

# Umatilla River Anadromous Fish Habitat Project

## 2022 Annual Report

(January 1, 2022 – January 31, 2023)

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## ACRONYMS

|         |   |
|---------|---|
| BA      | biological assessment   |
| BDSS    | beaver dam support structure  |
| BIA     | Bureau of Indian Affairs  |
| BPA     | Bonneville Power Administration                                     |
| cfs     | cubic feet per second   |
| COR     | Contracting Officer Representative                                  |
| CREP    | Conservation Reserve Enhancement Program                            |
| CTUIR   | Confederated Tribes of the Umatilla Indian Reservation              |
| CY      | Cubic Yards   |
| dbh     | diameter at breast height   |
| EPA     | United States Environmental Protection Agency                       |
| ESA     | Federal Endangered Species Act                                      |
| ft      | foot/feet   |
| FY      | fiscal year   |
| in      | inch/inches   |
| JPA     | Joint Permit Application  |
| km      | kilometer/kilometers  |
| LWD     | large woody debris  |
| m       | meters  |
| mi      | mile/miles  |
| MOA     | Memorandum of Agreement   |
| NOAA    | National Oceanic and Atmospheric Administration                     |
| NMFS    | National Marine Fisheries Service                                   |
| NPPC    | Northwest Power Planning Council                                    |
| NPCC    | Northwest Power and Conservation Council                            |
| NRCS    | Natural Resource Conservation Service                               |
| ODA     | Oregon Department of Agriculture                                    |
| ODEQ    | Oregon Department of Environmental Quality                          |
| ODFW    | Oregon Department of Fish and Wildlife                              |
| ODSL    | Oregon Department of State Lands                                    |
| OWEB    | Oregon Watershed Enhancement Board                                  |
| OWRD    | Oregon Water Resources Department                                   |
| PCSRF   | Pacific Coastal Salmon Recovery Fund                                |
| RM      | river mile  |
| SOW     | Statement of Work   |
| SE      | Standard error  |
| TMDL    | total maximum daily load  |
| UAFHP   | Umatilla Anadromous Fisheries Habitat Project                       |
| UBNPME  | Umatilla Basin Natural Production Monitoring and Evaluation Project |
| UBWC    | Umatilla Basin Watershed Council                                    |
| USACOE  | United States Army Corps of Engineers                               |
| USDA-FS | United States Department of Agriculture Forest Service              |
| USFWS   | United States Fish and Wildlife Service                             |
| USGS    | United States Geological Survey                                     |
| UPRR    | Union Pacific Railroad  |

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## INTRODUCTION

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) retain aboriginal and treaty rights related to fishing, hunting, pasturing of livestock, and gathering of traditional plants within the Umatilla River subbasin. The CTUIR Department of Natural Resources (DNR) has developed and accepted a First Foods organization and approach to ecosystem management based on the cultural traditions and practices of the Longhouse. The organization follows the serving order of food and conceptually “Extends the Table” to manage for sustainability within the Umatilla River subbasin. The First Foods are considered to be the minimum ecological products necessary to sustain CTUIR culture (Quaempts et al. 2018). The order is watershed-based beginning with water at the first and lowest point and progresses up to salmon, deer, cous, and huckleberry. This creates clear links to treaty rights and resources and sets direction and goals that relate to the community culture. In addition the CTUIR DNR developed the Umatilla River Vision that provides a description of the processes and conditions needed to protect and provide for First Foods (Jones et al. 2008). The River Vision describes physical and biological processes in support of 5 touchstones; hydrology, geomorphology, connectivity, riparian vegetation, and aquatic biota. The work accomplished through this project is directly related to the First Foods of water and salmon and the 5 touchstones, which incorporates goals of restoring high water quality and healthy and sustainable salmonid fish populations.

CTUIR’s right to fish in its historical fishing places was acknowledged in the Treaty of 1855 that stated: “the exclusive right of taking fish in the streams running through and bordering said reservation is hereby secured to said Indians, and at all other usual and accustomed stations...” (Treaty of 1855, Articles of Agreement, Article 1, page 3). Decreased salmonid abundance has significantly impacted the livelihood of the Tribal community and altered their way of life.

Overfishing, sweeping changes to rivers and streams, and policies that changed the landscape have endangered salmon and created a “salmon crisis” (Montgomery 2003). It is the challenging duty of the CTUIR Umatilla Anadromous Fisheries Habitat Project (UAFHP) to restore and sustain healthy conditions of local watersheds to both assist in salmon recovery and ensure they provide adequate quantities of sustainable natural resources to satisfy the CTUIR’s needs and preserve opportunities for traditional ways of life.

As part of the Northwest Power Conservation Council’s Columbia Basin Fish and Wildlife Program, this project is one of Bonneville Power Administration’s (BPA) many efforts at off-site mitigation for damage to salmon and steelhead runs, their migration, and wildlife habitat caused by the construction and operation of FCRPS dams. The Umatilla Anadromous Fish Habitat Project (UAFHP; #1987-100-01) initiated by CTUIR in 1987 is an integral component of the Umatilla River Subbasin Salmon and Steelhead Production Plan (NPPC 1990), and project work is supported both locally and regionally by multiple planning documents: Umatilla/Willow Subbasin Plan (NPCC 2005), Umatilla River Basin TMDL and Water Quality Management Plan (2001), CTUIR TMDL (2005), Umatilla River Vision (Jones et al. 2008), Conservation and Recovery Plan for Oregon Steelhead Populations in the Middle Columbia River Steelhead Distinct Population Segment (NMFS 2009), Recovery Plan for the Coterminous United States Population of Bull Trout (*Salvelinus confluentus*) (USFWS 2015), Meacham Creek Watershed Analysis and Action Plan (Andrus and Middel 2003), Umatilla and Meacham Watershed Assessment (UNF 2001), and the Birch Creek Watershed Action Plan (CTUIR 2016).

The Final Umatilla/Willow Subbasin Plan (NPCC 2005; Subbasin Plan) provided a systematic vision of a healthy ecosystem with abundant, productive, viable, and diverse populations of aquatic and terrestrial species with goals, objectives, and management strategies necessary to reach the subbasin vision. The vision entails several broad goals for habitat: 1) Protect existing high quality fish and wildlife habitat and strongholds, 2) restore and enhance degraded and diminished fish and wildlife habitats to support population restoration goals and to mitigate impacts from the construction and operation of the Columbia basin hydropower system and other anthropogenic impacts, and 3) restore the health and function of ecosystems in the Umatilla subbasin to ensure continued viability of their natural

resources (Management Plan, page 5-3). Specific aquatic qualitative objectives and strategies were developed to support the subbasin vision and goals. Quantitative management objectives relative to the UAFHP work activities include 1) maintain and enhance natural production, productivity, abundance, life history characteristics and genetic diversity of fish and mussels throughout the Umatilla subbasin using habitat protection and improvement and 2) maintain and enhance passage of adult and juvenile steelhead and Chinook throughout the Umatilla subbasin with passage protection and restoration (Management Plan, page 5-5). The Umatilla Subbasin Plan (NPCC 2005) determined that the limiting factors could be addressed through habitat restoration and implementation (“Phase III”) of the Umatilla Basin Project (pages 5-10). An identification and analysis of limiting factors/conditions and priority areas for action are fully described within the Subbasin Plan (Section 3.5) including passage barriers/entrainment, in-channel characteristics, habitat diversity (LWD), floodplain confinement, high water temperatures, high turbidity, inadequate flows, and poor riparian/floodplain vegetation. Priority management strategies are being conducted by the UAFHP in accordance with the Final Umatilla Willow Subbasin Plan (NPCC 2005; pages 5-8 & 5-9) to address limiting factors within the subbasin:

- Increase water conservation and irrigation efficiency
- Large Wood/Boulder Structure Placement
- Fence/Plant Riparian Zones
- Modify Channel Floodplain Function
- Construct Pool/Riffle – In-stream Modification
- Modify Detrimental Land use Activities
- Restore Upstream/Headwater Attributes to Improve Downstream Conditions
- Increase Passage Efficiency

The UAFHP continues to protect, enhance, and restore functional floodplain, channel, and watershed processes to provide sustainable and healthy habitat for aquatic species in the Umatilla River subbasin. Habitat restoration efforts fit within a holistic watershed approach supporting capacity building and long-term progress towards 1) achievement of the CTUIR DNR River Vision and First Foods mission statements, 2) Endangered Species Act delisting of Columbia River bull trout and middle Columbia River steelhead, and 3) addresses water quality limiting factors per the Clean Water Act 303d list.

During the 33-year project history, the CTUIR has helped administer and implement a number of fisheries habitat enhancement projects in the Umatilla River subbasin. The CTUIR maintains partnership habitat enhancement projects along Meacham Creek, Isquúktpe Creek, Birch Creek, Wildhorse Creek, East and West Birch Creek and the mainstem Umatilla River, among other sites. The CTUIR has developed effective interagency partnerships and is effectively working at the policy and project levels with various federal, state, and county agencies and private landowners.

