin Creeks, and Charley Creek were maintained and all PIT tag detections were submitted to PIT Tag Information System (PTAGIS). This task was completed by WDFW under a separate contract but ELR manages the pit tag data and uses the interrogation data to assess fish movement and survival.
 - We began our annual effectiveness monitoring of large woody debris (LWD) structures using customized iPad applications (~ 550 large woody debris structures total). All three existing 4 km long treatment areas were visited and each structure was assessed for its effect on hydraulic and geomorphic conditions (Figure 3 and 4).
- **Coordination and Planning**
 - We coordinated with WDFW and Snake River Salmon Recovery Board (SRSRB) on all aspects of the IMW
 - We assisted SRSRB in the Expert Panel process as it related to Asotin Creek.
 - Database management of discharge, temperature, fish, and habitat databases has been ongoing throughout the reporting period, and will continue.
- **Upcoming Work**
 - Winter and spring mobile PIT tag surveys to allow us to calculate survival during these seasons. Mobile surveys are conducted at all 12 fish monitoring sites.
 - Updated abundance, growth, movement, survival, and production analyses including modeling the effectiveness of restoration actions and identification of causal mechanisms.
 - Ongoing coordination and project management.
 - Summary report of the first three years of post-treatment results will be prepared.



Figure 1. Aerial photo of the IMW study area showing Charley, North Fork and South Fork Asotin Creek.

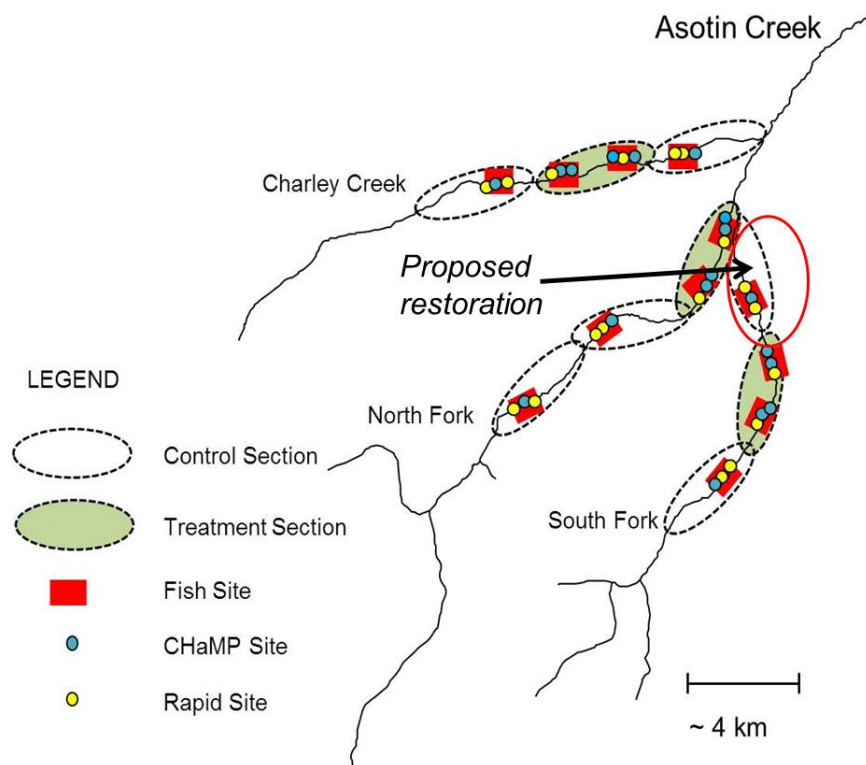


Figure 2. Location of Asotin Creek Intensively Monitored Watershed study creeks, treatment and control sections, restoration locations, and fish and habitat monitoring sites.



a) South Fork Asotin Creek, Mid-channel structure



b) Charley Creek, deflector.



c) North Fork Asotin Creek, Debris jam.

Figure 3. Examples of the restoration treatment using post-assisted log structures (PALS) installed in a) South Fork (197 structures in 2012), b) Charley Creek (208 structures in 2013), and c) North Fork (135 structures in 2014) to simulate natural large woody debris loading.

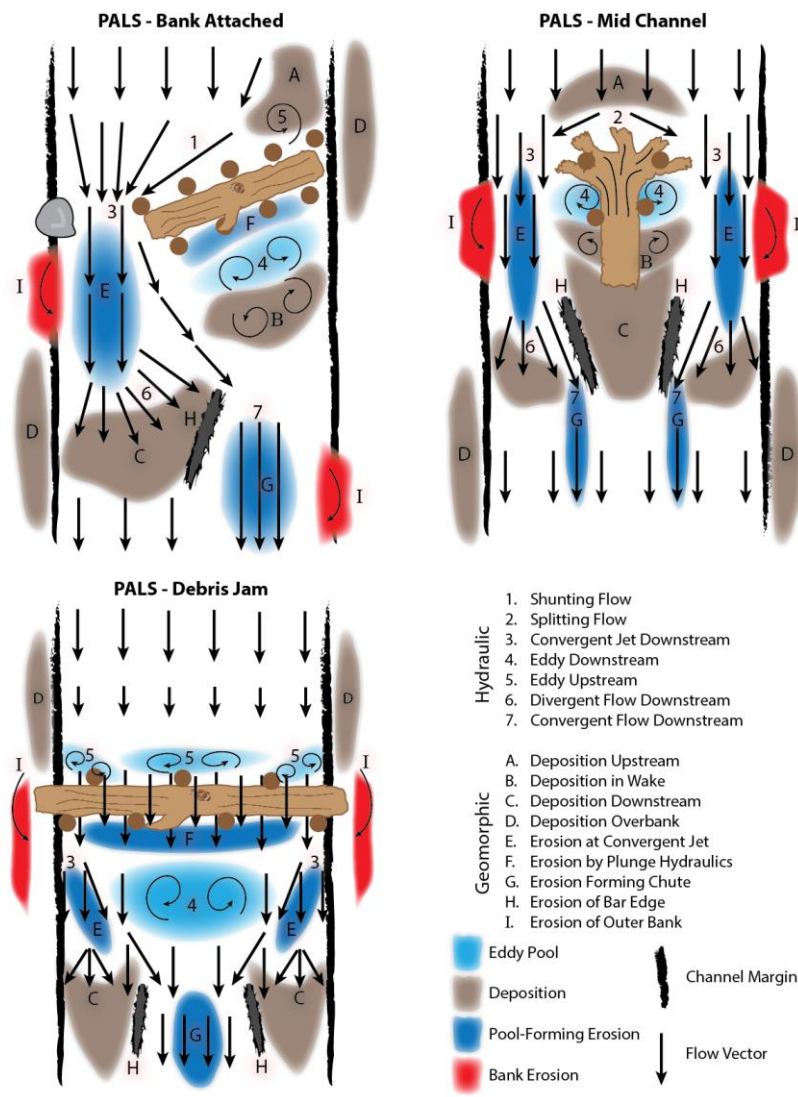


Figure 4. Design hypotheses for the three main post-assisted log structures built in the Asotin IMW.