Catherine Creek State Park Restoration Project

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Contract # 74313 Rel 54
Contract Performance Period 4/19 - 11/22
Report covers implementation from: April, 2022 – November, 2022

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A. Introduction/Background Information:

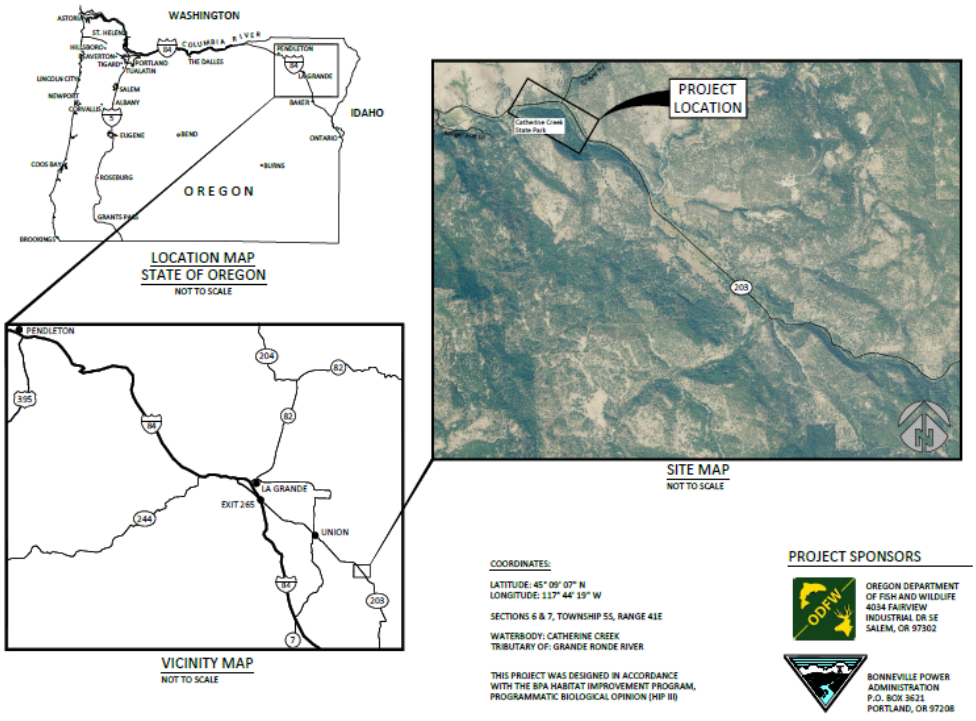
1. History of the project.

Catherine Creek State Park is located at RM 48.5-49.2 on Catherine Creek, tributary to the Grande Ronde River in Union County, Oregon. The project reach supports all freshwater life stages of ESA listed spring Chinook salmon and summer steelhead. It is also a migration corridor for ESA listed bull trout. Spawning and rearing of spring Chinook salmon and summer steelhead annually occur in the project reach.

Habitat for all life stages of spring Chinook and summer steelhead was rated fair within Atlas Prioritization. Riffles were prevalent and the substrate was gravel with few fines, but little cobble. The project reach lacked suitable pool area, undercut banks, large wood, and cobble substrate. The historic channel had been blocked off by gravel downstream of the Park's Day Use area. The width to depth ratio was 22.8 and Catherine Creek was channelized throughout the reach. Limiting factors for salmon and steelhead in the project reach include a low abundance of pool habitat, a lack of LWD, floodplain condition, and water temperature. Restoration increased habitat diversity and addressed limiting factors. A side channel and swale were excavated to provide low velocity habitat, cover, channel complexity, and enhance/increase riverine wetlands. Both intersect an existing spring complex enhancing cool-water thermal refuge. Large wood placements occurred to increase planform complexity, create and maintain scour pools, provide cover, increase deposition, rack wood, enhance/increase riverine wetlands, and form gravel bars. Native riparian vegetation was planted, and an interpretive trail will be constructed by the landowners in the future.

Project partners include Oregon Department of Fish & Wildlife (ODFW), Oregon Parks and Recreation Department (OPRD), Grande Ronde Model Watershed (GRMW) and Bonneville Power Administration (BPA).

2. Project location map.



B. Discussion of Completed Work:

This project was implemented as designed in April through November of 2022 by a hired contractor to address identified limiting factors that affect ESA listed salmonids in Catherine Creek. Restoration actions for this project target critical salmonid life stages and limiting factors, and included: pool development, floodplain reconnection, side channel and off-channel habitat restoration, LWD placement, channel reconstruction, and riparian revegetation. The primary project features implemented include side channel creation, large wood placement within the main channel and floodplain areas, riverine wetland enhancement, pool excavation around large wood structures, boulder placements within the main channel, gravel redistribution within the main channel, and riparian vegetation planting:

Side channel creation: A side channel was excavated along a historical channel scar that has been abandoned by a channel avulsion. Constructed wood jam habitat enhancement features were added at strategic locations. Reconnection of the side channel is expected to provide flows conducive to riverine wetland development.