The UAFHP is an integral component of the *Umatilla River Subbasin Salmon and Steelhead Production Plan* (1990) and is well integrated into the framework of the *Umatilla Subbasin Plan* (NPCC 2005) established by the NPCC to better coordinate habitat restoration work in the Umatilla River Basin. The CTUIR, ODFW, Natural Resource Conservation Service (NRCS), Umatilla National Forest, Umatilla Basin Watershed Council (UBWC), and other participating agencies and organizations have made significant progress towards restoring and protecting vital salmonid habitat in the basin.

The major project accomplishments during the 2022 contract periods are described in Table 1 below. This only includes the major implementation activities. The planning and design related activities for future implementation projects are contained in Table 2.

Project results are reported in various BPA formats including Pisces status reports, project completion reports, and annual reports. The CTUIR maintains a complete database on project planning, proposals, permitting, implementation, and results through the completion of required project deliverables. For a complete list of reports

submitted by the CTUIR's UAFHP since 1989, please consult the following website at URL:  
<http://www.efw.bpa.gov/integratedfwp/reportcenter.aspx>.

**Table 1.** Summary of Implementation work accomplished in 2022.

| <b>Work Element</b>     | <b>Stream Name</b>   | <b>Description</b>   |
|-------------------------|--|--|
| Conservation Agreements | Wildhorse, Birch, EFK Birch, WFK Birch, Cottonwood, & Umatilla River | Maintain current conservation agreement terms and conditions on 16 agreements, including maintaining fencing.  |
| Conservation Easement   | Umatilla River   | Continue working on finalizing a Conservation Easement on the UmaBirch Property  |
| Weed Treatment          | Meacham, Umatilla River  | Controlled noxious weeds on 415.5 acres of conservation agreements and previously implemented habitat projects using chemical and mechanical treatments. Biological control treatments are ongoing. Conducted site visit with USFS to assess Yellow flag iris at RM 10 project area. |
| Planting                | Meacham  | 1,970 plants   |

**Table 2.** Major designs and project planning completed in the 2022 calendar year.

| Project  | Description   |
|--|---|
| <b>West Birch and Stanley Creek Fish Passage Project</b> | Continued the design process to produce the 90% BDR to remove passage barriers to increase survival and benefit channel morphology on West Birch Creek and Stanley Creek. Design altered to account for cultural sites and changes due to flooding in the early spring.   |
| <b>Umatilla River Assessment</b>                         | Received the 90 % final draft of the Assessment and Appendices. Initialized the Prioritization Tool draft.  |
| <b>UmaBirch Conservation Easement</b>                    | Collaborated with the landowner and continued tasks to complete a conservation easement on a part of the UmaBirch property. Conservation Easement anticipated to be completed in summer of 2023.  |
| <b>UmaBirch Design</b>                                   | Completed 60% designs for UmaBirch Project PA 1-3. The design for Birch Creek RM 2.3 (PA 4) was taken to 100% in 2021 and implementation is scheduled to begin spring of 2023   |
| <b>UmaBirch NEPA Compliance</b>                          | An environmental assessment was initiated in 2020 for project areas 2 and 3 and will be finalized in 2023.  |
| <b>Meacham Creek RM 10-11 Design</b>                     | Coordinated with USFS and Tetra Tech Inc. to review the 60% design. Working towards finalizing the design and NEPA in 2023. Implementation is anticipated for 2024  |
| <b>Imeques Reach Design</b>                              | Completed HIP IV review on the 60% design with NMFS for floodplain restoration. Collaborated with Artificial Production staff and engineering firm to develop 15% design and supplementary screen intake report. Working towards selecting a preferred intake screen in 2023 and take the facility and floodplain design to 100% in 2023. |

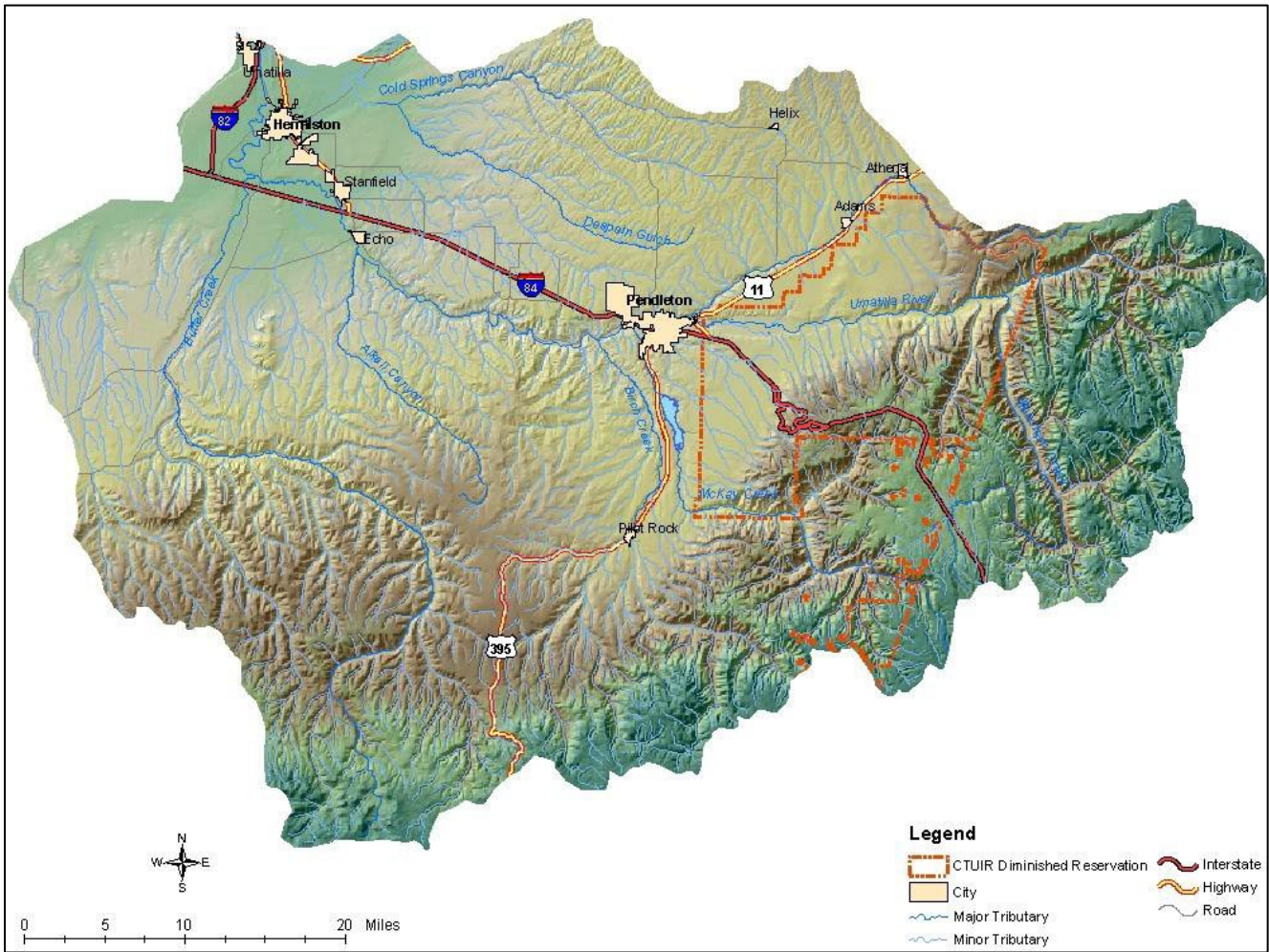
## Project Area

The UAFHP is defined by the boundaries of the Umatilla River subbasin, which is located in the northwest portion of the Blue Mountain Ecological Province in northeast Oregon. The Umatilla River subbasin comprises 1,465,600 acres of the 6,400,000 acres of ceded CTUIR land (CTUIR 1995) as identified by the Treaty of 1855. Figure 1 illustrates the vicinity of the Umatilla River subbasin within the Blue Mountain Province (Project map: <http://www.cbfish.org/Project.mvc/Map/1987-100-01>). The Umatilla River drains an area of approximately 2,540 square miles (mi.<sup>2</sup>) (6,579 square kilometers [km<sup>2</sup>]) and flows approximately 89 mi. (143 km) from where it branches into the north and south forks of the Umatilla River to the mouth at the confluence with the Columbia River. Each fork adds another approximately 10 mi. (16 km) of length. The Umatilla River originates at elevations up to 4,228 feet (ft.; 1,289 m), and flows west and north to its confluence with the Columbia River (USFWS 2002) at an elevation of about

