

Tucannon River Programmatic

Project #: 2010-077-00

Contract #: 60562

Annual Progress Report

(Reporting Period January 2013 to December 2013)

Contractor

Snake River Salmon Recovery Board

Contract Number 60562

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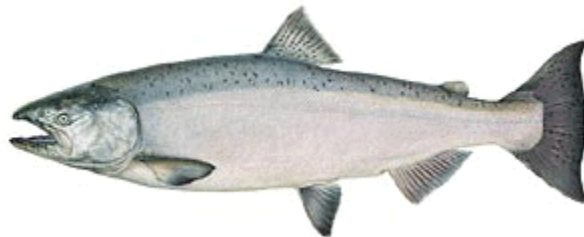
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Abstract:

The Tucannon River Habitat Programmatic project 2010-007-00 (Programmatic) is a restoration project focusing on improving Snake River spring Chinook habitat in the upper 30 miles of Tucannon River through reducing stream channel confinement and increasing channel complexity. The Snake River Salmon Recovery Board (SRSRB) works with its partners the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), Columbia Conservation District (CCD), US National Forest (USNF) and the Washington Department of Fish and Wildlife (WDFW) to implement the Tucannon River Habitat Restoration Plan (Anchor Nov, 2011).

The Programmatic was managed in 2013, under the BPA contract 60562 by the SRSRB with the purpose of providing support in completing the goals and objectives of the Programmatic during this 3rd year of implementation. The SRSRB maintained and convened two committees (Tucannon Implementer Committee (TIC) and the Regional Technical Committee (RTT)) which prioritize habitat restoration actions and projects under the Programmatic. Within the Programmatic, seven design and restoration contracts were active during the reporting period in addition to the administrative and technical support contract, which all will be discussed in this Annual Report.

In addition to performing the 2013 Programmatic management tasks, SRSRB staff worked with the RTT and TIC committees to update and prioritize a long term and short term work plan, provided partner technical support, conducted public outreach, field tours, conducted project and habitat data compilation and project database management. The Programmatic provided project sponsor support in both technical and project related attributes of project development, contracting and implementation.

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Introduction: Tucannon River Programmatic Habitat

The Snake River Salmon Recovery Board (SRSRB) serves as the Lead Entity for salmon recovery in the Washington State portion of the Snake River and its tributaries, guiding funding for the Salmon Recovery Funding Board (SRFB). Beginning in 2011, the SRSRB was awarded the Tucannon Habitat Programmatic (Programmatic) a project (# 2010-077-00) from Bonneville Power Administration (BPA) to increase habitat condition by 17%, and as part of that project an administrative contract to manage the Programmatic on the Tucannon River in South East Washington, through 2018. This report covers work completed under contract #60562 and the seven habitat design and implementation contracts active during the reporting period between February 1, 2012 and January 31st 2013.

The objectives of the programmatic are to identify, prioritize and implement habitat restoration actions in the Tucannon River which would improve spring Chinook habitat by 17% over the time of the 2008 FCRPS Biological Opinion. The SRSRB manages the programmatic by working with its local partners developed through the SRFB supported Regional Organization including; the Columbia Conservation District (CCD), Confederated Tribes of the Umatilla Indian Reservation (CTUIR), Ecological Research INC (ELR), Nez Perce Tribe (NPT), Pomeroy Conservation District (PCD), Tri-State Steelheaders (TSS), Umatilla National Forest Pomeroy District (USFS), Washington Department of Fish and Wildlife (WDFW), Washington State Parks Wooten State Park. The partners provide technical support in the development of restoration priorities, identify restoration projects that best meet the priorities and prioritize those projects for the 1.3 million dollars annually available to the Programmatic. To coordinate and manage the activities related to project management and implementation the SRSRB receives a contract from the Programmatic annually. The purpose of this annual report has been expanded in 2013 to describe all the work completed under the Programmatic including that completed by the partners.

In 2013, the Programmatic supported the project sponsors in the development of project design, permitting, sourcing materials (LDW) conducting pre-project field visits and developing contracting and budgeting. The SRSRB provided support to CTUIR in the development, prioritization and designing of Project Area 1&3 (#63605, & #62642) for implementation in 2014. Project Area 14 (#58777) managed by WDFW underwent final design considerations, permitting, material acquisition and is mobilized for full implementation in 2014. The SRSRB managed the completion of the PA-15 final design (#58975) and helped the CCD in the development of the Phase I implementation contracting (#62573) and initiated the development of the Phase II implementation contract (CR269397). Project Area 15 - Phase I&II are scheduled for implementation in 2014. Project Area 24 has been prioritized for implementation and the SRSRB is managing development and finalization of a design under contract # 64018 with a completion in 2014 and implementation in 2015. Project Area 11 (#64003) is managed by WDFW and will complete project designs, permitting and initiate material mobilization for implementation in 2015.

During the performance period the SRSRB coordinated the monthly meetings of the Regional Technical Team (RTT) the Tucannon Implementers Committee (TIC), and provided updates to the SRSRB governing body. The RTT and the TIC are the technical group responsible for project prioritization and technical review and provide technical support for the SRSRB. It is through these technical groups the SRSRB reviewed and approved the Tucannon Geomorphic Assessment (Anchor April, 2011) and the Conceptual Restoration Plan, Reaches 6 to 10 Tucannon River Phase II (November 2011). These documents were developed to be used as a guide in the prioritization of restoration projects into the Tucannon Work Plan. The SRSRB manages a sub contracts to implement the collection of project effectiveness data through the implementation of four CHaMP transects. The sample site are coordinated with ELR, the firm conducting the CHaMP monitoring pilot in the Tucannon. The SRSRB conducts annual tours of restoration projects in the basin and offers technical guidance in the pursuit of matching funding for restoration in the Tucannon.

Area of Primary Focus:

The Tucannon River is a Snake River tributary originating in the Blue Mountains of southeast Washington (Figure 1) and is located in Columbia and Garfield Counties. The main channel is approximately 58 miles long and drains about 503 square miles before entering the Snake River approximately 3 mile upstream from Lower Monumental Dam. Several major tributaries drain into the mainstem including, Pataha Creek, Tumalum Creek, Cummins Creek, Little Tucannon, and Panjab Creek. A full description of the basin has been provided in the Tucannon River Geomorphic Assessment and Habitat Restoration Study (Anchor April, 2011).

Focal Species

The Tucannon supports populations of four threatened species including the Snake River ESU spring Chinook, Snake River fall Chinook, Snake River ESU summer steelhead, and the Columbia River bull trout. All reaches of the Tucannon River are utilized by all species during one or more season annually with fall Chinook being the exception using only the lower river. The lower Snake River spring Chinook is currently only present in the Tucannon having been extirpated from Asotin Creek (Figure 2).

The Tucannon River spring Chinook is a sub-population of the Snake River spring Chinook ESU which has been listed as threatened under the Endangered Species Act since 1996, and is the primary focus of the Programmatic restoration project. The Tucannon River is the lowest downstream tributary population in the Snake River and is also the lowest elevation drainage where Snake River spring Chinook exist. The population was in decline throughout the 80's, but reached a critical low in the mid 90's when the number of wild adults dipped to as few as three naturally produced individuals. More recently, adult returns to the Tucannon have been steadily increasing as overall habitat conditions improve (Figure 3). The current know distribution for spawning and rearing spring Chinook in the Tucannon is from RM 20 upstream to RM 58 based on available information (Figure 4). It is anticipated

that as conditions improve this boundary would be expanded downstream. At the drafting of the Snake River Salmon Recovery Plan in 2005, based on existing condition spawning and rearing habitat was not available below RM 30, but through improving stream temperatures (Figure 5) the technical opinion is habitat availability has been extended to at least RM 20 and in some years further downstream.

Implementation Approach:

The project reach identified for restoration action under the Programmatic is based on the known spawning and rearing areas of historic and current populations. Restoration focusing on projects increasing channel complexity and floodplain connectivity from RM 20-50 (Figure 4) will receive first priority for implementation funding under the Programmatic, however projects focusing on steelhead, bull trout and fall Chinook habitat restoration will remain a high priority under the Recovery Plan drainage wide.

The SRSRB and its partners have been working to improve Tucannon River spring Chinook productivity and survival in the Tucannon River by focusing on habitat restoration actions which directly or indirectly impact habitat factors identified as factors limiting Chinook productivity and survival. Limiting factors were identified through EDT analysis conducted in the development of the Salmon Recovery Plan for South East Washington, the 2008 FCRPS Biological Opinion and are also listed in Table 1.

Salmon habitat restoration began in the Tucannon as early as 1999 and considerable progress has been made in addressing imminent threats (fish passage, irrigation screening, fine sediment& low flow), restoring and protecting riparian habitat and implementing upland BMPs like no-till agriculture (Table 2). Through the implementation of the restoration actions, improvements in summer temperature (Figure 3), reduced embeddedness and increasing woody debris are being realized, though it will take decades before full benefits of some actions are fully realized.

The RTT has considered the restoration achievements in imminent threats, riparian planting and upland BMPs and through adaptive management has narrowed the restoration focus to restoring rearing habitat as the primary objective for Chinook recovery in the Tucannon. Rearing habitat particularly winter rearing habitat was a major factor in the development of the Tucannon River Geomorphic Assessment and Habitat Restoration Study (Anchor April, 2011) which lead to the project objectives in the Conceptual Restoration Plan, Reaches 6 to 10 Tucannon River Phase II (Anchor November, 2011). Considering the tiered project list produced in Anchor November, 2011 the SRSRB TIC and RTT worked with project sponsors to prioritized implementation funding to restoration projects in a long term work plan spanning the life of the Programmatic (Attached in Pisces to Contract # 52633).

The restoration objectives outlined in Anchor November 2012 focus on reducing channel confinement, increasing floodplain connectivity and increasing channel complexity by placing large wood debris (Table 5). By targeting river function over large reaches the SRSRB anticipates the river to express

itself in the development of new channels, side channels and other critical off channel habitats limiting Chinook rearing survival. As channel shape changes from the existing over straightened incised single thread channel to a longer anabranch system, hyporheic exchange is expected to improve increasing groundwater influence, cooling summer base flows and warming winter base flows. Improvements in floodplain connectivity will enhance riparian forests by depositing fines on the floodplain, reducing embeddedness, increasing water retention and overtime leading to increased forest sustainability and LWD recruitment.

Data gaps exist in the Tucannon including Chinook pre-smolt migration and survival, adult mortality caused in the Snake and in the Tucannon. It is currently unknown the extent at which the middle and lower river plays in the winter survival of pre-smolts and or if and when fish use these habitats. It has been determined from pittag data that Tucannon origin adult fish returning to the Snake above Lower Monumental Dam are passing the Tucannon going through Lower Granite Dam and not returning to the Tucannon, the mechanism causing this is currently unknown. It has been noted that the existing adult trap may be causing a shift in population distribution to below the trap, modifications were made in 2013 to increase passage but an ongoing study will work to fix the trap. In 2012 and more significantly in 2013, poor adult survival (pre-spawn survival) was observed in the Tucannon (personnel communication WDFW 2014) above the existing trap resulting in a significant drop in the number of actual redds compared to the expected number. It is not known what has caused these fish to disappear, but in 2013 no evidence of predation or disease was noticed during red counts. In 2014, efforts will be made to determine the cause of mortality through the placement of trail cameras, increased enforcement patrols by WDFW and periodic foot surveys of holding areas. To answer these uncertainties the SRSRB will continue to work in the watershed to guide monitoring and identify factors limiting survival by supporting our partners in generating and using the best available science.

The following sections of this report will provide a detailed description of activities conducted under the work elements outlined in the scope of work (contract number 60562). When applicable, methods, results and progress on deliverables are described for the time period from February 1, 2012 through January 31, 2013.

Programmatic Implementation:

Program Implementation

Work Element 119, 185, 132: Manage and Administer Project, Produce Status Reports & Annual Report:

Deliverables: 2014 SOW development, property inventory, submitted in Pisces. Coordinate the Tucannon River Programmatic and identify project matching funds. Complete periodic status reports and annual report.