Apex Large Wood: Two bar apex wood jams were located areas prone to deposition, with the intent to create and maintain a scour pool at the face of the jam and increase bead load deposition behind the jam structure.

Bank Margin Habitat Cover Wood: Margin jams were located adjacent to the thalweg along the bank of the mainstem of Catherine Creek, as well as the re-activated side-channel complex.

Hillslope Wood: These wood jams were constructed along the left (south) bank of the mainstem of Catherine Creek. These jams are meant to mimic natural wood recruitment from the hillslope along with colluvial boulders, and subsequent racking of woody material transported from upstream.

Large Boulder Placement: Boulders were placed to provide an important element of complexity.

High Flow Swale: A high flow connection was excavated in the alignment of an access route used to place large wood on the main channel. This constructed feature will increase riverine wetland area.

Alcove Enhancement: The existing alcove was selectively excavated to ensure hydrologic connectivity during low flows. Bank margin habitat wood was placed to provide cover and key over-winter and high flow habitat for juvenile salmonids.

Gravel Bar and Pool Enhancement: At two locations in the upstream portion of the project, gravel bars were created utilizing on site materials to narrow the channel and provide planform complexity within a portion of the channel that had simplified plane-bed morphology. It is expected that area of riverine wetlands will increase on the seasonally inundated bars and pool featrues will exist were there were previously none.

Removal of old concrete bridge abutments and riprap: undesirable concrete was removed from the right bank of Catherine Creek upstream of the upstream pedestrian bridge and disposed of. Riprap was removed from the alcove enhancement area and placed in the identified upland spoil areas.

Native riparian vegetation was planted in disturbed areas and areas identified for vegetation enhancement.

These implemented project elements were guided by the Upper Grande Ronde Atlas prioritization document, the Northwest Power and Conservation Council's (NPCC) 2014/2020 Columbian River Basin Fish and Wildlife Program, the Recovery Plan for Northeast Oregon Snake River Spring and Summer Chinook Salmon, and Snake River Steelhead Populations, and the Grande Ronde Subbasin plan. Riparian condition, water temperature, side channel and wetland conditions, and floodplain condition are identified as priority limiting factors that were addressed with the project implementation.

Figures 1 and 2. Installation of LWD structure in newly constructed side channel and the completed side channel and large wood structures before activation.

Figures 3 and 4. Before and after two bank trees were pulled over. Note people in both images.

Figures 5 and 6. Construction of Pool-Bar-Wood complex and built Pool-Bar-Wood complex. Note width to depth reduction.

C. Lessons Learned & Adaptive Management

There were three primary lessons learned from this project. One of which was slightly anticipated. They were the environmental conditions present during construction, utilizing a new technique for our program of adding whole trees to the project by tipping/pulling over existing trees, and working within a state park that was open to the public during implementation.

The environmental conditions were anticipated but still impacted the completion rate of the project. In particular, the level of the groundwater was high, and the stream flows remained higher than average. Both of which impacted the implementation rate. Original equipment identified such as a dump truck was unable to be used for portions of implementation because of the conditions. As an alternative, the contractor used a pair of skid steers and was able to complete the tasks as designed. These lessons have been discussed with the Upper Grande Ronde Implementation Team partners and efforts to mitigate for them will be applied to future projects.

Our program had never had the opportunity to get to tip trees on-site right into the river so the addition of "Hillslope Wood" was a new technique for us. We were able to complete this project element utilizing a 300 series excavator, 200' of cable, chokers, and a chainsaw auger. Chokers were secured 15-20 feet up the trunk and the soil was loosened up around the base of the tree. The excavator was located on the opposite side of the creek in order to be able to safely pull the tree over. This technique has been shared with the Upper Grande Ronde Implementation Team partners so they can utilize it in the future if needed.

The last note of interest was working in a State Park while the campground and day use area were open to the public. While originally a concern, this really was never an issue, and the public was very respectful of our efforts. It was repeatedly stated that our work to improve salmonid habitat was appreciated. A fair bit of effort was put into safety signage and informational postings. This is highly recommended for projects that have the potential for daily public interaction.

While just completed, the sponsors recognize the need for adaptive management as it relates to projects. As mentioned, as implementors we have related lessons learned from this project to our regional Implementation Team partners. It is anticipated that regional monitoring efforts may also inform the partnership and will guide implementation into the future.