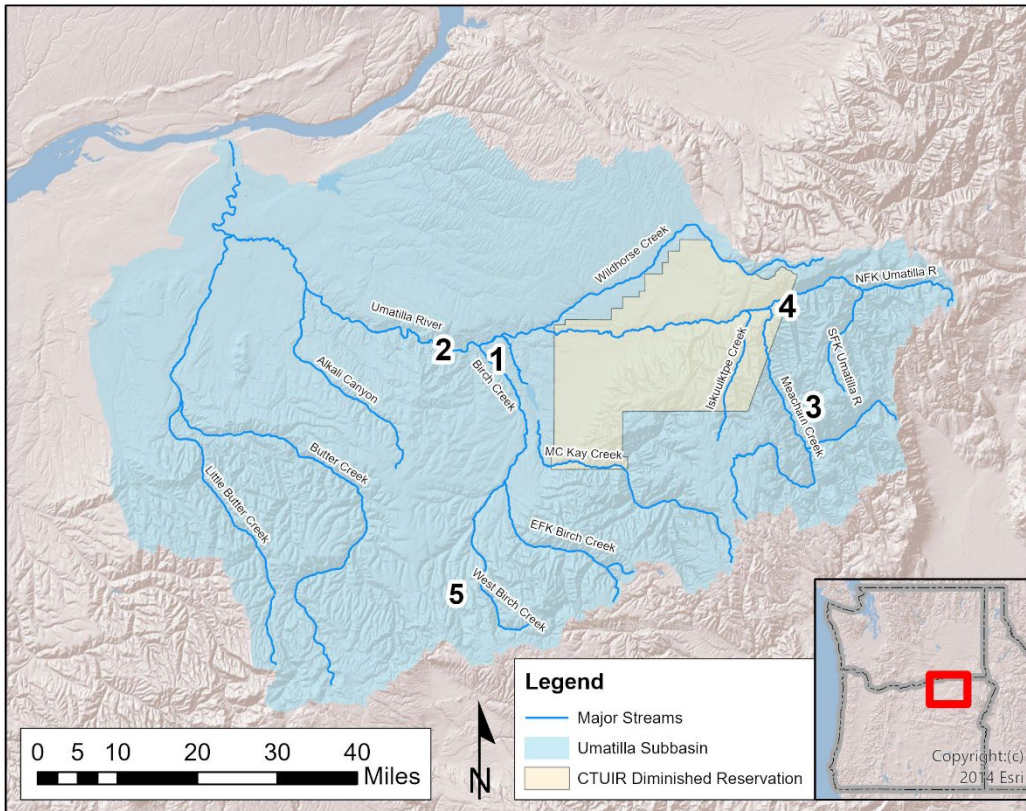
269 ft. (82 m). Other major tributaries include Meacham Creek, Birch Creek, McKay Creek, Butter Creek, and Wildhorse Creek.

The Umatilla River subbasin historically supported viable and harvestable populations of spring/summer and fall Chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*O. kisutch*), sockeye salmon (*O. nerka*), summer steelhead (*O. mykiss*), Pacific lamprey (*Entosphenus tridentatus*), bull trout (*Salvelinus confluentus*), steelhead-rainbow trout (*O. mykiss sp.*), mountain whitefish (*Prosopium williamsoni*) and a variety of additional native species. Anthropomorphic alterations have negatively impacted the watershed and caused significant reductions of endemic salmonid populations. Beginning in the late 1800s, fish populations started to decline due to habitat degradation. In fact, Sockeye and Coho were extirpated by the early 1900s. Irrigation and agricultural development throughout the basin in the early 1900s is believed to be the primary cause of the decline of steelhead and the extinction of salmon. Since the signing of the Treaty of 1855, aquatic and riparian habitats have been degraded through irrigation diversions, water extractions, channelization, livestock grazing, logging, agriculture and urban development (NPCC 2004). Subsequently, the abundance of Chinook, steelhead, bull trout, and other fish species has also been dramatically reduced. The Umatilla River population of spring Chinook salmon was reported extinct in 1926 (Boyce 1986). With declining fish populations, Tribal governments, federal, state and international agencies were obligated to eliminate or significantly reduce subsistence and sport fisheries by the mid-1970s. The Federal government listed Middle Columbia River summer steelhead and Columbia River bull trout in the Umatilla subbasin as threatened species under the ESA in 2006 and 1999, respectively.

In the mid-1980s, a successful, hatchery-based salmonid reintroduction effort for the Umatilla River was instituted using neighboring strains of various salmonid species. Although hatchery programs currently support subsistence and restricted sport fishing opportunities for steelhead and Chinook and Coho salmon, there remains significant need to re-build viable, harvestable, and sustainable naturally-produced fish stocks throughout the basin. Our primary area of focus for restoration and monitoring work in FY 2022 was Meacham Creek, Wildhorse Creek, Birch Creek, and the mainstem Umatilla River (Figure 2).



**Figure 1.** Umatilla River Subbasin



**Figure 2. Umatilla River Basin FY 2022 UAFHP Project Sites**

|   |  |  |
|---|--|--|
| <p><b>1: UmaBirch PA3 and 2 EC &amp; Design</b><br/> <b>UmaBirch CE/Design:</b> Continued progress towards finalizing the conservation easement to protect over 325 acres of floodplain and 9.5 cfs of instream flow from surface water rights at the confluence of the Umatilla River and Birch Creek. Concurrently developing a restoration design. Developed 60% restoration design for both project areas. Drafting the final EA. Continued progress on the Sec. 408 application for the Pendleton 2A levee on PA2, developing a design to replace the Taylor Ln bridge on PA3, and working towards decommissioning the feedlot on PA3.</p> | <p><b>2: Umatilla Basin Assessment:</b> Completed review and developed the Assessment document, technical appendices, spreadsheet tools, and geodatabases to 90%. Progressing to develop the Prioritization Tool in 2023</p>                         | <p><b>3: Meacham Creek RM 10-11:</b> Continued to work collaboratively with USFS and landowner neighboring project. A land owner agreement has been established. Design has stalled at 60% due to waiting for guidance from NMFS for to inform 90% design.</p> |
|   | <p><b>4: Imeques Reach Floodplain Enhancement Design:</b> Worked with engineer to progress restoration design to 30% and expected to be completed in 2023. Facility design is stalled at 15% due to needing to select the intake design in 2023.</p> | <p><b>5: West Birch and Stanley Creek Barrier Removal:</b> Worked collaboratively with private landowners to progress restoration design development 60%.</p>  |

## COMPLETED WORK BY WORK ELEMENT

This section highlights and describes completed work elements in an outline similar to our statement of work on CBFish.org. Each work element with associated identifier code and milestone are listed, followed by a comprehensive summary of completed work under each work element. In addition to a description of completed work elements specific to restoration activities, we briefly highlight habitat inventory results specific to UAFHP efforts outlined for this contract period.

### Contract 73982 REL 150 (CY 2022)

#### **Work Element A: 119. Manage and Administer Projects**

**Work Element Title:** Manage and Administer Project

**Milestone Deliverable:** Effective implementation management and timely contract administration

- A. Evaluate current workload and monitor implementation progress.
- B. Develop work plan consistent with expected budget availability and potential tasks or projects.
- C. Integrate and manage the planning, permitting, environmental compliance, and coordinated implementation of contract actions.
- D. Implement actions consistent with CTUIR River Vision. Complete CTUIR and BPA review of the funding package (SOW, Budget, and Property Inventory) for the upcoming contract period.

This work element includes general administration of the CTUIR Umatilla Anadromous Fish Habitat Project (UAFHP). CTUIR staff managed and administered project activities in accomplishing work elements and milestones with associated costs.

#### **Work Element B:**

#### **Work Element C: 114. Identify and Select Projects**

**Work Element Title:** CTUIR Umatilla Subbasin Restoration Coordination

**Milestone Deliverable:** Develop or update prioritized Habitat Project list

CTUIR UAFHP staff developed and annually updated habitat restoration and enhancement projects through coordination and planning with State, Federal and local partners, and private landowners consistent with the Umatilla Willow Subbasin Plan (NPCC 2005). This included participation with the UBWC and the Umatilla County SWCD. CTUIR completed a prioritized list of potential and final developed projects to be implemented contractually with BPA and other funding sources for the upcoming fiscal year and future year planning. Project development and planning were incorporated into this WE to assist in development of future funding packages. The CTUIR also continued to assist in completing the mainstem Umatilla River Assessment and Action Plan during this contract period. It is anticipated that this document will tier to all of the documents listed below and build on those to focus on the mainstem habitat actions, prioritized by reach and fish species.

Final Umatilla Willow Subbasin Plan (NPCC 2005),  
Middle Columbia River Steelhead Recovery Plan (NMFS 2009),  
Recovery Plan for the Coterminous United States Population of Bull Trout (*Salvelinus confluentus*) (USFWS 2015), Meacham Creek Watershed Analysis and Action Plan (Andrus & Middel, 2003), and  
Birch Creek Watershed Action Plan (CTUIR 2016).

#### **Work Element D: 191. Watershed Coordination**

**Work Element Title:** Umatilla River Watershed Coordination Duties

**Milestone Deliverable:** Coordinate Watershed Association Activities

- A. Coordinate with Umatilla Basin Watershed Council
- B. Coordinate with NRCS and the Umatilla County Soil and Water Conservation District
- C. Network with professionals in the field of habitat restoration
- D. Coordinate with co-manager ODFW and other Federal agencies

CTUIR UAFHP staff participated and coordinated with multiple agencies and stakeholders in the Umatilla River subbasin through the Umatilla River Basin Restoration Team meetings, including ODFW, USDA-FS, NRCS, the Umatilla County SWCD, Umatilla Basin Watershed Council and local stakeholders to enhance natural resources, identify problems and solutions, coordinate efforts to prevent duplication, enhance communication and cooperation and identify funding and cost share opportunities within the Umatilla River subbasin. Staff further coordinated with other agencies (e.g. USFWS, NOAA, EPA, BPA and etc.) in planning and implementing partner habitat restoration and enhancement projects, ESA planning processes, and project prioritization and selection processes. CTUIR staff prepared agreements, if necessary, to assign duties and responsibilities to the appropriate entities. We also developed documents, press releases, web sites, and other communications to impart information to participating stakeholders and the public. This effort was made much more challenging because of the pandemic.