During the time period January 1, 2013 through December 31, 2013 the SRSRB managed the implementation of the Programmatic (contract: 60562) and was the point of contact from its office at 410 B East Main Street, Dayton, Washington 99328. The SRSRB coordinated monthly RTT meetings on the 3rd Tuesday of each month for the purpose of prioritizing restoration actions, set restoration goals and objectives and reviewing restoration designs. In 2013, the Tucannon Coordinating Committee morphed into the TIC, a group of project sponsors and resource experts and land managers locally involved in Tucannon River habitat restoration. The TIC is a subcommittee of the RTT with the purpose of identifying restoration activities which best meet the restoration objective (Table 1) and coordinating those activities over the duration of the Programmatic. The TIC meets quarterly with the objective of streamline restoration, sharing information, coordinating with monitoring efforts and discussing project progression. The participants of the TIC included representation from the, USFS, CTUIR, NPT, WDFW, CCD, PCD, TSS and SRSRB.

Program Guidance and Create Project List

Work Element 114: Identify and Select Projects:

Deliverable: Conduct project solicitation and prioritize projects based on their merit and benefit to salmon recovery. Submit recommended projects to BPA. Provide technical support to project sponsors throughout implementation.

The SRSRB developed an approach to project selection and prioritization that differs from the conventional approach where organizations solicit projects and then review, revise, score, and rank them. Project selection within the Programmatic is a targeted approach, where the projects are pre-identified/prioritized based on a basin-scale geomorphic study (Anchor November, 2011), watershed restoration strategy and project prioritization framework. The geomorphic assessment, restoration strategy and project prioritization efforts were conducted by Anchor QEA (Anchor April, 2011 and November 2011). The November 2011 study developed the process and criteria that was used in the 2012 project solicitation and will be used to prioritize future projects and outlined a comprehensive restoration strategy.

The April 2011 study was conducted to strengthen the technical understanding of existing physical conditions and geomorphic processes in the basin from the mouth to the headwaters in order to identify and prioritize habitat restoration opportunities based on current empirical data. The assessment included: identification of the source, magnitude, and distribution of hydrologic and sediment inputs through the basin; analysis of floodplain connectivity; identification of passage barriers or infrastructure constraints; identification of stressors and features leading to habitat degradation; and a qualitative evaluation of restoration opportunities. A more focused and intense assessment was then conducted within the spawning and summer rearing distribution of spring Chinook salmon (river mile 20 to river mile 50) by Anchor QEA (November 2011). That assessment and subsequent reports form the technical basis for the projects proposed in this habitat programmatic.

The November 2011 (Anchor November 2011) report provided the conceptual restoration plans for discrete project areas between RM 20 and RM 50. Twenty-eight conceptual project areas were delineated and evaluated for restoration and protection potential. Project evaluation was based on findings in the 2011 Geomorphic Assessment (Anchor April, 2011); field reconnaissance during summer 2011 that characterized channel, floodplain, and riparian conditions; existing spring Chinook spawning and juvenile rearing data; input from the Tucannon Coordination Committee and RTT. The 28 conceptual project areas were then prioritized and placed into one of three Tiers. The project evaluation criteria were (1) expected biologic response, (2) consistency with natural geomorphic process, and (3) benefit-to-cost ratio. Biologic and geomorphic criteria were assigned qualitative values of high, moderate, or low value and benefit-to-cost was given a qualitative ratio using high, moderate, or low values.

The expected biological benefit was scored based on the expected magnitude of benefits and the likelihood that project objectives would be met. Those projects that most directly address limiting factors and critical life stages, while creating the greatest volume and diversity of quantifiable habitat, received the highest scoring. The juvenile spring Chinook life history stage (egg to parr) was identified as critical to improving the spring Chinook population in the Tucannon River. In particular, the persistent lack of adequate juvenile rearing habitat, especially during winter and spring runoff (post-emergence to parr), bed scour during stochastic winter/spring flows, and summer water temperature have been identified as limiting to juvenile populations. The expected biologic response of each project was evaluated within the following categories (1) provides immediate habitat benefits for critical life history stages, (2) reconnects isolated habitats or improves existing habitats and promotes floodplain connectivity, and (3) provides diversity throughout the active channel and low-lying floodplain for all life history stages.

The consistency with natural geomorphic process criteria was also used. Natural geomorphic processes are the primary factor in creating and maintaining high quality habitat in properly functioning rivers and streams. Designing for geomorphic process or removing inhibitors to geomorphic processes are very important considerations in project prioritization. The sustainability and functionality of the project is highly dependent on consistency with geomorphic processes, and it is the restoration of these processes that will create and maintain habitat features in the long term. The projects that will effectively address the rehabilitation of natural processes received the highest qualitative rating. Consistency with natural geomorphic processes were evaluated within the following categories (1) removes stressors that promote habitat degradation or inhibit natural channel and floodplain processes, (2) promotes reach-scale geomorphic response consistent with natural processes, (3) promotes the retention of LWD and sediment and forces pool-riffle morphology and complex channel plan form.

A rough opinion of probable cost for each project was developed by Anchor (November, 2011). The result of that evaluation was a qualitative ranking of the benefit-to-cost ratio. Those projects that achieve the greatest benefit for the least amount of money received the highest ratings. This criterion also

considered whether the benefit is achieved on a short-term or a long-term time line. This evaluation did not consider feasibility in terms of landowner willingness to participate, which is a consideration the RTT and TCC determined in the development of the work plan (Attached in Pisces contract # 56233). About fifty-percent of the river's length between river mile 20 and river mile 50 is privately owned while the remainder is state or federally owned. For a complete description and analysis of each project area refer to Anchor QEA (November 2011). Based on the results of the evaluation, the 28 project areas were organized into Tiers 1, 2 and 3, with Tier 1 projects being the highest priority for early implementation.

Project sponsorship is agreed to by TIC members at the conceptual project phase, i.e., SRSRB staff provide the list of priority projects and then TIC members assess their interest in sponsoring a project based on a member's interest, history, knowledge and/or capacity. A conceptual project at that point has a "likely lead" and is added to the work plan. The work plan (Attached to Pisces contract number 56233) identifies the 28 projects, likely lead, draft budget and a likely implementation year. This work plan allows the TIC and others to understand project sequencing, know who the point of contact is, what the anticipated annual budget will be, which projects have or will seek cost share and allow for tracking and reporting of completed projects. In 2013, two tables were prepared to track implementation of projects proposed in the Tucannon, Table 3 lists the restoration projects and indicates the fiscal year in which they are funded. The table goes further to list the restoration metrics as proposed and placed once completed. A more detailed list of projects has also been prepared for an informational basis listing projects both funded within the Programmatic and outside the Programmatic in the Tucannon during the 2014 season (Appendix A). Progress on each of the project listed in Table 3 as funded for implementation in 2014 are discussed in full detail later in this report.

Community Involvement and Education'

Work Element 99: Outreach and Education

Deliverable: Conduct one project tour, present program accomplishments to regional agency personnel and LE Board. Develop outreach materials.

The SRSRB conducted outreach activities in 2013 by attending public habitat restoration meetings, coordinating and hosting public tours, and posting it's completed and planned projects on the Washington State Habitat Work Schedule (<http://hws.ekosystem.us/>). Additionally, SRSRB staff attends local public meetings where they lead discussions on the restoration and protection of salmon habitat in the Tucannon. The SRSRB operates highly visible office in downtown Dayton which is highly accessible to the public, providing opportunity for individuals to meet with the SRSRB Director and staff.

The SRSRB works in coordination with WDFW and CTUIR to provide current population data for the Tucannon River spring Chinook, available on the SRSRB website

at: <http://www.snakeriverboard.org/Salmon/WRIA35SprChinook.html>. Population data can be viewed online and is update in the post monitoring season after counts are validated.

The Programmatic participates in the Tucannon River Citizens Work Group through the participation of its WDFW contract and it is through this work group the restoration projects proposed under the Programmatic are presented to the landowners and stakeholders of the watershed.

Conduct Environmental Compliance

Work Element 165: Produce Environmental Compliance Documentation

In 2013, the Programmatic worked to initiate and assist project sponsors in the development of project permits for PA-1, 3, 14, & 15. Permitting support varied from contract to contract but included the assisting in the development and finalization of the JARPA, SEPA, Forest Practices, 401&404, and Cultural Resource documents. The Programmatic also coordinated with the BPA EC Lead in the HIPPIII process.

Restoration Project Implementation:

PA-1,3,11,14,15 & 24.

The 2013 field season was defined as a design and field preparation season. In total, four large restoration projects were designed which when completed will add >1,321 pieces of large wood (whole trees to logs) constructed into 122 complex wood structures and one hundred twenty four single log structures. In 2014, restoration will total between the four projects 4.48 miles of LWD complexity, and reconnect and enhance (LWD) over 1.36 miles of side channel habitat.

In an effort to be prepared for the 2015 in stream work window two design projects are currently underway, one on private property (PA-24) and the other in the Wildlife Area (PA-11). The primary focus of both projects will be to increase in channel complexity with a secondary focus on increasing channel connectivity.

The six active projects supported by the Programmatic in 2013, are described in the following sections and also described in Table 3 and Appendix A. A brief project description and history is outlined as well as progress toward completion. A synthesis of expected project outcomes (Metrics) is provided as well as the number of structures and pieces of LWD to be placed in stream.

PA-1: Instream Habitat, Contract #63605

In 2013, CTUIR initiated a field assessment and design of the upper portion of PA-1 RM 49.4 to RM 50, the portion of the project located on WDFW and USFS properties. The lower private section of the project downstream of RM 49.4 to RM 48.9 is not included in the current design or planned for

implementation in accordance with the landowner's wishes. The lower reach was surveyed as part of the Anchor Nov 2011 Restoration Plan and was found to be LWD deficient and had potential for a side channel reconnection. The lower section of this project may be considered in the future if the landowner's become a willing participant in the Programmatic.

The PA-1 design was finalized in 2013 following Programmatic and landowner review/approval and is scheduled for implementation in 2014. The project will provide channel complexity and floodplain connectivity to approximately 0.64 miles of the main channel. The project will place approximately 129 LWD key pieces, reconnect 1,877' of side channel and enhance 290' of existing side channel. In total, the project will increase channel complexity on 5,599' of river channel. Projected restoration metrics are shown in Table 3 where they will be updated once implementation has occurred.

The project will also develop a structure downstream of the Panjab Bridge BM 50.1 that will back water an existing rock weir which has an excessive drop which fails WDFW fish passage criteria and potential casing a barrier to fish passage at low flows. In addition to the designed project, the WDFW Wildlife Area Manager is coordinating the reconfiguration of the camping area on river right so that it is no longer in the low lying floodplain and will accommodate the development of floodplain connectivity that will result from the designed project.

PA-3: Instream Habitat, Contract # 62642

In 2012, CTUIR initiated the design and development of PA-3 between RM 46.75 & RM 48.1 located on the WDFW Wildlife Area and USFS properties. A small section of the upper project above the confluence of the Little Tucannon was excluded from the project design to avoid an existing habitat monitoring control site identified under the Tucannon CHaMP. The project design was completed in 2013 and was reviewed by the Programmatic and landowners for implementation in 2014. The project is designed to place large wood in the using a helicopter in single and multiple tree configurations. This method has been selected due to the access to whole trees donated by the USNF and the proximity of the project area to the materials. The use of whole unanchored trees allows for a more natural habitat design and we believe a more natural habitat. To provide downstream security below unanchored wood two engineered structures in the lower most project area have been designed to provide overall project stability and act as a backstop preventing mass movement of wood from the project area downstream into high use areas.

The project proposes to place 149 whole trees via helicopter in numerous configurations at 24 locations over the 1.3 mile project reach as outlined in the final project designs. A total of forty logs with root wads will be placed in the lower five structures along with fifteen additional logs. To provide stability to these five lower structures 106 boulders will be used to ballast the five structures. Projected restoration metrics are shown in Table 3 where they will be updated once implementation has occurred.

This project area has been paired with a pre-project CHaMP monitoring site and will be followed up by a post project CHaMP survey; results of these surveys will be posted in the 2014 annual report. Data is available at monitoringdata.org or through coordination with the Tucannon CHaMP monitoring program.

