

Trout Creek Watershed Improvement Project

Annual Report

Project No. 1998-028-00

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A. Introduction/Background Information:

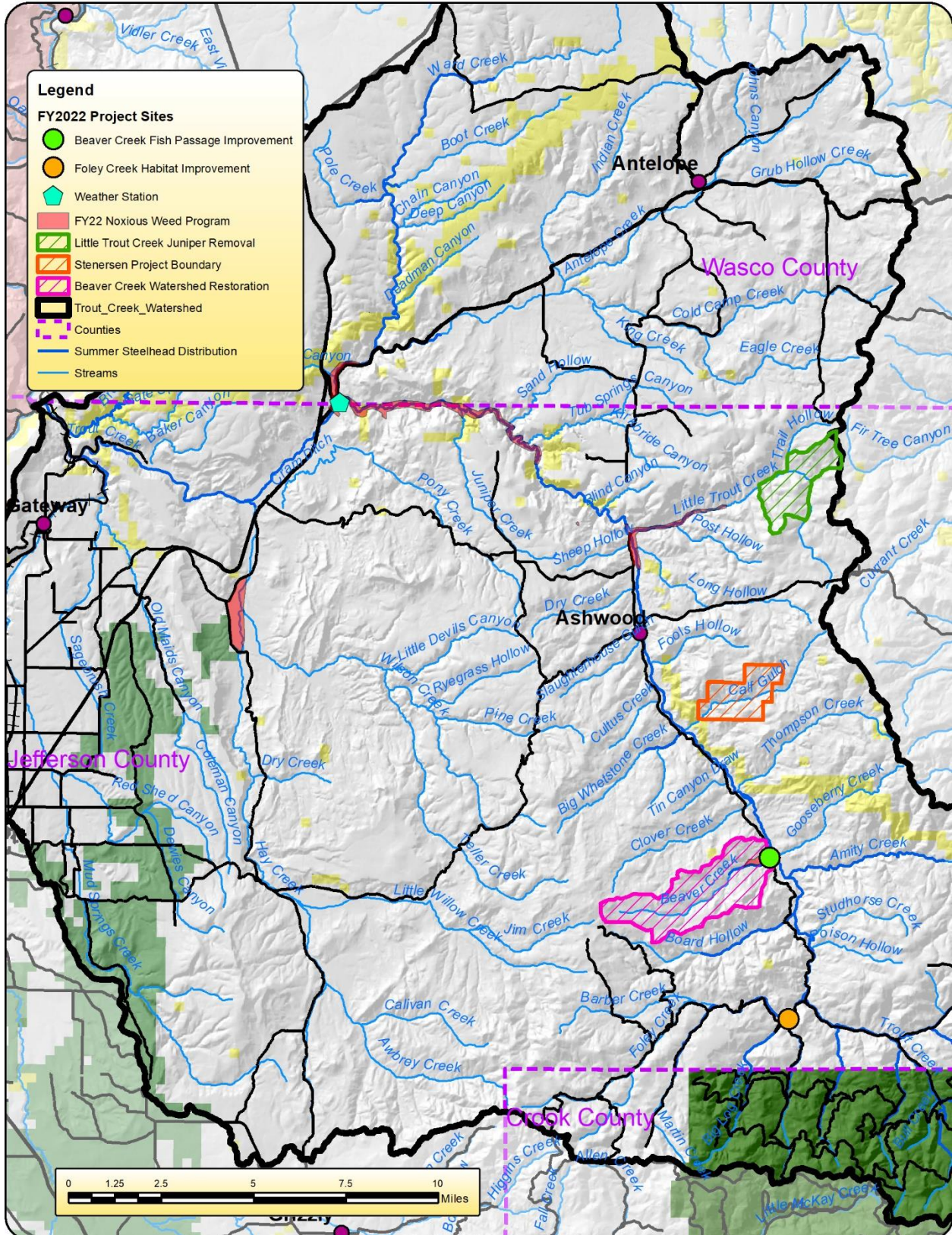
1. Project History

The Trout Creek Watershed Restoration Project's primary goal is to improve the habitat (in-stream, riparian, and upland), providing a more resilient landscape to the effects of climate change, while increasing the carrying capacity for native salmonids in Trout Creek and its tributaries. The species of focus are the ESA listed Middle Columbia River DPS Summer Steelhead and their counterpart, the interior redband trout. The status of the summer steelhead population in Trout Creek, within the Deschutes River eastside population is rated as "maintained" (moderate risk) per the 2022 Mid C Evaluation. Our goal is to return the Trout Creek population to "viable" status, with long term goals of reaching "highly viable".