### **Work Element E: 99. Outreach and Education**

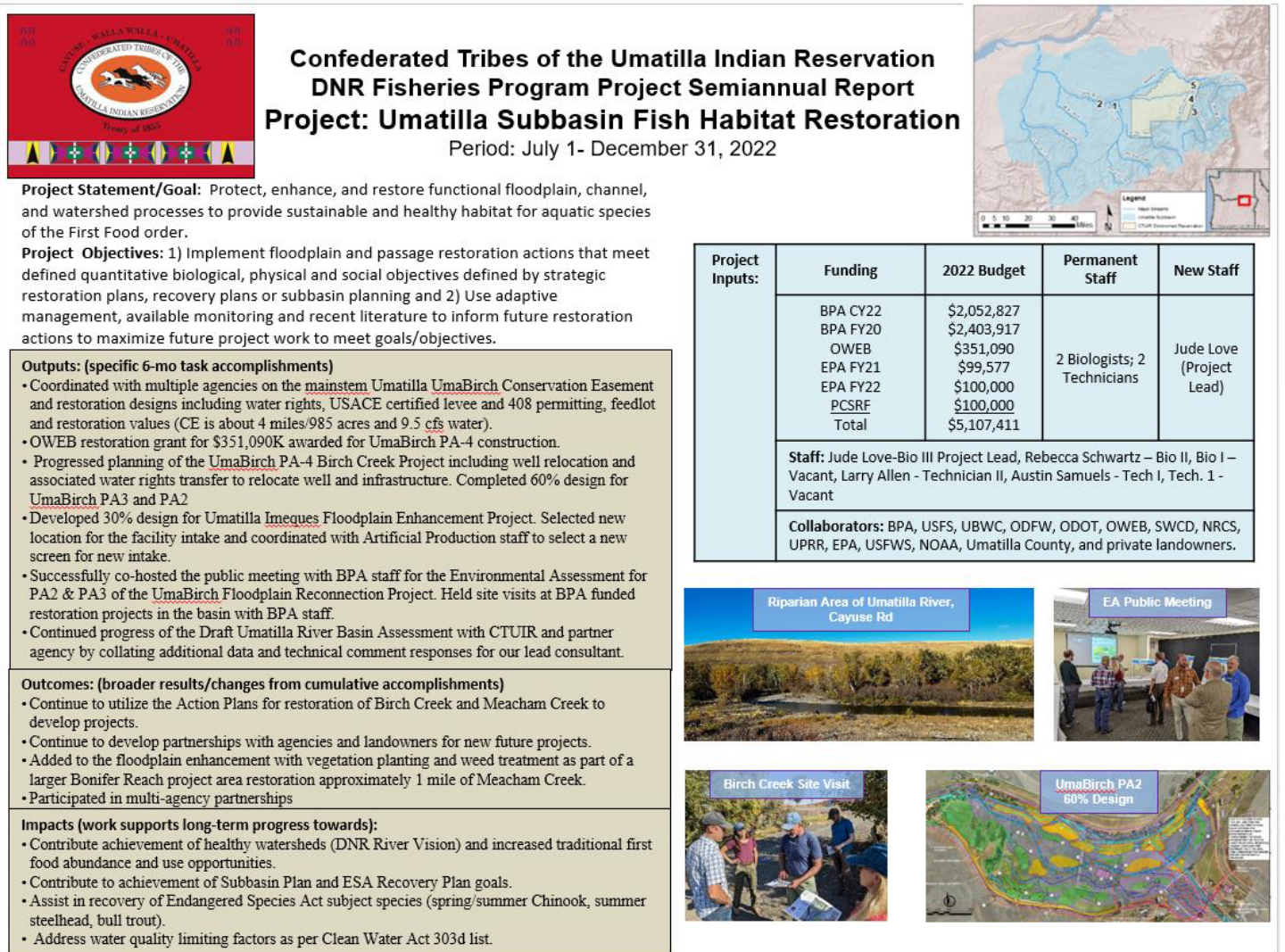
**Work Element Title:** Public Outreach and Education

**Milestone Deliverable:** Complete Outreach and Education Activities

CTUIR UAFHP staff educated the public on natural resource protection and restoration principles, and communicated on project activities throughout the year whenever possible. Activities during 2022 included: providing presentation material for Watershed Field Days, communicate with local stakeholders and landowners during the outreach open house for the UmaBirch PA 1 and 2 EA, and participate at the CTUIR DNR open house. The staff on attended River Restoration Northwest Annual Conference in February. Lastly, the 5 CTUIR Habitat Subbasins met in person in June for the annual team meeting to visit recently completed projects.

CTUIR UAFHP staff completed CTUIR semi-annual reports summarizing project objectives and outputs, expected outcomes, and resulting impacts of project restoration activities (Figure 3). These reports are used by the CTUIR Department of Natural Resources to inform CTUIR staff and government officials, other agencies and entities, and the public of project activities.

**Figure 3.** CTUIR semi-annual report for the CTUIR UAFHP, July 1– December 31, 2022.



## **Work Element D: 165. Produce Environmental Compliance Documentation**

**Work Element Title:** Produce Environmental Compliance Documentation

**Milestone Deliverable:** Compliance Documentation and Assistance for Environmental and Cultural Resource Clearances

The following milestones were completed for FY 2022 projects:

CTUIR successfully submitted many applicable documents to the appropriate federal, tribal, state, county entities for select implementation projects in a timely manner required under work elements related to producing environmental compliance documentation in FY2022. Secondary environmental compliance accomplishments during the reporting period included coordination with various compliance personnel to prepare supplemental documentation and reporting for ongoing and planned management actions. Environmental compliance methods include development of appropriate documentation under various federal, Tribal, state and county laws and regulations governing federally funded project work. Methods involve coordination with various federal and state entities agencies and development and submittal of permit applications, cultural clearances, biological assessments, National Environmental Policy Act checklists, etc., as necessary. Part of the environmental compliance work element includes planning and developing site-specific proposals tailored to accomplish fisheries goals and meet compliance standards. The details concerning the implementation of treatments and preparations for putting efforts on the ground, including preparations for subcontracting, and specifics in regarding the safeguarding of ESA-Listed species during the implementation process are outlined in the proposals.

- 1) UAFHP Environmental Compliance Documentation
- 2) ESA consultation with NMFS for FY 2022 project activities was covered under the Terms and Conditions of the HIP III Programmatic Biological Opinion (HIP III BO). Project activities covered under the HIP III BO included:
  - Operate and Maintain Habitat/Passage/Structure (WE H: 186; WE I: 186): CTUIR monitored and maintained existing easements and habitat improvement sites. Maintenance included vegetation watering and installing bioengineering treatments to stabilize habitat features.
  - Maintain Vegetation (WE J: 198): Project activities included maintaining plants on NRCS CREP tracts and treating noxious weeds.
  - Plant Vegetation (WE K: 47): Project activities included planting in Meacham Creek Project Areas.

CTUIR submitted a letter and attachments with necessary project descriptions and geo-referenced maps for assisting BPA with Section 106 National Historic Protection Act consultations and environmental compliance. The following projects were submitted for compliance:

- 1) UmaBirch Floodplain Restoration and In-stream Enhancement PA 1-3
- 2) Additional surveys for UmaBirch PA-4 were completed to incorporate the well relocation APE

Cultural Resources protection and preservation compliance was ongoing during this contract period. The CTUIR Cultural Resources Protection Program is in the process of completing the final report to complete SHPO Cultural for:

1. UmaBirch PA 1-3
2. West Birch and Stanley Creek barrier removal
3. Meacham RM 10-11
4. Imeques Reach

Ongoing projects will all require Cultural Resource Protection and Preservation monitoring during construction in 2023. The UmaBirch Floodplain project and West Birch projects will be ongoing into the next CY.

## **Work Element F: 122. Provide Technical Review and Recommendation**

**Work Element Title:** Review and Provide Technical Input on Issues and Topics that Affect the Areas Natural Resources

**Milestone Deliverable:** Provide Technical Input and Summaries to Enhance or Protect Natural Resources in the Subbasin

- A. Conduct review and provide input as necessary on natural resource preservation issues.
- B. Review and provide technical input on issues that may adversely affect natural resources.

CTUIR UAFHP staff reviewed and provided technical input as applicable on plans and proposals by entities within the Umatilla River Basin that may adversely impact floodplain or riverine processes and biota productivity. Other projects that were reviewed included relevant public project planning, development and review of grant funding proposals, and proposed landowner projects. Project staff provided input to multiple CTUIR departments on annual activities relevant to work within the floodplain, rivers, and wetlands, US Army Corps of Engineers/Oregon Division of State Lands removal-fill permit applications, and CTUIR Stream Zone Alteration (SZA) Permit applications on work proposed within the floodplain on Reservation land.

### **Work Element G: 172. Conduct Pre-Acquisition Activities**

**Work Element Title:** Conduct pre-acquisition activities for Birch Creek-Umatilla River confluence and East Birch Properties

**Milestone Deliverable:** Produce the necessary documents necessary to move forward with purchasing a conservation easement.