PA-14: Instream Habitat, Contract #58777

Project Area 14 design was the result of a group effort and various matching grants from SRFB and non-Programmatic BPA funds. The 30 % Design Report was produced by the CCD, was identified in 2012 for implementation in 2013 and through a matching grant obtained by SRSRB, was completed to a 100% level final design in January 2013. In 2013 WDFW assumed sponsorship of the project design implementation, beginning at RM 37.6 upstream to RM 39.2. The project reach downstream from RM 37.6 to 37.2 identified in the original concept (Anchor 2011 Nov) has been excluded from this project to maintain the existing CHaMP monitoring control site. This project reach would also be best restored using whole trees placed using a helicopter to protect existing riparian condition, and it will be reconsidered once materials near the site can be identified. The design focuses on the construction of engineered log jams for the purpose of reduce channel incision, increase complexity, increase floodplain connectivity and increase off channel habitat. Final project designs were completed in January 2013 and are attached to the contract numbered 58777.

Due to some delays in project design and an unreasonable implementation pace, full construction of PA-14 was delayed in 2013 with completion scheduled for 2014. As a result of the experience gained in this project and PA-15 that a minimum of two work season be provided an implementer once a 60% preliminary design can be used initiate permitting and sourcing materials. The Programmatic will strive to allow ample time to complete these large projects in coming years. The optimal format would be in the first yr approve preliminary design initiate permitting and finalize design so that in the second year the sub contracts for materials, site preparation and securing construction sub contracts can be completed (Table 4).

It is anticipated that the construction of PA-14 will place > 450 trees with root wads and an additional 120 logs into the channel and side channels. The project will construct 49 separate multiple log structures and place >67 individual habitat partial and whole trees. In the 2013 work window, WDFW was able to conduct site preparation and develop construction access routes. In several places side channels were excavated above the base flow elevation so that if flows were elevated in the winter 2013-14 they would receive flow and help shape those channels. At station 99+30 an approximate 100' long cut opened a 2,250' long side channel and at station 93+00 another 200' cut was excavated to add a 1,700' side channel. As of the drafting of this report flows had entered the side channels though the extent of channel shaping was unknown, results will be articulated in the 2014 annual report.

PA-14 is paired with a matched treatment and control CHaMP habitat monitoring sites which has had two years pre-treatment monitoring. The results from those sampling events are available through the Tucannon River CHaMP monitoring lead or through CHaMP monitoringdata.org. A full habitat analysis of the CHaMP data will be conducted by the Ecological Research Inc. the firm conducting the CHaMP program in the Tucannon for BPA. In the 2015 project report we will provide a summary of results from our sampling efforts conducted under CHaMP.

PA-15: Design Contract #58975

The PA-15 design was also the result of a combined effort between SRFB matching funds to the Programmatic. In 2012, the SRSRB utilized a SRFB grant to develop the conceptual design prepared for Project Area 15 by Anchor QEA (Anchor November 2012) into a 30% preliminary design. Project Area 15 was selected for preliminary design because it was identified as a Tier 1 project (Anchor November 2012) and because of its proximity to the construction on PA 14, reflecting an effort to restore contiguous habitats. The preliminary design process was completed in July 2012, and was followed by the development of a Programmatic contract (#58975) which advanced the project design to final by December 2013. It was anticipated that the final design work would have been completed as of the summer of 2013 but was delayed slightly by the difficulty identifying a project sponsor who could manage the construction work load. The delay was to assure the final design would be completed with the appropriate input from the sponsor implementing the design. In August 2013, the CCD became the project sponsor and the design was finalized in December 2013. The project has been recommended for implementation in 2014 and will involve the placement of river channel structure between RM 36.35 and RM 36.96. During the design process the total project length was reduced to exclude the section above RM 36.96 from the final design. The purpose was to avoid risk to three small private parcels on river right. Final Designs are attached to the project contract #58975 in Pisces.

PA-15: Instream Habitat Phase I & II Contracts #62573 & CR269397

The PA-15 implementation contracts are the result of the PA-15 Design contract described above. The implementation of the project was committed to by the CCD in August of 2013, with the design being completed in December 2013. The implementation of this project is supported by two separate contracts and at the time of this report the second contract had not been fully approved. The purpose of the two contracts was fiscal related and not construction based. It is anticipated that the entire project will be built in 2014.

The project area is mostly on WDFW properties but involves two private landowners, one on the down river end and one on the up river end. During the finalizing of the project and initiation of permitting both private landowner contacts changed. This lead to some delays in initiating cultural assessment in that the project access point needed to be moved and a second cultural notice was needed to reflect the changes in access. That being said permitting is underway and cultural surveys will be completed in the

spring of 2014. The WDFW portion of the project area was one of the most recent additions to the Wildlife Area and the reach is over simplified confined and lacks LWD (Anchor Nov, 2011). The focus of the design is to increase complexity, floodplain connectivity and off channel habitat.

The construction of this project will place LWD structures in 0.61 miles of the main stem and in involve the construction of a 1,400' perennial side channel and the placement of LWD roughness features over the entire length of the side channel. Within the project area LWD structures will be placed in 0.88 miles of perennial channel. A total of 28 complex wood structures will be constructed and 57 single habitat logs will be placed comprising a total of 570 whole trees and logs. When the project is completed the overall channel length within the project areas will have been lengthened by 0.27 miles.

PA-15 is paired with a matched treatment and control CHaMP habitat monitoring sample site which has had two years pre-treatment monitoring. The results from those salmon events are available through the Tucannon River CHaMP monitoring lead or through CHaMPmonitoringdata.org. A full habitat analysis of the CHaMP data will be conducted by the Ecological Research Inc. the firm conducting the CHaMP program in the Tucannon for BPA. A summary of CHaMP monitoring results will be provided in next year's report following project implementation.

PA-11: Design, Permit and Mobilization, Contract #64003

The project is being designed and implemented by WDFW for the river reach between RM 40.57 and RM 41.8. The project area was largely impacted by the School Fire which destroyed most of the riparian trees in the 1.23 mile reach. Currently, the channel is not incised and the reach is characterized by a anabranch - braided channel form. The main objective for the design is to increase channel complexity through LWD placement and to stabilize some of the existing side channels and increase complexity within them.

WDFW is planning on finalizing the design in house and initiating permitting in spring of 2014. It is anticipated mobilizing materials will begin in the summer/fall of 2014 followed by implementation in 2015. Implementation would be covered under a new contract from FY 15. Final design specifications will be reported in the 2014 annual report.

PA-11 is paired with a match treatment and control CHaMP habitat monitoring sample site which has had pre-treatment monitoring as part of the CHaMP program. The results from those sampling events are available through the Tucannon River CHaMP monitoring lead or through monitoringdata.org. A full habitat analysis of the CHaMP data will be conducted by the Ecological Research Inc. the firm conducting the CHaMP program in the Tucannon for BPA.

PA-24: Design & Permit, Contract #64018

The Project Area 24 design was developed to a 30% designs under a matching SRFB grant from the Conceptual Restoration Plan prepared by Anchor November, 2011. The project final design is being sponsored by the SRSRB in coordination with the CCD who will sponsor the implementation of the project. The project is scheduled for completion in the summer of 2014 with permitting beginning in 2014 followed by implementation in 2015. The restoration concept would involve the removal of river confining structure and the placement of channel complexity. The project is located on private properties from RM 27.5 to RM 28.25 and in total would place LWD structures along the entire 0.75 mile reach. An additional feature of the preliminary design is to remove river confine features to reconnect 1.32 acres of low lying floodplain. The preliminary 30% project designs are attached to contract 56233 in Pisces.

Completed Restoration Project Update:

PA-10 & 18

The implementation of Programmatic projects began in 2012, with the completion of PA-10, a complexity and confinement project and the PA-18 floodplain project. Both projects were focused on restoring river and floodplain function, and both were built to allow natural function to do most of the channel and floodplain forming, requiring some high flow to work with wood placed in stream and on the floodplain. As it turned out the 2013 water year was far below average snow pack (Figure 6) and peak flows (Figure 7) did not engage the new wood or exposed floodplain as hoped. By the time this report was in draft, the 2014 water year had delivered flows >1,300 cfs which are anticipated to have mobilized bed load and created the desired effect.

Implementation of PA 10 utilized a combination of constructed engineered log jams and unsecured log complexes. The unsecured logs totaled 291 whole trees ranging in length from 50' to over 100' and ranged in diameter from 15 inches to over 30 inches. An additional, 500 trees were transported to the project site ranging in size from 4-12 inches in diameter and 20-30 feet long and distributed throughout the project reach using the helicopter. These trees were placed to act as racking materials to the larger trees. The project also involved the construction of five log structures which were anchored and included another 65 logs. The project reach pre-treatment was mostly devoid of LWD prior to the LWD replenishment project, an example reach is illustrated in pre and post treatment in figure 8.

The design of PA-10 relied heavily on the river high flows >1,000 cfs to redistribute unsecured trees and to deposit cobbles and gravels to create much of the habitat. It was also anticipated that high flows would aid in scouring side channels and develop perennial side channels. In 2013, snow pack in the Blue Mountains was lower than average (Figure 6) followed by a less than favorable stream flow (Figure 7) for mobilizing bed load and driving channel formation. Even with low peak flows in 2013, PA-10 saw the development of approximately 0.57 miles of new side channel, 0.13 miles perennial and 0.43 miles ephemeral (>250cfs). Within the 0.13 mile perennial side channel a beaver colony was

established by the end of 2013. Observations made in 2013 lead us to anticipate that with high flows the ephemeral channel will become perennial. A full reach survey will be completed in the summer of 2014 to determine the extent of change in this reach, and a summery comparison of pre/post treatment will be made using the existing CHaMP sites located in the reach.

Lessons learned to date on PA-10 include:

- The placement of whole trees with large root masses may require considerations in modifying some of the root masses to ensure higher contact of wood with water.
- The placement of large numbers of structures in channel may greatly reduce river energy reducing the ability of the river work with or move materials and may need to be taken into consideration during design.
- The addition of racking materials or mobile wood debris may be important in areas below areas designed to contain wood to supplement the “wood debris shadow effect” caused immediately downstream of large projects. The racking material used in PA-10 has been more important than anticipated.

The floodplain work completed on PA 18 in August 2012, with the removal of buildings, wells and an old culvert located on the floodplain (Figure 9). This project was a very passive floodplain project targeting full floodplain connectivity in an area where past channel restoration had improved floodplain connectivity to the point that alterations were needed during high to protect the extant infrastructure. During the 2013 water year the flows did not engage the floodplain in this reach so channel and floodplain shape did not change significantly, however the site did continue to recover from its degraded condition and the impacts of demolition (Figure 10). It is anticipated that over time the area of infrastructure abandoned by the implementation of this project could be captured as a side channel and spur the establishment of forested riparian habitat as seen in adjacent reaches.

Develop Effectiveness Monitoring Plan

Work Element 156: Develop RM&E Methods and Designs

Deliverable: Development of a monitoring plan

The SRSRB staff worked Ecological Research Inc. (ELR) to update the habitat monitoring plan drafted in 2011-2012, for the purpose of defining and guiding monitoring activities in the Tucannon River. The plan will remain provisional as it enters the phase of implementation when it is understood updates may be needed as situation or new information emerges.

The objective of the plan is to organize and outline a strategy for the SRSRB and its partners to observe both short term changes and long term trends in the habitat parameters identified as the limiting factors to salmon recovery. The environmental parameters identified as measuring progress toward the limiting factors are identified in Appendix B. The SRSRB as a habitat restoration program, has not traditionally collected or maintained environmental data sets for the purpose of reporting habitat conditions in the

Tucannon, but has relied on its partners and the resource agencies to collect validate and maintain monitoring datasets. The reliance of the SRSRB on partners to collect the necessary data for adaptive management, in some cases has led to gaps in the data necessary to making informed management decisions. The plan has identified the data gaps and outlined the data needed and who will be collecting it.

