**LWP snorkel survey summary 2012-2014**

The LWP pine oxbow reconnection project has been snorkeled 6 times by Yakama Nation personnel since 2011. The impact reach includes the lower LWP oxbow to the mouth of Roaring Creek and 100 meters up Roaring Creek. The control reach includes the 2007 Nason Oxbow project on Nason Creek and “the scale station” on the mainstem Nason. Graphs below only include the oxbow control. Survey protocol has been adapted throughout the monitoring period and includes:

* 2011: reconnaissance year. One snorkel (August), no control
* 2012: One snorkel (August), included oxbow and scale station control
* August 2013: Yakama Nation and CCNRD staff met and decide two snorkels will be done per year; a summer (August-September) snorkel and a winter (Late Feb-March) snorkel.
* October 2013: LWP bridge completed, full connection between mainstem Nason and LWP oxbow established
* December 2013: Yakama Nation conducts a limited snorkel survey that included only the bottom half of the oxbow and 100 meters up Roaring Creek (due to ice coverage). The control was not surveyed.
* March 2014
* August or September 2014: The most recent snorkel survey to date

Observed species composition and abundance in March 2014 (post construction) was similar to those in March 2013 (pre-construction). Although there was an increase in all salmonid species, Yakama Nation staff also observed these increases at the Nason Creek smolt trap and therefore do not attribute them to the LWP connection project. The most Brook trout were observed during summer snorkels and warm stream temperatures. Numbers of spring Chinook and summer steelhead observed in LWP, were much higher in August 2014 than in September 2014 and every other snorkel survey to date. Increased numbers were likely due to increased connectivity to Nason Creek. However, Brook trout numbers also increased over the previous summer snorkel suggesting other factors may also have contributed to the increase. The corresponding control reach did not show major changes in species assemblage or abundance other than a decrease in summer steelhead.

Figure 1. Juvenile Chinook count by monitoring visit in LWP and Nason Oxbow control.

Figure 2. Juvenile Coho count by monitoring visit in LWP and Nason Oxbow control.

Figure 3. Juvenile steelhead count by monitoring visit in LWP and Nason Oxbow control.

Figure 4. Brook trout count by monitoring visit in LWP (control count ranged from 2-3 fish).