Significant coordination and planning efforts were accomplished in the 2022 contract year to advance the UmaBirch project to the potential purchase of most of the floodplain property and the execution of a conservation easement on the remaining floodplain portion of the property. The UAFHP has been working closely with the landowner, other CTUIR projects, the Blue Mountain Land Trust, and Western Rivers Conservancy and BPA to determine the scope and terms of the land and water conservation easement, conservation measures and value. Over the course of this contract year, all parties have met intently to coordinate all activities necessary for completion of the agreement. An appraisal was completed during this CY. The deliverable for the work element of producing documents and surveys necessary for the conservation easement has been met. CTUIR, landowner, and other partners will continue progress in 2023.

### **Work Element H: 186. Operate and Maintain Habitat/Passage/Structure**

**Work Element Title:** Inspect and Maintain Function of In-stream Improvement Structures

**Milestone Deliverable:** Maintain Proper Operation of In-stream Habitat Structures

- A. Environmental compliance requirements complete.
- B. The inspection, replacement and/or maintenance of passage and habitat structures.
- C. Hire contractor to perform work.

CTUIR monitors 8 passage rectification projects to assure that treatments are effectively working and to insure that intrusive objects are not interfering with the designed function of the passage structures (Table 3). Routine quarterly scheduled site visits of individual projects are conducted either independently by the CTUIR or jointly with project partners such as ODFW. Site visits typically follow significant flow events or responses to landowner requests at project sites. Project maintenance included, but was not limited to, meeting specified conditional language in state and Federal permits, maintaining debris that is routinely captured or caught on in-stream structures, responses to landowner requests and concerns, and completion of post-treatment surveys to monitor and quantify changes to physical and ecological responses.

### **Work Element I: 186. Operate and Maintain Habitat/Passage/Structure**

**Work Element Title:** Maintenance of Habitat Features Associated with Project Conservation Agreements

**Milestone Deliverable:** Maintenance of Land or Structures Associated with Conservation Agreements

- A. Environmental compliance requirements complete.

B. Adhere to details of existing easements and/or initiate additional agreements as feasible.

The purpose of these Conservation Agreements is to protect, enhance, and restore functional floodplain, channel, and watershed processes to provide sustainable and healthy habitat for aquatic species in the Umatilla River subbasin. The UAFHP have and will continue to maintain the individual projects to ensure that project structures and fencing are functioning and habitat recovery is progressing towards meeting projects goals and objectives. The CTUIR currently maintains 16 conservation agreements. Current agreements provide secured access and protection of resources for functional floodplain, channel watershed processes to provide sustainable and healthy habitat for aquatic species 26 miles of stream. CTUIR routinely conducts custodial maintenance on individual projects to ensure that project structures and fencing are functioning and habitat recovery is progressing towards meeting projects goals and objectives. Activities include, but are not limited to, installing and repairing riparian cattle exclusion fences, maintaining or installing water gaps, riparian and floodplain plantings and maintenance, noxious weed control, maintenance of fish habitat improvement structures, and landowner coordination and education. This fall and winter the UAFHP staff planted 1,970 plants throughout the Meacham Bonifer Project Areas.

**Table 3.** Habitat passage structures monitored and maintained by CTUIR to meet design specifications.

| Year | Stream           | Stream Location | Project Description  |
|------|------------------|-----------------|--|
| 2007 | Meacham Creek    | RM 1.7          | Passage rectified by removing large cabled boulders (improved adult passage)                                     |
| 2007 | Meacham Creek    | RM 20.2         | Partial dam removed (juvenile and adult passage)   |
| 2007 | Camp Creek       | RM 0.3          | Partial dam removal (juvenile and adult passage)   |
| 2007 | Greasewood Creek | RM 0.4          | Partial dam removal (juvenile and adult passage)   |
| 2007 | West Birch Creek | RM 3.2          | Roughened channel to restore proper gradient and reduce step height at road bridge crossing for adult passage    |
| 2008 | West Birch Creek | RM 2.7          | Hoelt Dam fish passage rectification (juvenile and adult passage)  |
| 2019 | Umatilla River   | RM 48.2         | Partial dam removed (juvenile and adult passage)   |
| 2019 | Wildhorse Creek  | RM 18.8         | Passage rectified by removing concrete grade control structure and replacing bridge (Juvenile and adult passage) |

### Work Element J: 198. Maintain Vegetation

**Work Element Title:** Maintain Vegetation and Control Noxious Weeds in Project Areas within the Umatilla River Subbasin

**Milestone Deliverable:** Maximize Survival of Native Vegetation in Enhancement Project Areas

- A. Environmental compliance requirements complete.
- B. Physical removal of non-preferred species of vegetative growth from project area.
- C. Weed control in project areas by chemical means.
- D. Water vegetation and reduce weed competition to improve survival at CTUIR project areas.
- E. Till established weed areas as necessary for noxious weed control.

Project activities conducted in 2022 included the monitoring and maintenance of 16 conservation agreements on

numerous individual landowner properties. Watering, weeding and maintenance methods for each Conservation Agreement and project area is important for enhanced native vegetation and project site but maintenance varies by site conditions. Strategies to address weeds are included in agreements that are either completed by the landowner, CTUIR, subcontractor, and/or through the County Weed Control Board. CTUIR staff provides assistance to landowners by coordinating and managing herbicide application, providing funding, and developing treatment strategies. Manual, biological and chemical treatment options are utilized by CTUIR and may be employed when consistent with existing standards. The project treated 402.43 acres of property within the Umatilla subbasin in 2020 (Table 4). Weed control is essential in establishing native grass and plant species. The UAFHP partnered with Umatilla County and the Forest service to spray/control noxious weeds on sites where chemical application is necessary. The team identified problem weeds, determined the appropriate herbicide and selected the most effective application methods and rates in accordance with the National Oceanic and Atmospheric Administration's (NOAA) Biological Opinion under BPA's Habitat Improvement Program. The UAFHP utilizes backpack spraying applications to treat perennial, annual and biennial weed species. All herbicide applications are consistent with Oregon Revised Statute (ORS).570.505 and Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) Regulations. CTUIR complies with BPA standards and supplies a report to BPA detailing the types and quantities of herbicides applied to specified locations.

Additionally, Habitat Department Staff assisted the Rangeland Management Department in monitoring invasive Japanese Knotweed at the Imeques Project and various locations along the Umatilla River. The Habitat Department also assisted Tri-County CWMA in Japanese knotweed control found in project and conservation agreement areas after the 2020 flood events. The department staff will be retaking the Pesticide Applicators exam in 2022 as well.

**Table 4.** Noxious weed treatments completed by location within the Umatilla River Basin, 2022

| Agreement Name             | Latitude | Longitude  | Acres Treated | Method                  | Species Targeted   |
|----------------------------|----------|------------|---------------|-------------------------|--|
| Meacham Creek              | 45.63673 | -118.35686 | 56            | Mechanical,<br>Chemical | <i>Potentilla recta</i> , <i>Centaurea</i> spp., <i>Echium vulgare</i> , <i>Rubus</i> spp.   |
| Wildhorse Creek            | 45.80863 | -118.49055 | 12.5          | Mechanical,<br>Chemical | <i>Conium maculatum</i>  |
| B&G Resources              | 45.66254 | -118.99011 | 52            | Mechanical,<br>Chemical | <i>Lepidium</i> spp., <i>Centaurea</i> spp.<br><i>Chondrilla juncea</i>  |
| Wujek                      | 45.66254 | -118.99011 | 28            | Chemical                | <i>Polygonum cuspidatum</i> ,<br><i>Fallopia japonica</i>  |
| Birch Creek PA-4           |          |            | 16            | Mechanical,<br>Chemical | <i>Conium maculatum</i> <i>Dipsacus</i> <i>fullonum</i> , <i>Onopordum</i> <i>acanthium</i> , <i>Salsola</i> , <i>Chondrilla</i> <i>juncea</i> |
| <b>Total Acres Treated</b> |          |            | <b>164.5</b>  |                         |  |

## Work Element K: 47. Plant Vegetation

**Work Element Title:** Planting within Umatilla River Subbasin Project Areas

**Milestone Deliverable:** Complete Scheduled Tree and Shrub Plantings in Project Areas

- A. Environmental compliance requirements complete.
- B. Agreement with the Native Plant Nursery for Growing Plants and Developing Plant Protocol.
- C. Establish Planting Locations in Existing Project Areas for Increased Recovery.

UAFHP staff annually plant vegetation and distribute native grass seed in areas we have implemented existing and new habitat enhancement projects or have identified a need in maintained riparian Conservation Agreement areas. In 2022, the UAFHP completed a fall planting effort within the previously implemented Meacham Creek Floodplain Restoration and In-stream Enhancement Projects. The fall planting effort included installing 1,970 containerized, native plants in Meacham Creek.

Planting tasks include site planning and development of planting strategies, collection and preparation of materials (pruning and conditioning of live willow material), pre-order coordination with the CTUIR Tribal Native Plant Nursery, and installation. Planting techniques are customized for conditions within each project area. Planting location, species, age, form (cuttings, saplings, bare-roots, potted, plugs), and soil/substrate conditions were considered and addressed during the implementation planning phase. The CTUIR UAFHP staff work closely with the Tribal Native Plant Nursery to collect local seed and plant stock to provide native plants for particular project areas by elevation and planting zones.