Effectiveness Monitoring

Work Element 157: Collect/Generate/Validate Field and Lab Data

During the reporting period the SRSRB coordinated and supported its partners in the collection of habitat data including stream temperature, stream flow, and channel complexity. The SRSRB adopted the CHaMP method and protocol for implementation monitoring in 2012, so the changes made through restoration could be directly compared to the watershed wide scale changes. In 2013, 4 supplemental CHaMP monitoring sites were implemented through Programmatic funding at future implementation projects (PA 03, 14, 15 and 24) for the purpose of developing pre/post-project implementation data set. The data was collected by ELR, the CHaMP contractor conducting the Tucannon CHaMP project. As part of sub-contract with ELR, they will process, analyze and develop the data and meta-data in www.champmonitoring.org. It is anticipated these monitoring activities will continue for several years following implementation and a summary of changes will be reported on the early restoration actions will be provided by ELR.

The SRSRB worked with its partners to ensure the long term datasets on stream flow and temperature where continued in 2013, primarily through coordination with WDOE to maintain the stream flow and temperature gage at Marengo. Gages all over the region continue to be at risk of discontinuation under WDOE funding and the SRSRB will need to remain proactive to ensure this data set continues. In 2013, stream flow (Figure 11) and temperature (Figure 12) was monitored continuously at the DOE Marengo gage.

One of the largest data gaps present at the initiation of the Programmatic was instream channel habitat complexity, including channel shape, off channel habitat, and LWD abundance. The assessment work completed under Anchor (April 2011, November 2011) provides information as to available off channel habitat and LWD deficiency though the objective of the assessments was not to collect monitoring data but to describe existing conditions (Table 5 & 6). The CHaMP effectiveness monitoring efforts began in the winter and spring of 2011 and continued through 2012. In coordination with the SRSRB, CHaMP managers were able to consider planed Programmatic restoration actions in designating treatment sites and control monitoring sites. Annually, 25 control and treatment sites will be monitored over the long term with 12 continuous sites and 13 rotating sites. In 2013, the Programmatic supported the completion of 4 additional sites located in association with project areas being design for future implementation to ensure the documentation of pre-project site conditions. CHaMP protocol uses high resolution topographic survey data to develop a DEM for the monitoring reach. The DEM is then used as a measure of channel shape and complexity in which a direct comparison of channel shape can be made

over time. Monitoring also measures LWD, substrate type and size, fish cover, bank conditions and riparian cover and condition.

In 2013, the SRSRB coordinated with WDFW to collect and PIT tag 1,500 wild chinook parr in the upper Tucannon in July and early October. These fish will be detected in the Tucannon at the detection stations supported under other WDFW projects as they smolt in the winter spring of 2014. These fish will provide migration timing, survival and habitat use in the lower Tucannon, answering one of the significant survival questions about the importance of the middle and lower reaches of the Tucannon River to chinook survival.

Through the work completed in the Tucannon River Assessment (Anchor April, 2011), restoration planning and conceptual design (Anchor November, 2011), the upper 30 miles of river habitat was surveyed for LWD presence or absence, channel bed form and level of confinement (Table 6). The river reaches not meeting the LWD objective for restoration of 2 key piece per channel width were noted and a total of 21 miles of the 30 miles surveyed did not meet the objective (Table 5). Furthermore the Assessment (Anchor April, 2011), identified 25.6 miles of the upper 30 miles as confined to moderately confined (Table 6) calling for channel work and infrastructure removal. The Programmatic is targeting these limiting factors with methods called for in Anchor Nov, 2011 and great changes in physical habitat are anticipated. To determine the impacts our restoration efforts have on the availability of spring Chinook habitat in the Tucannon it will continue to be important for us to measure pre/post project implementation conditions throughout the Programmatic implementation.

Citations

2012 Anchor QEA, LLC. Final 30% Design Report Project Area 15, Tucannon River RM 37.15 to 35.35. Prepared for the Snake River Salmon Recovery Board, Dayton WA. Anchor QEA, Bellingham WA. August 2012.

2012 Anchor QEA, LLC. Final 30% Design Report Project Area 24, Tucannon River RM 28.25 to 27.5. Prepared for the Snake River Salmon Recovery Board, Dayton WA. Anchor QEA, Bellingham WA. August 2012.

2012 Anchor QEA, LLC. Conceptual Restoration Plan, Reaches 3&4 Tucannon River RM 4.5 to 13.4. Prepared for the Columbia Conservation District, Dayton WA. Anchor QEA Bellingham WA October 2012.

2012 Anchor QEA, LLC. Conceptual Restoration Plan, Reach 5 Tucannon River RM 13.4 to 20. Prepared for the Snake River Salmon Recovery Board, Dayton WA. Anchor QEA Bellingham WA October 2012.

2012 Anchor QEA, LLC. 60% Design Report Project Area 14 Tucannon River. Prepared for Snake River Salmon Recovery Board, Dayton WA. Anchor QEA Bellingham WA November 2012

2012 Anchor QEA, LLC. Integrated Species Restoration Prioritization Tucannon River. Prepared for the Columbia Conservation District and Snake River Salmon Recovery Board, Dayton WA. Anchor QEA Bellingham, WA November 2012.

2011 April, Anchor QEA, LLC. Tucannon River Geomorphic Assessment and Habitat Restoration Study. Prepared for Columbia Conservation District, Dayton WA. By Anchor QEA Bellingham WA.

2011 November, Anchor QEA, LLC. Conceptual Restoration Plan, Reach 6 To 10 Tucannon River Phase II. Prepared for Columbia Conservation District, Dayton WA. By Anchor QEA Bellingham WA.

Tucannon River Programmatic

Project #: 2010-077-00

Contract #: 60562

Annual Progress Report

(Reporting Period January 2013 to December 2013)

Tables

Table 1: Habitat restoration objectives as they are list in the Salmon Recovery Plan for South Eastern Washington for the Tucannon River from the mouth of Pataha Creek upstream above Panjab Cr. The objectives are listed by level of priority as identified in the 2012 plan. Imminent threats are always considered the highest priority when identified in project rounds.

Upper Tucannon River MSA (from Pataha Creek upstream to Tucannon headwaters)	
Imminent Threats: Fish Screens, Low Stream Flows	
I.	Riparian: > 40 to 75% of maximum
II.	Large Woody Debris: >1 key piece per channel width
III.	Channel Confinement: < 25 to 50% of stream bank length
IV.	Temperature: < 4 days > 72°F

Table 2. The Tucannon River habitat restoration objectives for salmon and steelhead as identified in the 2012 Salmon Recovery Plan for SE Washington. Each objective has several habitat metrics being used to measure progress towards meeting the restoration objective. The table lists the total available/current know habitat, the restoration goal of the objective and the current status toward meeting the goal.

Restoration Objective	Metric Description	Metric	Units	Notes
Riparian Restoration Objective – Restore to >40 to 75% of maximum	Reach Length	51	miles	Panjab Cr to Confluence
	Length Public Lands (24%)	12.34	miles	Public Lands are considered protected varied levels of riparian recovery.
	Restoration Goal Length	29-54	miles	The goal is a bench mark
	Current Status	33.85	miles	The current status include miles of restoration in main stem and tributaries.
	Total Reach Area at 180 ft Buffer	2618	acres	
	Area Planted Goal	1963.5	acres	Bench Mark
	Restoration Status	1008.6	acres	
Remove All Imminent Threats (Migration Barriers, Unscreened Diversions)	Screen Estimated Total	54	count	
	Screen Status	54	count	
	Barrier Estimated Total	5	count	The Tucannon Hatchery Weir is being evaluated for its apparent effect on fish passage
	Barrier Status	5	count	
Large Woody Debris Restore to > 2 Key Piece per Channel Width	Reach Length (reach 6-10)	30	miles	RM 20-50
	LWD Restoration Goal	21	miles	Identified in Anchor Nov 2011
	LWD Restoration Status	2.5	miles	Treated
	LWD Goal # of Key Pieces (45 ft average channel width)	4928	count	Bench Mark for the upper 30 miles, based on the number of key pieces/bank width for the 21 miles identified in the Anchor (Nov 2011)
	LWD Status # of Key Pieces	511	count	Placed In Stream (LWD Key Piece as defined in CHaMP Monitoring Protocol)
Channel Confinement: Restore to < 25 to 50% of Bank Length	Reach 6-10 Total Length	30	miles	RM 20-50
	Reach 6-10 Goal Length	18	miles	Based on Anchor Nov 2011
	Reach 2-5 Total Length	20	miles	
	Reach 2-5 Goal Length	5	miles	

Table 3: Long range work plan identifying project completion time table as well as anticipated out comes from those projects. Metric values in bold are completed at the time of this report, otherwise they are proposed values.

RM		Reach	Project Area	Project Actions (in ft)						Floodplain acres)	Year Started	Tier	# LWD Key Pieces	# Debris Added
				LWD (ft)	Levees/Riprap		Side Channels							
From	To				Remove	Set Back	Enhance	New	Reconnect					
50.1	49.5	10	1	3432	0	0	290	0	1877	-	2014	2	129	
48.1	46.8		3	7128	0	0	-	-	-	0.59	2014	2	204	
46.4	46.0		5	2460	988	95.05	-	-	-	10.73	2017	3		
46.0	45.3		6	1134	145	0	-	-	-	-	2017	3		
45.3	44.9		7	2443	337	0	-	-	-	-	2017	2		
44.9	44.4		8	1504	684	329.13	445	0	546	1.01	2016	2		
44.4	44.0		9	2970	2563	-	-	-	-	-	2016	3		
44.0	42.4	9	10	10032	1305	0	0	686	2274	5.83	2012	1	300	500 ea
42.3	40.7		11	9716	1108	-	-	-	-	1.43	2015	1		
40.7	40.0		12	1965	-	-	-	-	-	-	2015	3		
40.0	39.2	8	13	3556	3192	758.96	-	-	-	3.91		1		
39.2	37.8		14	7656	162	-	0	3600	0	17.77	2013-2014	1	593	220 cy
37.2	36.4		15	4600	865	-	-	1400	-	-	2014	1	534	185 cy
34.9	34.3		17	2936	706	-	1614	-	-	2.25	2017	1		
34.3	32.1		18	3558	-	-	-	-	-	-		2		
32.1	31.8	7	19	1432	639	-	-	-	-	-		2		
31.8	31.5		20	-	-	-	-	-	-	-	Protection	3		
31.5	30.3		21	5977	1743	2551.07	-	-	-	0.59		2		
30.3	29.3		22	5338	2945	193.14	-	-	-	2.45	2014	1	24	
29.3	28.3		23	5059	2159	888.67	-	-	-	9.48	2014	1	24	
28.3	27.5		24	3972	2532	2924.26	-	-	-	1.32	2015	1		
27.5	26.9	6	25	1177	-	-	-	-	-	-		3		
26.9	23.7		26	9578	8305	12217.65	-	-	-	29.26	2011-204	1	83	
23.7	22.9		27	1257	266	2819.5	-	-	-	-		2		
22.9	20.0		28	1037	657	-	-	-	-	22.12		3		

Table 4: Approximate project implementation schedule developed for managing the time required to complete the necessary steps for implementing large projects under the Programmatic. Note the sort period where the project construction must take place. It is the narrow work window in the Tucannon which requires much perpetration a staging outside the in stream work window.

[illegible]

Table 5. This table is reproduced from Anchor 2011b and lists the approximate habitat quantities for restoration projects produced during the conceptual restoration plan. The table list the restoration actions for reaches 6-10 of the restoration .

