Appendix 7: Project Area 24

- Sponsor: Columbia Conservation District
- Landowner: Howard Family
- Funder: Bonneville Power Administration
- Match: Salmon Recovery Funding Board
- Design: Anchor QEA

Contributing Partners:
Appendix 7 – Slide 1: Project Area – 24 (PA-24), completed on private property in the Tucannon River (RM 28.3-27.5) by the Columbia Conservation District in 2015. The map layer above illustrates pre-project condition with yellow lines representing existing river levees (350'), yellow dots representing pools (N=13) and the white dots representing existing LWD (> 6m long & 0.3 m dia) (N=43) or ~0.5 pieces/bankfull width or ~25% of the restoration objective of 2 pieces/bankfull width.
Appendix 7 – Slide 2: PA-24 pre-project river reach flowing NW is highlighted in blue (0.86 miles in length), and pre-existing side channels in pink (0.1 mile in length). The heavy yellow bars delineate river confinement in the form of river levees (~380 ft in length).
Appendix 7 – Slide 3: PA-24 post project channel shape with the blue line (0.86 miles long) delineating the main channel, the pink line (0.1 mile long) representing pre-existing channels, the green line newly watered side channels (0.29 miles long) and the yellow line (0.15 miles long) reconnected high flow pathways. The red bars delineate the confining features removed in the form of river levee (380 feet long). Overall side channels increased by 81% and the perennial channel length including main channel and side channel increased 23% within the project reach.
Appendix 7 – Slide 4: PA-24 post project LWD key piece (>6 m long & 0.3 m dia) locations, brown dots indicating both location of multi log and single log placement. During construction 498 key wood pieces were placed in channel creating 28 multi log structures and 33 single log placements. The pre-project key pieces/bankful width was 25% of the objective and was improved to double the objective of 2 key pieces/bankful width, post project.
Appendix 7 – Slide 5: PA-24 pre and post construction pool locations. Pre-project pools indicated by yellow dots (N=18) and post project pools by blue dots (N=26). Pools increased 130% by number and increased ~70% in surface area based on CHaMP rapid habitat data, ELR CHaMP survey data.
Appendix 7 – Slide 6: PA-24 pre/post CHaMP survey extents for habitat units. The unit types are shown in the legend. The inset shows the pre-project measurements in comparison to the post project channel condition. LWD key pieces are mapped on both surveys. This site will continue to develop once channel shaping flows are observed.
Appendix 7–Slide 7: PA-24 pre/post project condition in 2015, illustrating the floodplain connectivity objectives. Upper left pre-project plain bed riffle condition typical through the entire reach. Lower left, placement of channel grade ELJ to provide channel complexity and increase stream bed elevation reconnecting side channel leaving from the right of the structure. Upper right, represents the upper most section of the levee before removal, (lower right) following the levee removal a perennial flow path was reconnected and a bar apex jam was constructed to aid in splitting flows.
Appendix 7 – Slide 8: PA-24 pre/post project condition photos 2015. Pre-existing condition plain bed rifle (Upper left), was modified during construction by the placement of two ELJ structures to increase channel complexity and reduce velocities (lower left). The photo in the upper right illustrates the lower levee where it was removed and a new flow path was connected (lower right). A bar apex was placed to maintain a hard point and wooded island.
Appendix 7 – Slide 9: Pre/post photos of PA-24 from left to right. The photo set illustrate the change in stream velocities following the first high flow in 2015/16. The objective of the two structures in the right images was to break up high flow velocities and create deposition in bars, this will require a flow which mobilizes bed load. The short term objective was to create back water pools and provide over head cover. It appears the short term goal has been achieved through back watering of historic plain bed channel converting it into glide and pool habitats.
Appendix 7 – Slide 10: In the PA-24 project design, floodplain connectivity was one of the primary objectives. In the post project photos taken one year following construction connectivity has begun to be achieved. In March and April of 2016 the Tucannon experienced peak flows of ~450cfs, which is close to a 2yr flood event but a bit short. Even with these minor flows inundation occurred within the project area. Lower left is the point where the upper river levee was removed allowing the development of side channels in the floodplain. The other three images are photos of the side channels created within the project area in 2016.