### **Work Element L: 115. Produce Inventory or Assessment**

**Work Element Title:** Produce Umatilla River Subbasin Assessment

**Milestone Deliverable:** Deliver Subbasin Assessment and Assessment Action Plan

The UAFHP awarded a contract for the Assessment and Action Plan to Tetra Tech Inc. in 2020. The CTUIR worked with Tetra Tech Inc. in identifying data gaps and collating the necessary data and identification of data gaps in 2021. The 90% final draft assessment document was delivered by the end of this CY. The UAFHP worked closely with the CTUIR GIS department to transfer this data into new maps in the CTUIR repositories and in public databases as well as determining where critical data gaps still exist.

### **Work Element M: 175. Produce Design and/or Specifications**

**Work Element Title:** West Birch Creek Fish Passage Project Design

**Milestone Deliverable:** Final Design

CTUIR collaborated with the ODFW and UBWC to design the replacement of two fish passage barriers with 1) an open-bottom arch bridge on Stanley Creek and 2) complete removal of another current abandoned irrigation diversion structure entirely on West Birch Creek. The UBWC have secured match funds to complete this work through an OWEB grant. An environmental engineering firm was solicited and contracted to complete topographic surveys, coordinating with the county and city by the UBWC. The UAFHP has worked with UBWC and engineering firm Tetra Tech Inc. to complete the 90% design and in the process of completing the cultural resource consultation.

### **Work Element N: 175. Produce Design and/or Specifications**

**Work Element Title:** Meacham RM 10 Habitat Enhancement Project Design

**Milestone Deliverable:** Complete Meacham Creek RM 10 Habitat Enhancement Design

CTUIR continued to work collaboratively with the USDA USFS Walla Walla Ranger District to develop the work plan for Review of the 60% basis for design report was completed in the previous CY. Progression has stalled during this review period due to internal staff changes in addition to needing confirmation from the USFS and NMFS that the 60% BDR fits under current ARBO II measures in order to move forward. Yellow Flag Iris was identified at the project location and is a known invasive species that needs to be addressed. A draft USFS agreement and financial plan for the project was completed and submitted for review by the USFS.

### **Work Element O: Work Element T: 175. Produce Design and/or Specifications**

**Work Element Title:** Imeques Project Design

**Milestone Deliverable:** Imeques Reach habitat Enhancement Final Design

CTUIR developed a work plan and advertise for solicitation of engineering services for design. Kleinschmidt-R2 was selected for development of design. During this CY the 60% conceptual designs and draft basis for design report related to floodplain design have been delivered. Development of the feasibility assessment for the facility has been stalled at 15% due to a decision still having to be made on the new intake screen. The UAFHP staff are working closely with our Fisheries Program Artificial Production and Monitoring and Evaluation departments on design with intent to improve acclimation facility operations and maintenance, trap site and fish habitat improvements.

**Work Element P: 175. Produce Design and/or Specifications**

**Work Element Title:** UmaBirch Properties – Floodplain Restoration and Habitat Enhancement Design

**Milestone Deliverable:** 100% UmaBirch Floodplain Restoration and habitat Enhancement Design

In 2022, UAFHP staff continued towards finalizing the conservation easement for restoration work on the UmaBirch project established in 2017. Construction of PA 4 has been delayed to the spring of '23 due to the application review time for approval to relocate the irrigation well on the floodplain.

The design indicates a phased construction approach into four distinct project areas (PAs). The 60% Basis for Design Reports for PAs1-3 were delivered during this review period. It was determined during the summer that a new bridge that separates PA 3 and 2 on Taylor Ln is needed due to erosion around the stream right abutment. Design for this bridge will be delivered in 2023 with additional scope and funds added to the existing contract.

**Work Element Q: 132. Produce (Annual) Progress Report**

**Work Element Title:** Produce Annual Progress Report CY22 (Jan. 1, 2022, thru Jan. 31, 2023)

**Milestone Deliverable:** Completed annual progress report

- A. Review progress report format requirements
- B. Upload finalized RM&E technical report for BPA to publish
- C. Distribute progress report for BPA review and comment
- D. Upload non-technical progress report to Pisces
- E. Review progress report format requirements
- F. Draft CY2021 technical report
- G. Interagency/tribal review
- H. Confirm BPA posted received

The CY2022 BPA Annual Progress Report was completed and was uploaded to BPA through Pisces in February 2023.

**Work Element R: 185. Produce Pisces Status Report**

**Work Element Title:** Periodic Status Reports for BPA

**Milestone Deliverable:** Complete Periodic Pisces Status Reports

CTUIR reported to BPA periodically during the contract period on the status of each statement of work element, and milestones and deliverables using the computer program Pisces:

February-June (2/1/2022/ -  
6/30/2022)

July-September (7/1/2022-  
9/30/2022)

October-December (10/1/2022 -

12/31/2022)

Final January (1/1/2022-1/31/2023)

The BPA Contracting Officer Representative (COR) reviewed the Pisces status reports, recommended changes as necessary and accepted them electronically upon approval. Additionally, upon completion of each deliverable milestone, we provided metrics and final project location (latitude and longitude) when required. These Pisces status reports provide a tool for the BPA COTR and administrative staff to track project progress in meeting contract requirements.

## Discussion

The projects implemented in this reporting period were carefully designed in previous years to mitigate for the identified ecological concerns and align with local assessments. The CTUIR approaches restoration utilizing the Umatilla River Vision, previously described (Jones et al. 2008). The process-based philosophy of the River Vision encourages development of projects that address multiple River Vision Touchstones, limiting factors, and ecological concerns (Table 7).

Habitat protection and restoration actions, like those completed during this review period, were identified in numerous local assessments and planning documents. The Umatilla River Basin TMDL and WQMP (ODEQ and CTUIR 2001), Umatilla/Willow Subbasin Plan (NPCC 2005), Middle Columbia Steelhead DPS ESA Recovery Plan (2009), and the Recovery Plan for the Coterminous United States Population of Bull Trout (USFWS 2015) all identify one or more habitat restoration or protection actions implemented by the UAFHP in this reporting period as a way to address issues facing ESA-listed fish species and/or water quality concerns. In addition to the subbasin-scale planning documents, the restoration activities completed by the UAFHP in this reporting period are also supported by several smaller scale watershed assessments. The Meacham Creek Watershed Analysis and Action Plan (Andrus and Middel 2003) and the Birch Creek Watershed Action Plan (CTUIR 2016) both specifically support the restoration actions completed in those watersheds.

## OBSTACLES AND LESSONS LEARNED

The largest obstacles to during the 2022 reporting period were staff changes and working through design complications to reach an agreed upon resolution. Examples include 1) Discovering erosion on UmaBirch PA 3 near the Taylor Ln. Bridge and determining the best way to proceed to receive the best downstream delivery of the stream and floodplain connectivity; 2) Selecting an appropriate screen for the existing intake at the Imequas Reach Facility; and 3) Delaying implementation of UmaBirch PA4 due to deciding to relocate the existing well and irrigation infrastructure across Birch Creek. These obstacles created multiple challenges to communication, execute implementation to meet existing timelines, and staff daily activities. Throughout this period, project staff have adapted and strategized together to continue moving each project forward.

Overcoming these constraints as best as possible, the UAFHP completed work in areas with multiple jurisdictions, subcontracted several large design and construction contracts, and maintained complex partnerships with landowners and local action agencies. The wide variety of work presented a number of unique challenges. As a result of working through these challenges, the UAFHP has learned several lessons that will inform future project work.

**Table 5.** The Umatilla Anadromous Fish Habitat Project objectives relative to the Umatilla River Vision touchstones (Jones et al. 2008), BPA 2008 Fish Accords primary limiting factors (Fish Accords 2008) and NOAA’s ecological concerns (NMFS 2009).