Reach	Project Area	RM		Project Actions (in ft)								Reconnected Low Floodplain (in acres)	Riparian Enhancement (in acres)	Protection Area (RM)
				LWD Addition	Levees/Riprap		Side Channels			Roads				
		From	To		Removal	Set Back	Enhance	New	Reconnect	Remove	Realign			
10	1	50.0	48.9	6714	-	-	-	-	-	-	-	-	-	-
	2	49.1	48.7	1097	-	-	1412	203	-	-	-	-	-	-
	3	48.7	46.8	6908	377	-	-	-	-	-	-	0.59	-	-
	4	46.8	46.4	2386	1191	1028.47*	1969	256	822	-	-	1.63	-	-
	5	46.4	46.0	2460	988	95	-	-	-	2327	-	10.73	-	-
	6	46.0	45.3	1134	145	-	-	-	-	-	-	-	-	45.3-45.7
	7	45.3	44.9	2443	337	-	-	-	-	2706	2468	-	-	-
	8	44.9	44.4	1504	684	329	445	-	546	-	-	1.01	-	-
	9	44.4	44.0	2970	2563	-	-	-	-	-	-	-	-	-
9	10	44.0	42.4	8174	1305	-	-	-	-	-	-	5.83	39.37	-
	11	42.3	40.7	9716	1108	-	-	-	-	1540	652	1.43	39.79	-
	12	40.7	40.0	1965	-	-	-	-	-	-	-	-	17.81	40.0-40.7
8	13	40.0	39.2	3556	3192	759	-	-	-	-	-	3.91	-	-
	14	39.2	37.2	10309	162	-	-	-	-	-	-	17.77	-	-
	15	37.2	36.4	4027	865	-	-	-	-	-	-	-	-	-
	16	36.4	34.9	1708	524	-	-	1118	-	-	-	4.59	-	-
	17	34.9	34.3	2936	706	-	1614	-	-	664	724	2.25	17.26	-
	18	34.3	32.1	3558	-	-	-	-	-	-	-	-	-	33.65-34.3, 32.1-33.1
7	19	32.1	31.8	1432	639	-	-	-	-	-	-	-	-	-
	20	31.8	31.5	-	-	-	-	-	-	-	-	-	-	31.5-31.8
	21	31.5	30.3	5977	1743	2551	-	-	-	-	-	0.59	-	-
	22	30.3	29.3	5338	2945	193	-	-	-	-	-	2.45	-	-
	23	29.3	28.3	5059	2159	889	-	-	-	-	-	9.48	-	-
	24	28.3	27.5	3972	2532	2924	-	-	-	-	-	1.32	-	-
6	25	27.5	26.9	1177	-	-	-	-	-	-	-	-	-	27.15-27.5
	26	26.9	23.7	9578	8305	12218	-	-	-	-	-	29.26	-	-
	27	23.7	22.9	1257	266	2820	-	-	-	-	-	-	-	-
	28	22.9	20.0	1037	657	-	-	-	-	-	-	22.12	-	20.5-21.7, 22.1-22.8

Table 6. The following table lists the data on channel confinement produce from the LIDAR information and is reproduced from Anchor 2011a. The table lists the proportion of river channel confinement by river reach.

Reach	River Mile		Length (mi)	Degree of Confinement, Length (miles)			Degree of Confinement, (%)		
	Begin	End		Confined	Moderate	Unconfined	Confined	Moderate	Unconfined
10	50.2	44.0	6.2	1.5	4.7	0	24.2%	75.8%	0.0%
9	44.0	40.0	4.0	0	2	2	0.0%	50.0%	50.0%
8	40.0	32.1	7.9	0.9	6.4	0.6	11.4%	81.0%	7.6%
7	32.1	27.5	4.6	2.4	2.2	0	52.2%	47.8%	0.0%
6	27.5	20.0	7.5	0.4	5.1	2.1	5.3%	67.1%	27.6%
5	20.0	13.2	6.8	3.7	1.8	1.3	54.4%	26.5%	19.1%
4	13.2	8.9	4.3	0.6	1.9	1.8	14.0%	44.2%	41.9%
3	8.9	4.5	4.4	4.3	0	0.1	97.7%	0.0%	2.3%
2	4.5	0.7	3.8	0.5	1.6	1.7	13.2%	42.1%	44.7%
1	0.7	0.0	0.7	0.7	0	0	100.0%	0.0%	0.0%
			Sums	15	25.7	9.6	29.8%	51.1%	19.1%

Tucannon River Programmatic

Project #: 2010-077-00

Contract #: 60562

Annual Progress Report

(Reporting Period January 2013 to December 2013)

Figures 1 - 12

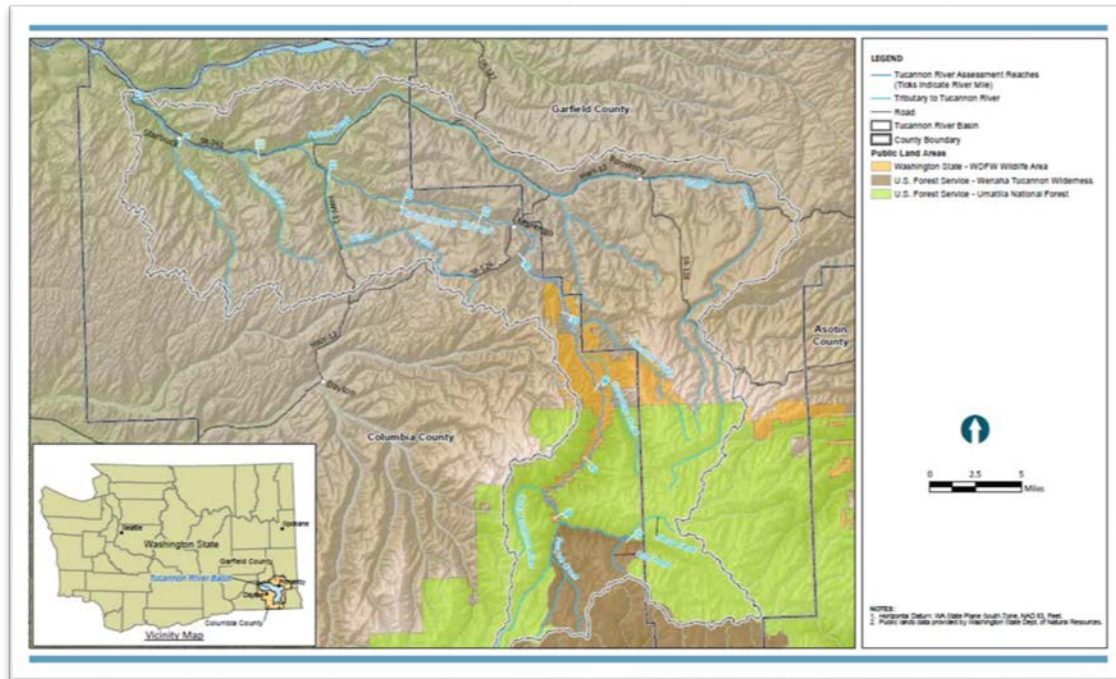


Figure 1. Tucannon River Watershed vicinity map (Anchor April, 2011). The gold shaded areas indicate the Wooten Wildlife Area, the green areas the Umatilla National Forest, the darker brown headwaters of the Tucannon indicate the wilderness area and the remainder of the watershed is private land.

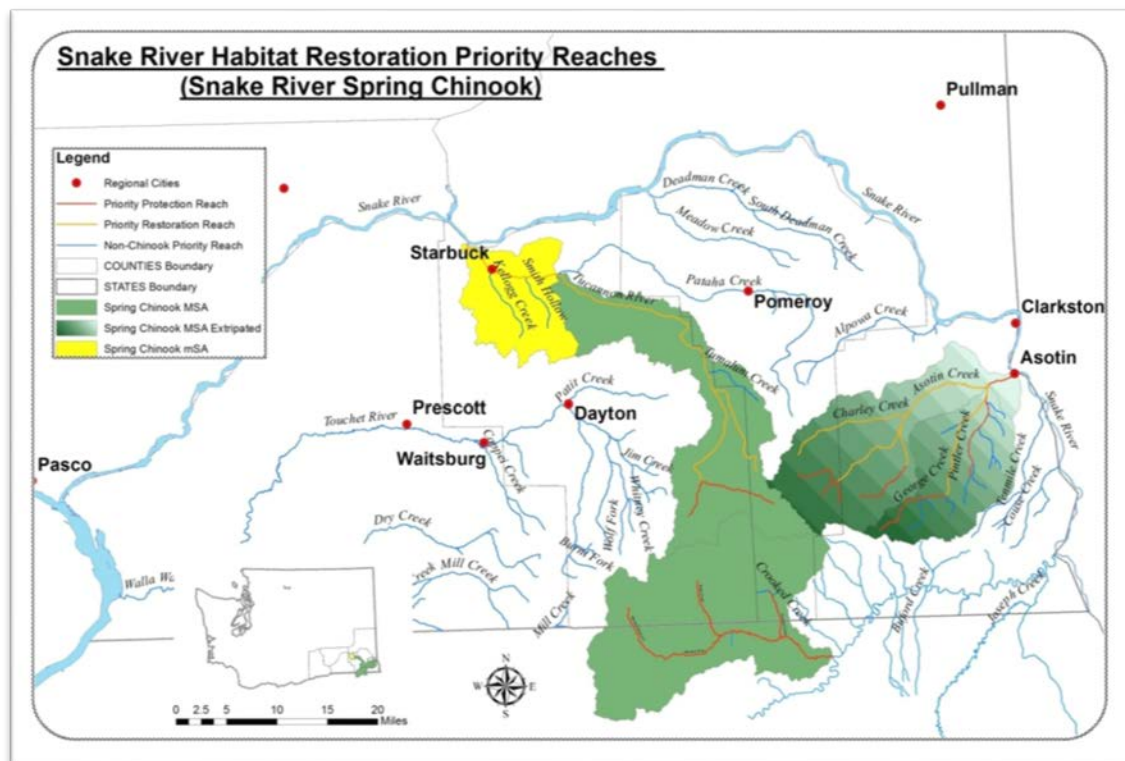


Figure 2. Snake River Salmon Recovery Plan priority areas for Snake River ESU spring Chinook. The map highlights the Tucannon, Asotin and Wenaha River basins. The green shaded areas are the major spawning areas (MSA) and the yellow area is a minor spawning area (mSA). The stream reach highlighted orange indicate the river reach where the SRSRB RTT supports stream channel restoration activities and the red reaches protection project types. The Asotin population is currently believed to have been extirpated.

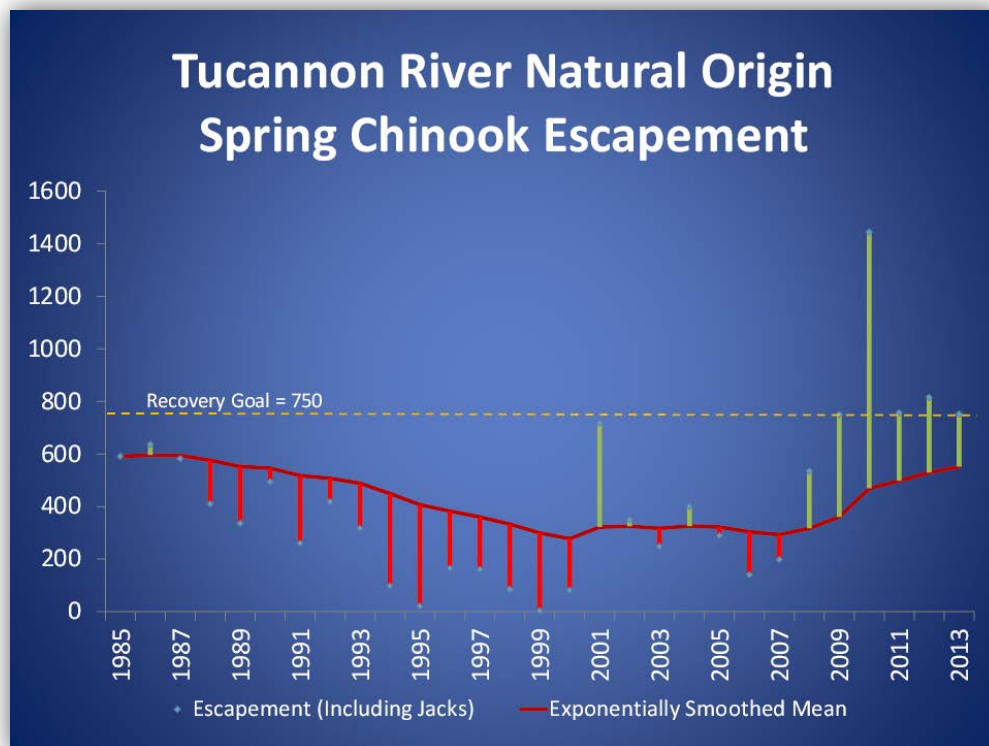


Figure 3. Mean natural origins spring Chinook escapement for the Tucannon River in relation to the recovery goal and the geometric mean, based on WDFW data collected by the WDFW Snake River Lab Dayton WA. The blue dots indicate the population estimate, the red curve indicates the geometric mean and the dashed line the recovery goal of 750 adults. The bars indicate divergence from the geometric mean. This table is for illustration purpose and is used by the SRSRB for informational purpose only.

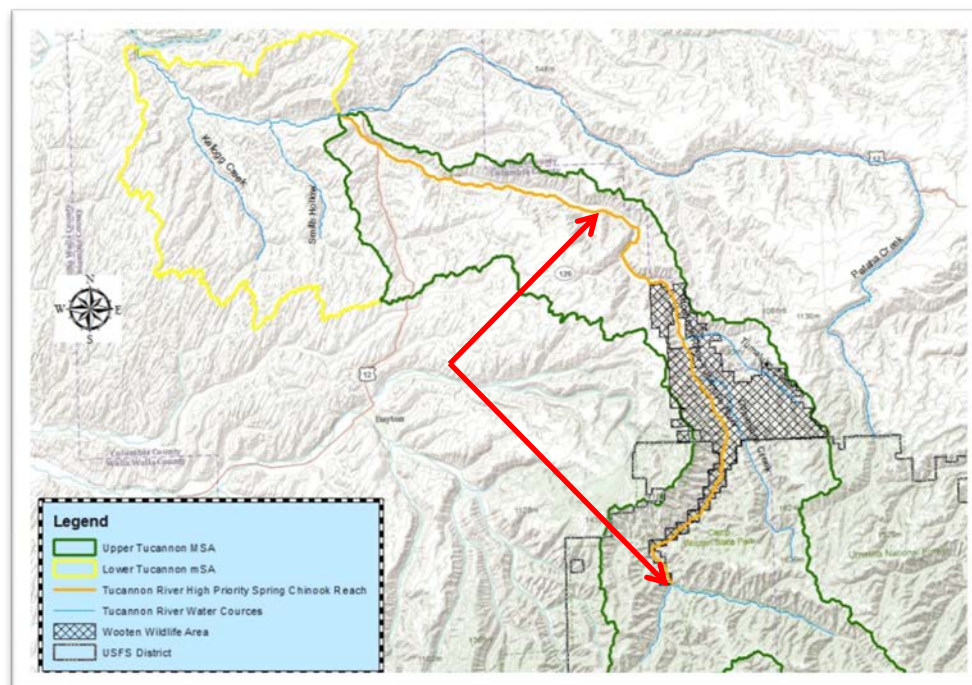


Figure 4. The Tucannon River spring Chinook priority restoration area is the river reach highlighted in orange and indicated by the red arrows. The Tucannon major spawning area is represented by the green polygon and the minor spawning area by the yellow polygon. See legend for additional map detail.

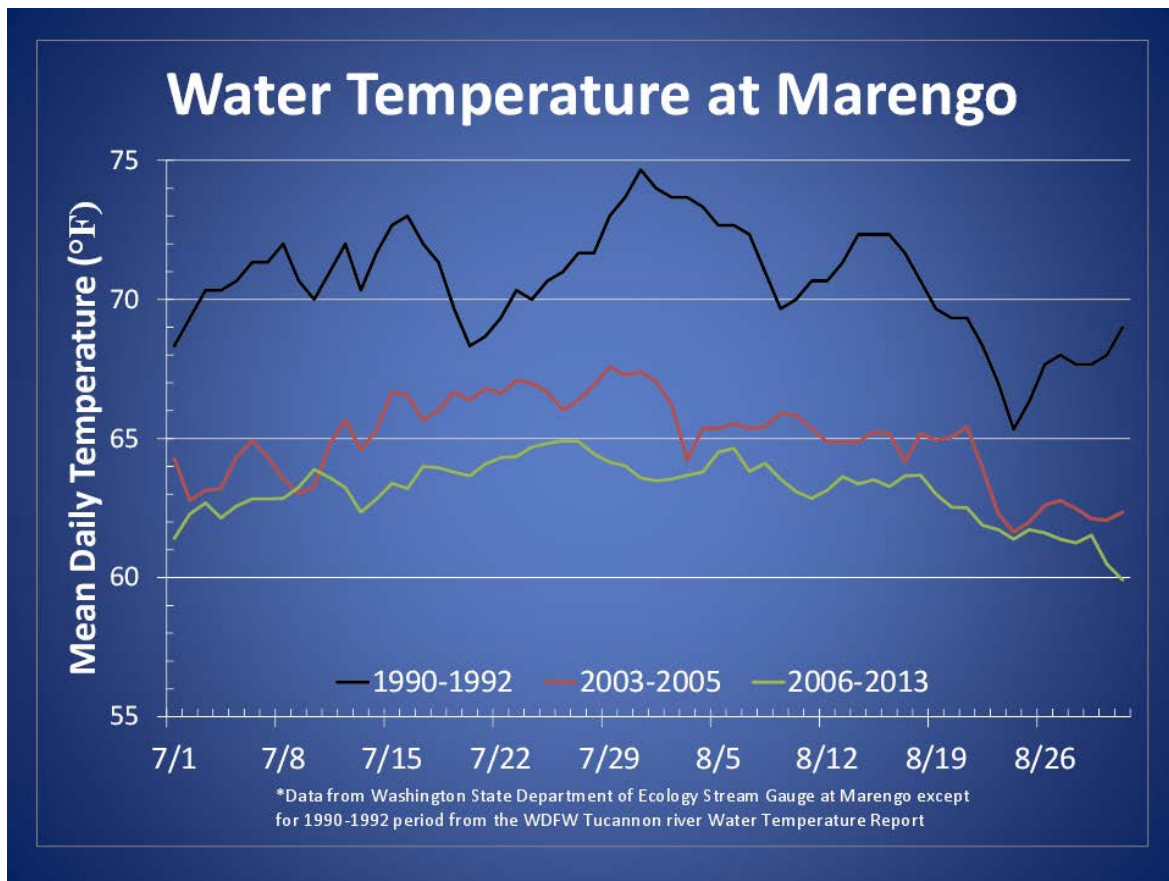


Figure 5: Mean daily stream temperature measured at Marengo on the Tucannon River between 1990 and present. Note the gradual decline in temperature from the 90's to present.

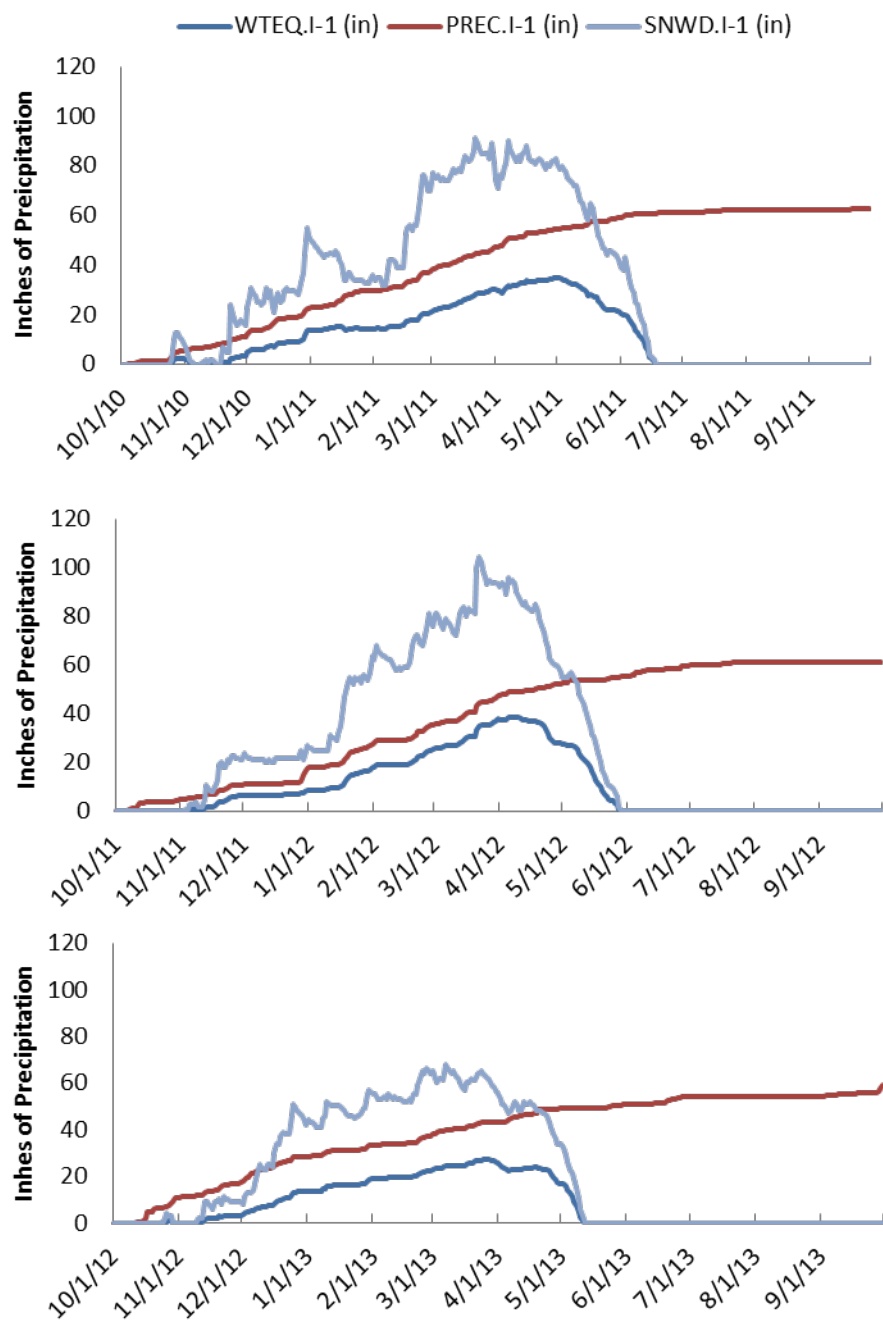


Figure 6: NRCS SNOTEL data reports for the 2011-2013 water years for the Touchet Station. The figure illustrates total precipitation in red, total snow depth in light blue and snow water equivalent in dark blue.