| Umatilla Habitat Program Objectives   | Umatilla River Vision 2008 Touchstones Addressed                           | BPA 2008 Fish Accords Primary Limiting Factor's Addressed     | NOAA Ecological Concerns   | NOAA Ecological Concerns Subcategories  |
|---|--|---|--|---|
| Protect and conserve natural ecological processes that support the viability of fish populations and their primary life history strategies      | Biota<br>Connectivity<br>Geomorphology<br>Hydrology<br>Riparian Vegetation | In-channel Characteristics<br>Floodplain/Riparian<br>Sediment | Multiple(Habitat Quantity, Injury and Mortality, Peripheral and Transitional Habitats, Channel Structure and Form, Sediment Conditions, Water Quality, Water Quantity, Population Level Effects) | Multiple  |
| Restore passage and connectivity to habitats blocked or impaired by artificial barriers and maintain properly function passage and connectivity | Geomorphology<br>Connectivity  | Passage/Entrainment   | Habitat Quantity   | Anthropogenic Barriers  |
| Maintain and restore floodplain connectivity and function   | Aquatic Biota, Connectivity, Riparian Vegetation, Geomorphology, Hydrology | Water Quality-Temperature<br>Riparian/Floodplain              | Food, Peripheral and Transitional habitats, Riparian Condition, Channel Structure and Form, Water Quantity   | Altered Primary Productivity, Altered Prey Species Composition and Diversity, Riparian Condition, LWD Recruitment, Floodplain Condition, Bed and Channel Form, Instream Complexity, Decreased Water Quantity, Altered Flow Timing |
| Restore degraded and maintain properly function channel structure and complexity  | Connectivity, Riparian Vegetation, Geomorphology                           | In-channel Characteristics                                    | Riparian Condition, Peripheral and Transitional Habitats, Channel Structure and Form   | Riparian Condition, LWD Recruitment, Side Channel Conditions, Floodplain Condition, Bed and Channel Form, Instream Structural Complexity  |
| Restore riparian condition and LWD recruitment and maintain properly functioning conditions   | Aquatic Biota, Riparian Vegetation, Hydrology                              | In-channel Characteristics<br>Riparian/Floodplain             | Food, Riparian Condition   | Riparian Condition, LWD Recruitment, Altered Primary Productivity, Food-Competition, Altered Prey Species Composition and Diversity   |
| Restore natural hydrograph to provide sufficient flow during critical periods   | Connectivity, Aquatic Biota, Hydrology,                                    | Floodplain/Riparian<br>Water Quality-Temperature              | Habitat Quantity, Water Quality, Water Quantity  | HQ-Competition, Oxygen, Increased Water , Alter Flow Timing   |
| Improve degraded water quality and maintain unimpaired water quality  | Hydrology, Aquatic Biota   | Floodplain/Riparian<br>Water Quality-Temperature              | Riparian Condition, Sediment Conditions, Water Quality   | Riparian Condition, Decreased Sediment Quantity, Temperature, Oxygen Turbidity, Toxic Contaminants  |

## ADAPTIVE MANAGEMENT

The UAFHP places a heavy weight on adaptive management, applying lessons learned in past years, and using research and action effectiveness monitoring data to support project decision making.

This contract year the UAFHP brought on a new Project Lead Fisheries Habitat Biologist III, transitioned the Biologist I to II, and looking to still fill the Biologist I position. The Biologist III has been a tremendous asset to the UAFHP by bringing in a new perspective to strategizing working through project related constraints, unifying staff to communicate and work more effectively together, communicating project goals with landowners, and project stakeholders.

This CY include being adaptable to rapid changes in department staffing and learning how to adapt to multiple roles in order to ensure projects are completed and met on time. Additionally, reflecting on how to improve, plan, and coordinate planting will be critical when construction is completed at UmaBirch PA 4 in the next CY. The UAFHP continues to improve the species mix based on ecological suitability and enhancement of First Foods species. Methods for planting more efficiently, like hydro-seeding riparian species in addition to plugs has been researched to incorporate into the UmaBirch wetlands that will be constructed next CY.

Utilizing a River Vision (Jones et al 2008) approach, the staff have developed an implementation approach to allow the water to do as much work for us as possible. Not only does this align perfectly with a process-based approach, it also minimizes impacts to the resources in the short term. This approach, specific to constructing new side channels or main channels, relies on the premise that they are constructed in the fall and allowed to overwinter. These channels are roughly excavated, to allow the water to activate the newly constructed section at a designed flow elevation (e.g. typically about 1.2 year flow return interval). Channel dimensions are not constructed to exact widths or depths, as the water will be allowed to scour the channel to the appropriate dimensions. Also the project strives to only excavate the minimum amount necessary to reconnect relic channels. This accomplishes the following ecological/biological benefits:

- There is less excavation, as the water is allowed to more clearly define its own channel geomorphology, which reduces overall project costs;
- Allowing the water to define its own course more directly also likely contributes to longer term stability, as the water is creating its own channel;
- This allows the newly disturbed soil to gain weathering, which reduces the amount of turbidity produced;
- The newly disturbed soil is washed into place by hand. This turbid water is pumped into the floodplain and allowed to slowly re-infiltrate slowly, which further reduces future turbidity;
- When the turbidity is realized in the system, it is at a time of the year when there is substantially less stress to the fish that are present:
- Water temperatures are lower (i.e. there's less oxygen requirements on the fish);
- The turbidity presumably settles out along the length of newly reconnected channel prior to reaching areas occupied by fish;
- This occurs at a time of the year when there's more water, which allows fish more refugia areas to avoid any potential turbidity stressors; and,
- This approach minimizes the need for fish salvage, and thus, reduces the incidental take of listed and resident fish.

A gap in our current feedback loop stems from the simple truth that not many of these large-scale, full floodplain projects have been implemented and monitored in a manner that provides clear, concise answers. This is particularly true for certain project elements, like hyporheic exchange and long-term ecological improvements. Another flaw is the lack of resources available that allows project sponsors to clearly articulate finding of monitoring that is completed to colleagues.

## SUMMARY AND CONCLUSIONS

The CTUIR Habitat Program utilizes a process based approach to restoration activities, following the CTUIR River Vision (Jones et al 2008), Upland Vision (Endress et al 2019) and First Foods policies (Quaempts et al 2018). These guiding documents provide the framework in which our program develops, designs, implements and monitors restoration activities and projects. Following this approach, project staff have developed a more holistic way to meet project objectives, provide the system with tools to place it on a recovery trajectory and allow the water to do some of the work for us.

In accordance with the 2006 NPCC solicitation outline, the CTUIR UAFHP has focused its restoration activities primarily on Meacham Creek, Birch Creek, and mainstem Umatilla River. However, project restoration activities occur in other areas of the basin where floodplain and riverine processes are treated with outcomes that are beneficial to ecological processes, water quality and fish production. The Meacham Creek Watershed has long been a primary focal point of the CTUIR effort to improve habitat conditions in the Umatilla Basin because of its location, size, historical significance, and recovery potential. Table 8 highlights the CTUIR Umatilla Anadromous Fish Habitat Project restoration accomplishments since 2007.

Proposed restoration actions have focused on protection, enhancement, and restoration of functional floodplain, channel and watershed processes at multiple scales using passive and active restoration techniques. Over the past decade, the CTUIR Department of Natural Resources and UAFHP have transitioned from restoration toward a fixed endpoint to address symptoms to a restoration of processes. Restoration of process is more likely to address causes of river ecosystem degradation, whereas restoration toward a fixed endpoint addresses only symptoms. Specific restoration actions proposed for completion by CTUIR include levee removal and or modification, floodplain and channel construction, in-stream and floodplain large wood additions, in-stream structure placement, wetland enhancement, floodplain and riparian plantings, noxious weed removal, riparian management through fencing, and removal of physical migration barriers. Threats from climate change, invasive non-native species, and chemical/fuel spills are becoming increasingly relevant within the Umatilla Watershed. The negative effects associated with these emerging dangers have the potential to severely compromise ongoing restoration efforts. The obvious and most direct potential threat to restoration efforts in the long-term is the increase in stream and river temperatures to an uninhabitable level for salmon and trout in the near future. The UAFHP has and will continue to maintain project areas under secured conservation agreements, or conservation easements/land acquisition, on private properties for protection and enhancement of floodplain and riparian habitat investments. Completed project activities are described below in more detail in the context of the watershed with reference to annual progress reports.

During this reporting period, the UAFHP continued to implement habitat improvement projects. While implementation of UmaBirch PA4 had to be delayed, UAFHP staff completed maintenance of ongoing weed treatments, riparian vegetation plantings/enhancement and passage projects maintenance at properties where the CTUIR has pre-existing riparian conservation agreements like Athena Bridge.

The CTUIR UAFHP made progress as well as completion on several design documents that will serve to inform projects in the long and near term future of the UAFHP. The UAFHP began the design process for a floodplain reconnection and in-stream enhancement project on Imeques Reach of the Umatilla River, progressed design for UmaBirch PAs 1-3 to 60%, developing design for a replacement bridge to prevent continued upstream erosion, progressing on decommissioning the CAFO on PA 3, and working through the Sec. 408 application for the Pendleton 2A Levee setback and review process with the USACE and other project partners. While the Meacham Creek RM 10-11 design has been delayed to due additional planning needs, implementation is anticipated for 2024. The UAFHP made great strides on the Umatilla Basin Assessment and Action Plan by receiving the final draft submittal of the Assessment and reviewing the first draft of the Prioritization Tool.

A principal strength and focus of the CTUIR UAFHP project is the ability to work cooperatively with the various entities throughout the restoration process. Staff participated and cooperated with multiple agencies and stakeholders in the

Umatilla Basin Watershed including ODFW, USDA-FS, Natural Resource Conservation Service, Umatilla Basin Watershed Council, Umatilla County Soil and Water Conservation District, and local stakeholders to enhance or protect natural resources, identify problems and solutions, coordinate efforts to prevent duplication, enhance communication and cooperation and identify funding and cost share opportunities within the Umatilla River subbasin.

The UAFHP is an ongoing effort to protect, enhance and restore functional floodplain, channel and watershed processes to provide sustainable and healthy habitat for aquatic species in the Umatilla River subbasin, including ESA Threatened Middle Columbia River Steelhead. Project work further supports the CTUIR Department of Natural Resource River Vision and First Foods mission statements to sustain production. The River Vision principles have been successfully applied in effort to reestablish the salmonids to self-sustaining levels. We expect a substantial positive response of salmonid populations once habitat floodplain and channel function is addressed and improved. We believe a positive correlation between habitat improvement, salmonid density, and fitness levels will shift the status of ESA-Listed species towards a safer level of sustainability in the Umatilla River Basin.