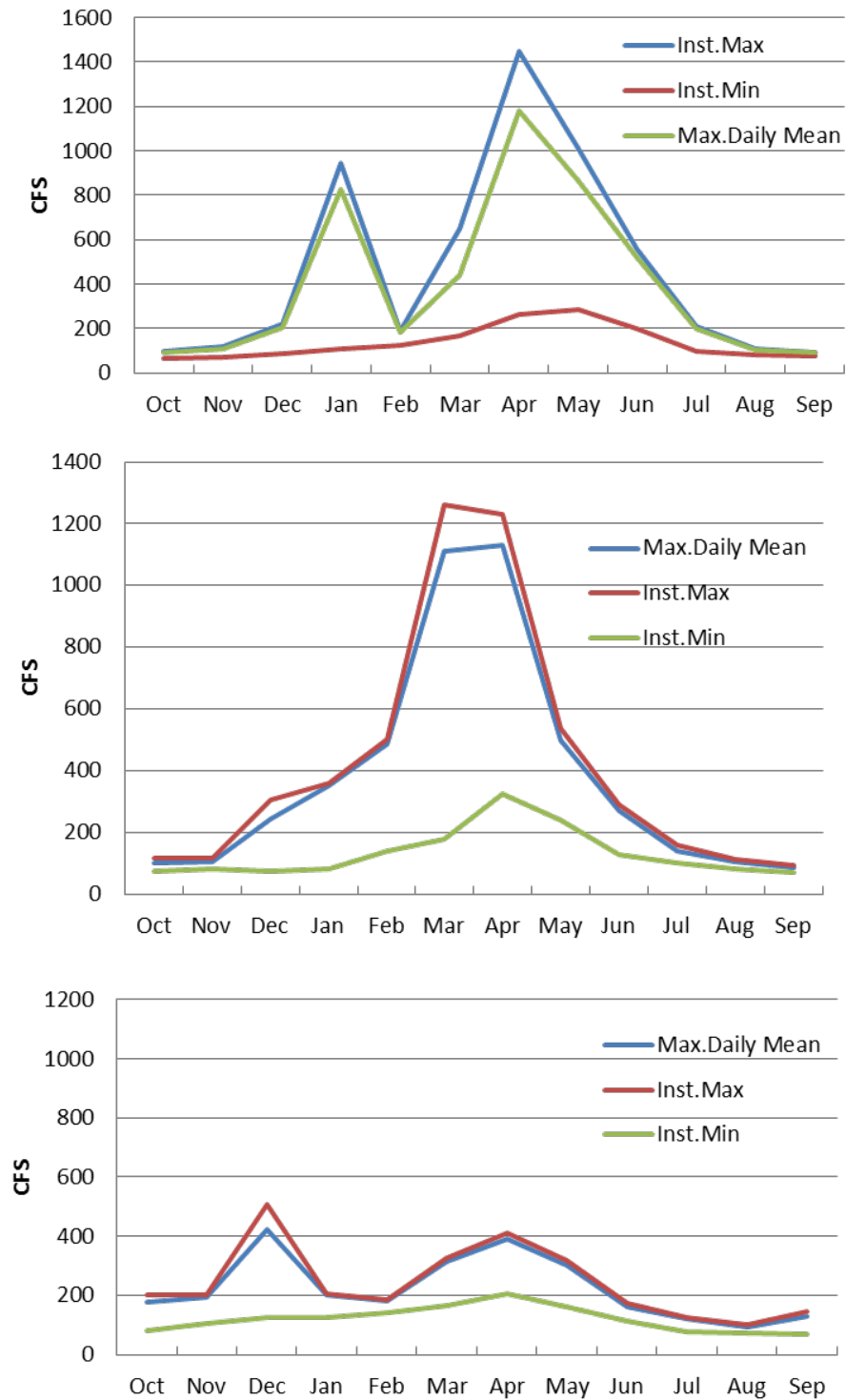


Figure 7: Washington Department of Ecology Stream Gage data from the Marengo gage on the Tucannon 2011-2013 water year. The upper graph is the 2011, the middle 2012 and lower 2013 water year. In each figure the max daily mean is plotted with the instantaneous max and min for each day.



Figure 8: Tucannon River Project Area 10 April 2010 pre project photo (Left). (Right) same project reach post treatment in September 2013.



Figure 9. Project Area 18 floodplain restoration project. Image A illustrates the pre project condition. The blue lines on the image indicate the over land flows which occurred in 2009 and 2010. The red polygon highlights the infrastructure removed as part of this project. Image B illustrates the post project condition of the site in September 2012. The red polygon indicates the position of the removed infrastructure.



Figure 10: PA-18 Google image captured on July 4th 2013. Note (Area enclosed by oval) the recovery of soil and vegetation at the site of demolition.

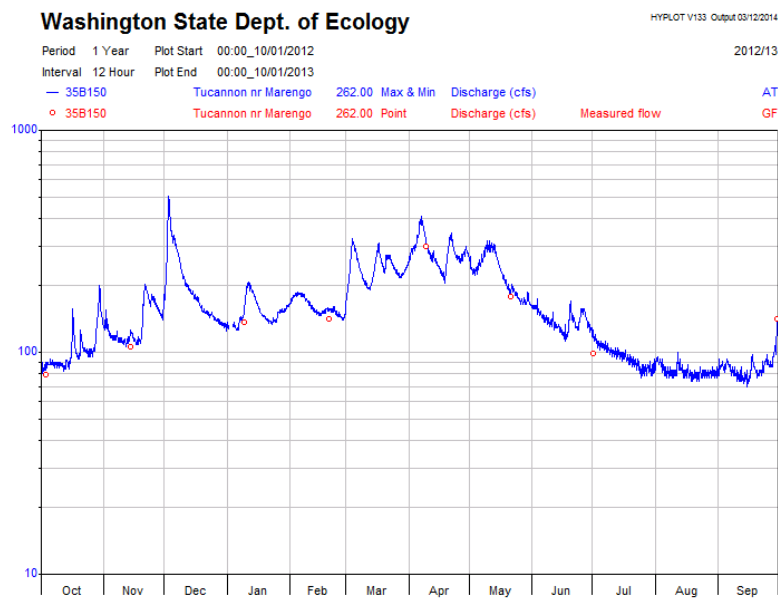


Figure 11. Stream flow measured at the WDOE stream gage at Marengo for the 2012 water year beginning October 1st 2011 through September 31st 2012. Flow is reported as daily mean for cfs.

Washington State Dept. of Ecology

HYPLOT V133 Output 03/05/2014

Period 1 Year Plot Start 00:00_10/01/2012
Interval 12 Hour Plot End 00:00_10/01/2013

2012/13

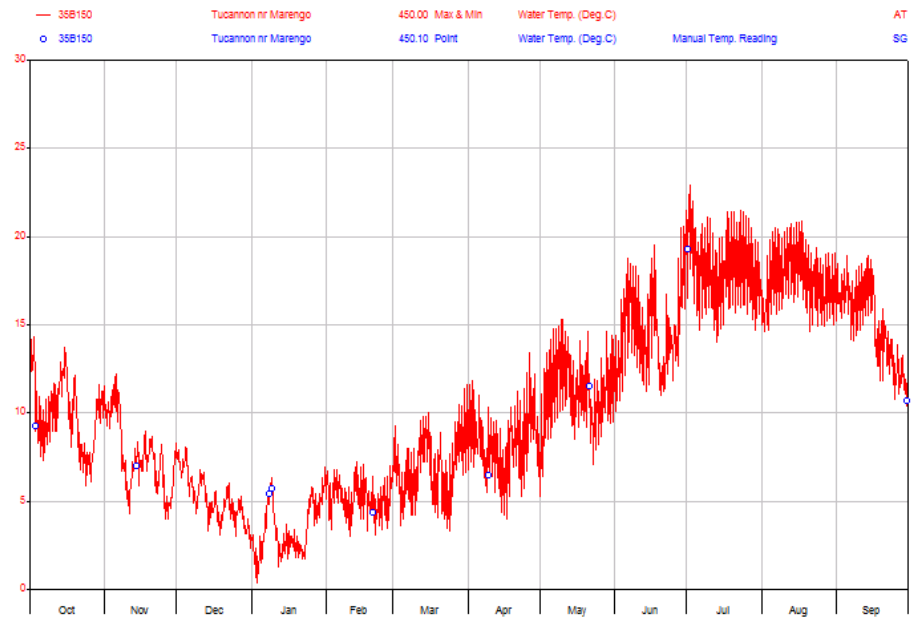


Figure 12. Stream temperature measured at the WDOE stream gage at Marengo for the 2012 water year beginning October 1st 2011 through September 31st 2012. Temperature is reported as daily mean in degrees Celsius.

Tucannon River Programmatic

Project #: 2010-077-00

Contract #: 60562

Annual Progress Report

(Reporting Period January 2013 to December 2013)

Appendix A &B

Appendix A

Overview 2014 Implementation Season

Tucannon River Programmatic Habitat Project (2010-077-00)

Project Area 01 Implementation (Project 2010-077-00 -- Contract #63605)

PA-1 is pending implementation approval with implementation to be either in 2014 or 2015

Project Number	PA-01
Project Name	Panjab Bridge
River Mile	49.4-50
Land Ownership	USFS and WDFW
Project Sponsor	Confederated Tribe of the Umatilla
Schedule	Design 2013 implement 2014-2015
Project Objective	Improve hydraulic bed form complexity through LWD, increase floodplain connectivity and develop side channels
Project Size	0.65 mile
Current Design Level	Conceptual 60%
Design Contractor	Tetra Tech
Construction Contractor(s)	TBD
Design Cost Funded by CTUIR Accords	\$60k
Construction Cost Estimate based on 60%	\$400k
Implementation Funding Source	BPA Tucannon River Habitat Programmatic/CTUIR Accords Tucannon Habitat Program
Quantities	114 whole trees will be paired with 8 base logs to create 21 wood structures ranging from single log to multiple log (20 log) structures, anchored with rocks
Comments	Project includes the moving of existing campground out of current floodplain to an adjacent dryer location. WDFW funded as match through the Floodplain Management Plan.

Project Area 03 Implementation (Project 2010-077-00 -- Contract #62642)

PA-03 Preliminary designs were completed in 2012 with some modification to the lower two structures in 2013 to increase stability above Camp Wooten. Implementation is scheduled for 2013.

Project Number	PA-03
Project Name	Little Tucannon
River Mile	46.75-48.1
Land Ownership	USFS and WDFW
Project Sponsor	Confederated Tribe of the Umatilla
Schedule	Design 2013 implement 2014
Project Objective	Improve hydraulic bed form complexity through LWD, increase floodplain connectivity and develop side channels
Project Size	1.35 mile
Current Design Level	60%
Design Contractor	Tetra Tech
Construction Contractor(s)	TBD
Design Cost Funded by CTUIR Accords	\$30k
Construction Cost Estimate based on 60%	\$495k
Implementation Funding Source	BPA Tucannon River Habitat Programmatic/CTUIR Accords Tucannon Habitat Program
Quantities	190 whole trees will be paired with 6 base logs to create 24 wood structures ranging from single log to multiple log structures
Comments	The majority of structures will be placed using a Helicopter with the two downstream structures being designed for stability at 100 yr flood

Project Area 11 Implementation (Project 2010-077-00 -- Contract #64003)

Back Ground: Project Area 11 has been developed in the Tucannon Conceptual Restoration Plan to a 10% level. WDFW has been working internally to develop preliminary project designs. Based on current materials presented we would ask for approval to continue with design to final. The Programmatic would bring advanced designs back to the board for implementation approval.

Project Number	PA-11
Project Name	PA-11
River Mile	42.3-40.7
Land Ownership	WDFW
Project Sponsor	WDFW
Schedule	Design 2013-2014 implement 2014-2015
Project Objective	Improve hydraulic bed form complexity through LWD
Project Size	1.37 mile
Current Design Level	Conceptual 10% from Restoration Plan 2011 plus some preliminary design concepts and site survey
Design	WDFW internal
Construction Contractor(s)	TBD
Design / Construction Cost Estimate based on 10%	\$25k/<\$500k (my estimate based on other projects in the basin, cost of materials plays a big role in cost)
Funding Source	BPA plus will likely pursue SRFB Match
Design Engineer	WDFW
Comments	

Project Area 14 Implementation (Project 2010-077-00 -- Contract #58777)

PA-14 Was designed in 2012 with initial construction taking place in 2013 with material acquisition and staging. Access points were developed and side channel that could be completed in the dry were completed. The completion of PA14 is scheduled for 2014 work window.

Project Number	PA-14
Project Name	--
River Mile	39.2-37.15
Land Ownership	WDFW
Project Sponsor	WDFW
Schedule	Design 2012 implement 2013-2014
Project Objective	Improve hydraulic bed form complexity through LWD, increase floodplain connectivity and develop side channels
Project Size	2.05 mile
Current Design Level	Final
Design Contractor	Anchor/WDFW
Construction Contractor(s)	WDFW Habitat Crew and TBD
Design Cost	\$75k, BPA & SRFB funded
Construction Cost Estimate based on 100%	\$1.2million
Implementation Funding Source	BPA Tucannon River Habitat Programmatic and SRFB
Quantities	49 multiple log structures ranging from 2-5 logs to 20-30 will be constructed along with 67 single log placements
Comments	Approximately 450 trees with root wads will be used and over a 120 additional logs

Project Area 15 Implementation (Project 2010-077-00 -- Contract #58975 & CR-269397)

PA-15 was designed in 2012 & 2013. The project is currently in permitting and is scheduled for implementation 2014.

Project Number	PA-15
Project Name	--
River Mile	37.15-35.35
Land Ownership	WDFW and private
Project Sponsor	CCD
Schedule	Design 2012 – 2013 and implement in-2014
Project Objective	Improve hydraulic bed form complexity through LWD, increase floodplain connectivity and develop side channels
Project Size	0.75 mile
Current Design Level	Final
Design Contractor	Anchor
Construction Contractor(s)	TBD
Design Cost	\$90k, BPA & SRFB funded
Construction Cost Estimate based on 100%	\$800k
Implementation Funding Source	BPA Tucannon River Habitat Programmatic & SRFB
Quantities	28 multiple log structures ranging from 2 logs to 30 will be constructed along with 40 single log placements
Comments	Approximately 212 trees with root wads will be used and over a 261 additional logs

Project Area 22 Implementation (Project 19940018-06 -- Contract #CR-265972)

PA-22 was identified in the Tucannon Restoration Plan for completion. The primary limiting factor within the reach is limited complexity particularly in relation to lack of LWD.

Project Number	PA-22
Project Name	--
River Mile	30.3 - 29.3
Land Ownership	private
Project Sponsor	CCD
Schedule	Design 2013 --and implement in-2014
Instream Work Window	
Project Objective	Improve hydraulic bed form complexity through LWD Structure placement and Riparian planting. Place 8 wood complex structures
Project Size	1 mile
Current Design Level	Preliminary
Design Contractor	CCD Engineering
Construction Contractor(s)	TBD
Design Cost	\$10k, BPA
Construction Cost Estimate based on 100%	\$63,500k
Implementation Funding Source	BPA CCD Tucannon Stream and Riparian Restoration Project
Quantities	8 multiple log structures placed throughout the project reach
Comments	

Project Area 24 Final Design (Project 2010-077-00 -- Contract #64018)

Back Ground: Project Area 24 was conceptualized in the Tucannon River Conceptual Restoration Plan. The project was prioritized and designed to a 30% level in 2012 as part of a SRFB grant. The CCD has asked for the completion of a final design in 2014 for implementation in 2015.

Project Number	PA-24
Project Name	PA_24
River Mile	28.25 to -27.5
Land Ownership	Private
Project Sponsor	CCD/WWCC
Schedule	Design 2014- implement 2015
Project Objective	Improve hydraulic bed form complexity through LWD and improve floodplain connectivity through removing and modifying river levees
Project Size	0.75 mile
Current Design Level	Preliminary 10% from Restoration Plan 2011 plus 30% preliminary design from past SRFB grant
Design	Anchor did 30%
Construction Contractor(s)	TBD
Design Cost	\$86k
Construction Cost Estimate based on 10%	\$760k (implementation costs are based on 30% design)
Funding Source	BPA Tucannon River Habitat Programmatic
Design Engineer	TBD
Comments	

Project Area 26 Implementation (Project 19940018-06 -- Contract #CR-265972)

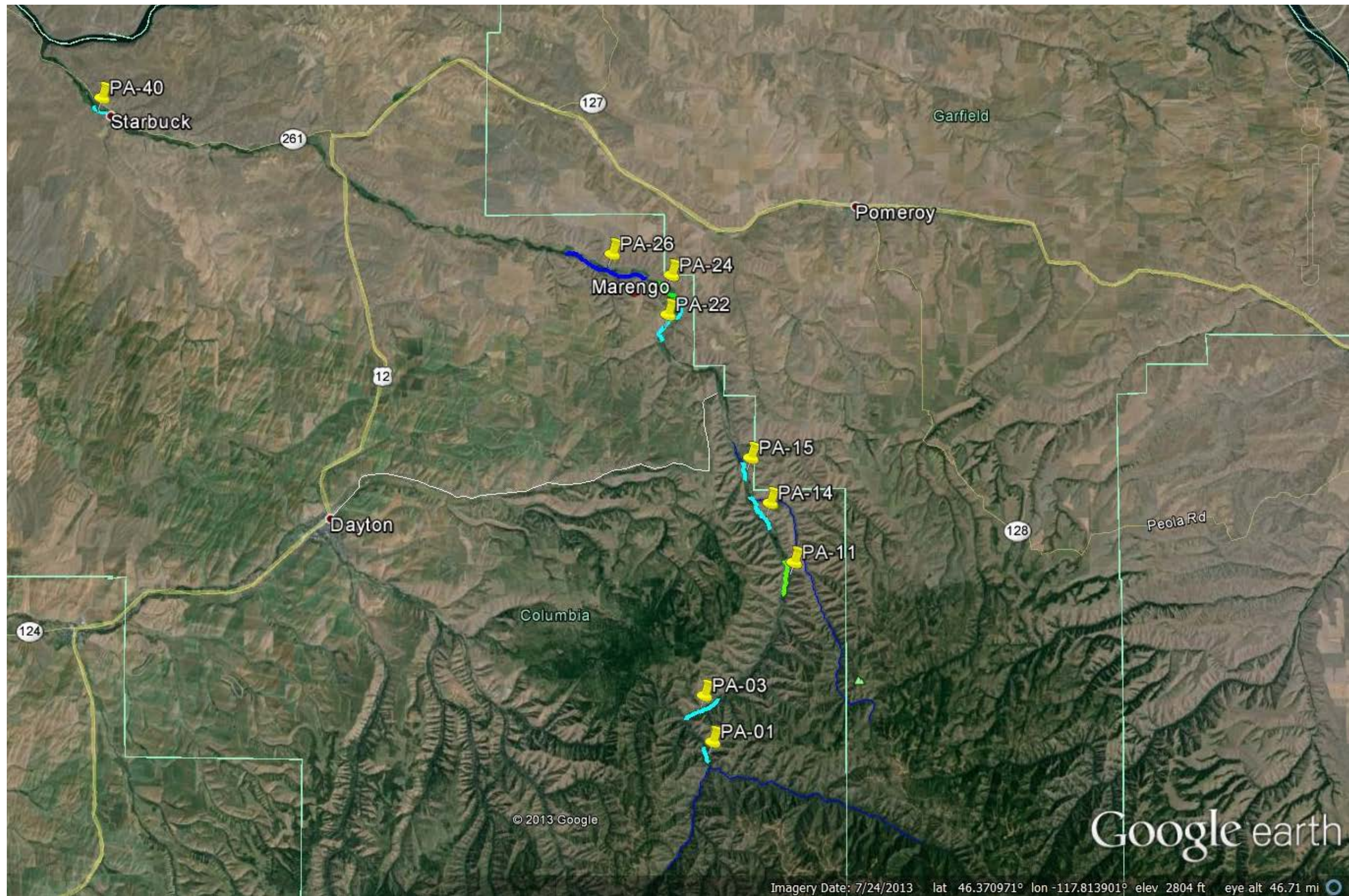
PA-26 was identified in the Tucannon Restoration Plan (Anchor 2011 Nov) as a high priority for expanding floodplain connectivity and increasing in channel structure. The floodplain project was completed in 2011 and has been followed in 2013 by the placement of 17 log structures. This project will continue to add to complexity throughout the reach.

Project Number	PA-26
Project Name	N/A
River Mile	26.9-23.65
Land Ownership	private
Project Sponsor	CCD
Schedule	Design 2013/2014 and implement in-2014
Project Objective	Improve hydraulic bed form complexity through LWD, increase floodplain connectivity and develop side channels
Project Size	0.75 mile
Current Design Level	Preliminary
Design Contractor	CCD Engineer
Construction Contractor(s)	TBD
Design Cost	\$?k, BPA
Construction Cost Estimate based on 100%	\$50k
Implementation Funding Source	BPA CCD Tucannon Stream and Riparian Restoration Project
Quantities	Place up to 5 LWD structures
Comments	Project is designed to provide added benefit to the reaches where the levee set back has occurred

Project Area 40 Implementation (Project 19940018-06 -- Contract #CR-265972)

PA-40 has designed in 2011 - 2013. The project is currently in permitting and is scheduled for implementation 2014.

Project Number	PA-15
Project Name	Tucannon Ranch Floodplain and Side Channel Development
River Mile	4.5-4
Land Ownership	private
Project Sponsor	CCD
Schedule	Design 2011 – 2013 and implement in-2014
Project Objective	Improve floodplain connectivity and develop side channels. Develop side channel complexity
Project Size	0.5 mile
Current Design Level	Final
Design Contractor	Anchor & CCD Engineer
Construction Contractor(s)	TBD
Design Cost	\$??60k, BPA & SRFB funded
Construction Cost Estimate based on 100%	\$530k
Implementation Funding Source	Department of Ecology Grant & BPA CCD Tucannon Stream and Riparian Restoration Project
Quantities	32 multiple log structures ranging from 2 logs to 10 will be constructed in 3,700 ft of reconnected side channel. Develop 2,500 of off set dike
Comments	



Appendix B. Tucannon River monitoring parameters and available data produced as part of the Tucannon River Monitoring Plan Outline. The table lists the available data in the Tucannon River indicating the time period and where the data is being housed.

Component	Parameters	Data Source	Time Period	Data Location	Interval	Comments
Hydrology	Flow	1. DOE gage at Marengo, 2. USGS gage at Starbuck	1. 6/1/2003 –present 2. 1997-present	1. SRSRB or WDOE 2. SRSRB or USGS	Annual	1. The Marengo gage will be the flow point for the MSA and monitoring spawning and rearing flows. 2. The USGS gage will be the flow point for the mSA and passage.
	Hydrograph	Anchor 2011a	Developed in 2011	SRSRB and CCD	Once	The model was developed as part of the Geo Assessment report completed for the CCD
	Bed load	Anchor 2011a	2010 Baseline	CCD/SRSRB	Once	
Water Quality	Temperature	WDOE Marengo gage WDFW/USFS temperature logger	2003 to present	SRSRB/ WDOE	Annual	The Marengo gage will be used as a surrogate for the MSA. Additional data points will be used or developed to considered based on need
	Turbidity/fines	USFS/CCD turbidity ISCOS			Annual	
	Embeddedness	CCD Field Assessment reports			Periodic	
Riparian	Riparian Cover	Remote sensing images Orthos and 2010 LIDAR	1994, 1996, 2003, 2005, 2006, 2009, 2010, 2011	USGS, USDA, SRSRB	2yr	94 data is USGS and covers Bridge below Last Chance Resort to below Little Tucannon. 2010 data is SRSRB data. The rest is USDA
	Maturity/Com position	LIDAR canopy height and field surveys	April 2010 Baseline	SRSRB or CCD	5yr	LIDAR was acquired in April 2010 and analysis will be finalized in 2012
Channel Habitat Complexity	Channel Type	Anchor 2011a	2010	CCD	5yr	The channel type is descried in report
	Pools/Channel Shape	1. CHaMP 2. Historic USFS Surveys 3. Pre/post restoration monitoring	1. 2011 Baseline 2. 1999-etc 3. 2012 Baseline	1. CHaMP 2. USFS 3. SRSRB	Annual & Periodic	1. CHaMP is conducting a main stem w/25 sites visited each year 2. 3. The pre/post monitoring sites would be at restoration sites (use CHaMP protocol)
	Key LWD Pieces	1. CHaMP 2. Anchor 2011b	1. 2011 Baseline 2. 2011 Baseline	1. CHaMP 2. SRSRB	1. Annual 2. Once	1. CHaMP will measure change in LWD 2. Anchor Report provided and estimate of river length meeting the # of LWD/Channel width.
	Off Channel Habitat	1. CHaMP 2. Anchor 2011b	CHaMP 2011 Baseline Anchor 2010 only	1. CHaMP 2. SRSRB	Annual & 5yr	Channel length calculations will be extracted from the 5 yr LIDAR flights
Channel Confinement	Floodplain	Anchor 2011b	2010 baseline??? unless there is more	SRSRB	5 yr	Floodplain can be updated by 5yr LIDAR data
	Channel Length	Anchor 201a)	1954, 1974, 1996, 2010 Aerial Images & 2010 LIDAR	SRSRB	5 yr	The Time series will be extended by additional yrs and would be updated by the 5 yr LIDAR