**Table 6.** The CTUIR UAFHP restoration project descriptions by location, treated primary limiting factors (NMFS 2009) by CTUIR River Vision touchstones (Jones et al. 2008) and accomplishments; 2007-2022.

| Subbasin, Stream and Years                                      | Project Description   | Species | CTUIR River Vision Touchstones/ Habitat Limiting Factors (PLF's shaded in yellow-NOAA BiOP) |                            |                         |                        |            |                |           |                         | Comment/<br>Accomplishments |   |
|---|---|---------|---|----------------------------|-------------------------|------------------------|------------|----------------|-----------|-------------------------|-----------------------------|---|
|   |   |         | Biota-Connectivity  | Geo-morphology             | Connectivity            |                        | Hydrology  |                |           | Riparian Vegetation     |                             |   |
|   |   |         | Passage Barriers/<br>Entrainment  | In-channel Characteristics | Habitat Diversity (LWD) | Floodplain Confinement | High Temps | High Turbidity | Low Flows | Riparian/<br>Floodplain |                             |   |
| Meacham Creek and Camp Creek, Tributary of Meacham Creek (2007) | Fish passage rectifications, pool development with rock structures, and plantings | ST<br>S | X   |                            |                         |                        |            | X              |           |                         | X                           | Rectified two diversion dams and one in-stream structure providing unimpeded access to the entire watershed, development of pools with boulder cross vanes, 335 ft of streambank stabilization with added wood complexity, 0.3 miles livestock exclusion fence, and 500 riparian plantings. |
| West Birch Creek (2007-2008)                                    | Fish passage rectification, riparian protection fencing and plantings             | ST<br>S | X   |                            | X                       |                        |            | X              |           |                         | X                           | Rectification of the Cunningham and Hoeft Dams providing 2.4 miles unimpeded habitat, 335 ft of streambank stabilization with added wood complexity, 0.3 miles livestock exclusion fence, and 5,000 riparian plants.  |

|   |  |                              |   |   |   |   |   |   |   |   |  |
|---|--|------------------------------|---|---|---|---|---|---|---|---|--|
| Mainstem Umatilla River (Initiated 2008-2012) | Treated and maintained 3.5 miles of floodplain and channel; riparian and uplands   | CHS, CHF, STS, Coho          |   |   | X |   | X | X | X | X | Conservation Agreement on B&G Property to maintain 355 (61 riparian and 294 upland acres; installation of 60.7 acres of CREP tract's), 2 off-channel water wells, 13,400 seedling trees planted, 1,335 lbs of native grass seed and noxious weed control; Installation of an access restriction fence (3 additional riparian acres protected). |
| Meacham Creek (2009)                          | Floodplain improvement with levee setback, initiation of off-channel rearing habitat, large wood placement, and riparian plantings | CHS, STS,BT, Pacific Lamprey | X | X | X | X | X |   | X | X | Restored 40 acres of floodplain connectivity over 1-mile of stream by removal or modification of 3 levees and 1 dike (3,200 linear ft, 24,000 cubic yards); distribution of large wood on floodplain; 15,000 planted hardwood and conifer seedlings (30acres).   |
| Meacham Creek (Initiated 2008-2012)           | Riparian protection fencing and plantings  | CHS, STS,BT, Pacific Lamprey |   | X | X |   | X |   | X | X | Built 9.8 miles of livestock exclusion fence between RM 2.0-8.5 (~350 acres protected).  |
| Birch Creek (2010-2016)                       | Bank stabilization and large wood habitat complexity and riparian plantings  | STS                          |   | X | X | X | X | X |   | X | Restoration of 335 ft of streambank stabilization with large wood and boulders over 0.1 miles of stream, 2 large wood in-channel habitat structures, and planted 5,000 riparian plantings over the 1-mile property.  |

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| Meacham Creek Floodplain Restoration and In-Stream Enhancement Phase I Project RM 6-7.1 (2011-2012) | Floodplain and channel improvement with levee setback, large wood placement, side-channel connectivity, wetland enhancement, and riparian plantings. | STS, CHS, BT, Pacific Lamprey |   | X | X | X | X | X | X | X | Reconnected 67 acres of floodplain over 1-mile of stream by removing a 2,800 foot levee and modification of two spur dikes (600 ft removed), realigned historic channel with meanders in the floodplain, developed 3 secondary channels and 3,568 ft of off-channel habitat, 12 large pool structures, 10 major and 286 medium rock and log features, and installed 38,290 plantings. |
| Birch Creek (2012)  | Fish passage rectification and habitat restoration project.  | STS, Coho                     | X | X |   | X | X | X |   | X | Removed two abandoned irrigation diversions (Taylor Property-ODFW lead agency) providing unimpeded access to 2.7 river miles of stream. Included channel reshaping, setback of leveed road adjacent to the channel; and reshaping of the channel and banks, two j-hook rock structure placements and riparian plantings over 0.6 miles of stream.                                     |
| West Birch Creek (2012)   | Fish passage rectification and habitat   | STS                           | X | X | X |   | X | X |   | X | Removed one abandoned irrigation diversion (Low Property-ODFW lead  |

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|   | restoration project.   |  |   |   |   |   |   |   |   |   | agency) providing unimpeded access to 5.0 river miles of stream, installation of rock and large wood structures, channel re-shaping and plantings over 1-mile of stream.  |
| Dillon Diversion Dam Removal (2017)   | Fish passage rectification   | STS, CHS, CHF, Coho, BT, Pacific Lamprey | X | X |   |   |   |   |   |   | Removed a longstanding partial barrier to upstream migration and opened an additional 3.65 miles of river to unimpeded travel for anadromous salmonids.   |
| Meacham Creek Bonifer Reach Floodplain Reconnection and In-stream Enhancement – Project Areas 3 & 4 (2017-2018) | Floodplain and channel improvement with levee removal, channel reconnection, large wood placement, and riparian plantings        | STS, CHS, BT, Pacific Lamprey            |   | X | X | X | X | X | X | X | Treated over 1.6 miles of Meacham Creek by removing 3,385 linear feet of levees and dikes, reconnecting 3,766 linear feet of primary and secondary channel habitat, and installing 69 engineered log jams with more than 537 logs with rootwads attached. |
| Basin-wide Agreements O&M (2008-2018)   | Ongoing maintenance of 17 riparian conservation agreements including livestock exclusion fencing, tree planting and weed control | CHS, CHF, STS, Coho, BT, Pacific Lamprey | X | X | X | X | X | X | X | X | 552 acres protected and maintained, 15.15 miles of riparian fence protection (184 ac.), 7,300 planted hardwood seedling trees.  |
| Meacham Creek Bonifer Reach Floodplain Reconnection and In-stream Enhancement –                                 | Floodplain and channel improvement with channel creation and reconnection,   | STS, CHS, BT, Pacific Lamprey            |   | X | X | X | X | X | X | X | Treated 0.95 miles of Meacham Creek by creating and reconnecting 7,656 feet of primary and secondary channel  |

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| Project Area 2 (2019)   | large wood placement, and riparian plantings  |  |   |   |   |   |   |   |   |   | habitat, and installing 14 engineered logjams, 45 individual log structures, and 130 boulders   |
| Reith Dam Removal (2019)  | Fish passage rectification  | STS, CHS, CHF, Coho, BT, Pacific Lamprey | X | X |   |   |   |   |   |   | Removed a longstanding partial barrier to upstream migration and opened miles of river to unimpeded travel for anadromous salmonids.  |
| Athena Bridge Fish Passage Project (2019)   | Fish passage rectification  | STS, BT, Pacific Lamprey                 | X | X |   |   |   |   |   | X | Removed fish passage barrier, replaced bridge, placed rock structures and planted native riparian vegetation.   |
| Meacham Creek Bonifer Reach Floodplain Reconnection and In-stream Enhancement – Project Area 1 (2020) | Floodplain and channel improvement with channel creation and reconnection, large wood placement, and riparian plantings | STS, CHS, BT, Pacific Lamprey            |   | X | X | X | X | X | X | X | Treated 0.8 miles of Meacham Creek by creating and reconnecting 7,656 feet of primary and secondary channel habitat, and installing 13 engineered logjams, and 22 additional log structures |
| Meacham Creek Punchlist – Bonifer Project (2021)  | removing and modifying levees and spur dikes and adding LWM to improve habitat complexity                               | STS, CHS, BT                             |   | X | X | X | X | X | X | X | Treated 2 acres of habitat by full dike removal in the riparian zone and treated 0.55 acres of riparian non-wetland habitat   |
| Meacham Creek Bonifer Reach Floodplain Reconnection and In-stream Enhancement – Project Area 1 (2022) | Floodplain and channel improvement; removing levees, adding LWM, planting, weed treatment habitat                       | STS, CHS, BT                             |   | X | X | X | X | X | X | X | Treated Meacham, Umabirch PA-4, Wujak, Wildhorse and mid-Umatilla River properties habitat with riparian planting and weed treatment. Maintained previous project areas                     |

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