Project work supports the goals listed in the Deschutes River Sub-basin Summary (Nelson, 2001), the Deschutes Subbasin Plan (2004) that addresses Trout Creek, and the Trout Creek Watershed Assessment (2002). The project work also supports tributary habitat improvements under the 2019 CRS Biological Opinion targeting ESA listed Middle Columbia River steelhead. This project also follows the habitat strategies and actions found in the Oregon Middle Columbia (Mid-C) Steelhead Recovery Plan (2010). A summary of accomplishments and prioritized actions is provided in the Trout Creek Basin Long-Range Action Plan & Restoration Accomplishments document prepared by the Jefferson SWCD and ODFW and can be found on the CBFish.org website.

The Jefferson SWCD has successfully implemented many large-scale projects in the past 24 years. In this time, we have managed to restore function to more than 13.4 miles of stream channel & floodplain habitat, removed 24 seasonal irrigation barriers, and eliminated 3 passage barriers, opening an additional 8 miles of habitat to migrating adult steelhead. Refer the Trout Creek Basin Long Range Action Plan & Restoration Accomplishments for more detail on past accomplishments. This has been implemented at an extremely low cost to the BPA. We have been able to keep costs exceptionally low because of our in-house knowledge and experience. With our working relationship with ODFW – Trout Creek Project, we have put high quality conservation on the ground at the lowest costs seen anywhere in the Columbia Basin. Combined with our ability to secure funding from other sources to help offset costs from BPA, and our ability to perform the work "in-house" from start to finish, we have been an extremely efficient project since our inception, more than doubling funding received from BPA for habitat improvement in the Trout Creek Watershed. The Trout Creek watershed covers 692.4 square miles, with 117 miles of stream currently available to summer steelhead, so there is still great opportunity to continue improving the habitat well into the future.

2. Project Location Map



B. Completed Work:

Planned Projects:

All projects are designed to improve fish habitat, water quality and quantity in the Trout Creek basin. Projects within the riparian zone that directly impact the stream will be conducted during the in-water work period (July 1 - October 31) as dictated by ODFW guidelines. All projects will follow all pertinent state and federal law, regulations, and executive orders.

Trout Creek Vegetation Improvement:

This project will plant native seed in designated riparian exclosures and disturbed upland areas throughout the Trout Creek Watershed. Areas that have been freshly scoured with recent high-water events may be re-seeded with native seed mix. Areas that have been treated for noxious weeds will be a priority for this work element. We will locate areas with exposed soil or little vegetation and broadcast native seed in those areas within the Trout Creek Watershed. These sites may coincide with sites treated through the Trout Creek Noxious Weed Program. Re-vegetating the disturbed ground will help stabilize the soil and reduce overall erosion and sediment entering the streams/waterways in the watershed.

Trout Creek Noxious Weed Program:

Continue the noxious weed program for the Trout Creek Watershed for the 13th year, the 11th in conjunction with the Jefferson Co. Public Works and local licensed applicators, and now the 5th with the Jefferson County Weed Advisory Committee (JCWAC). Collaborate with Public Works and JCWAC to provide them with herbicide to be used in the Trout Creek Watershed on "A" list weeds. Collaborate with the County to provide them with herbicide to be used in the Trout Creek Watershed on "A" list weeds. The County will disperse herbicide to approved landowners and apply the chemical as well. Coordinate with local licensed applicators that are spraying on private property in the Trout Creek Watershed to potentially provide herbicide for "A" list species. The SWCD will continue to apply herbicide to known weed patches throughout the watershed. The program will attempt to control noxious weed species that are found on the county's "A" list. These include Scotch Thistle, Spotted Knapweed and Yellow Starthistle. We will continue to monitor areas with known biological control on certain weed patches to determine if more biological control is necessary or if herbicide will need to be used. Ensure the proper reporting from the SWCD and the County to provide accurate accounting of herbicide use to EC.

Future Project Design:

The JCSWCD will continue to collaborate with ODFW on project designs. We anticipate the Foley Creek Complex design will be completed and permitted in the spring of 2023 with implementation scheduled for 2023 and 2024. The Foley Creek Complex entails relocating a road, re-configuring stream channel locations and confluences, eliminating 4 fords and 2 culverts, leaving one road/stream interface by repurposing a concrete bridge that fell into the creek during the 1996 flood. We will continue to work in conjunction with the HIP Team throughout the design process on all projects to ensure the best possible product for the resource. Prior to the initiation of the project construction, we plan to have an approved design that follows the HIP guidelines that can be implemented in 2023 and 2024.

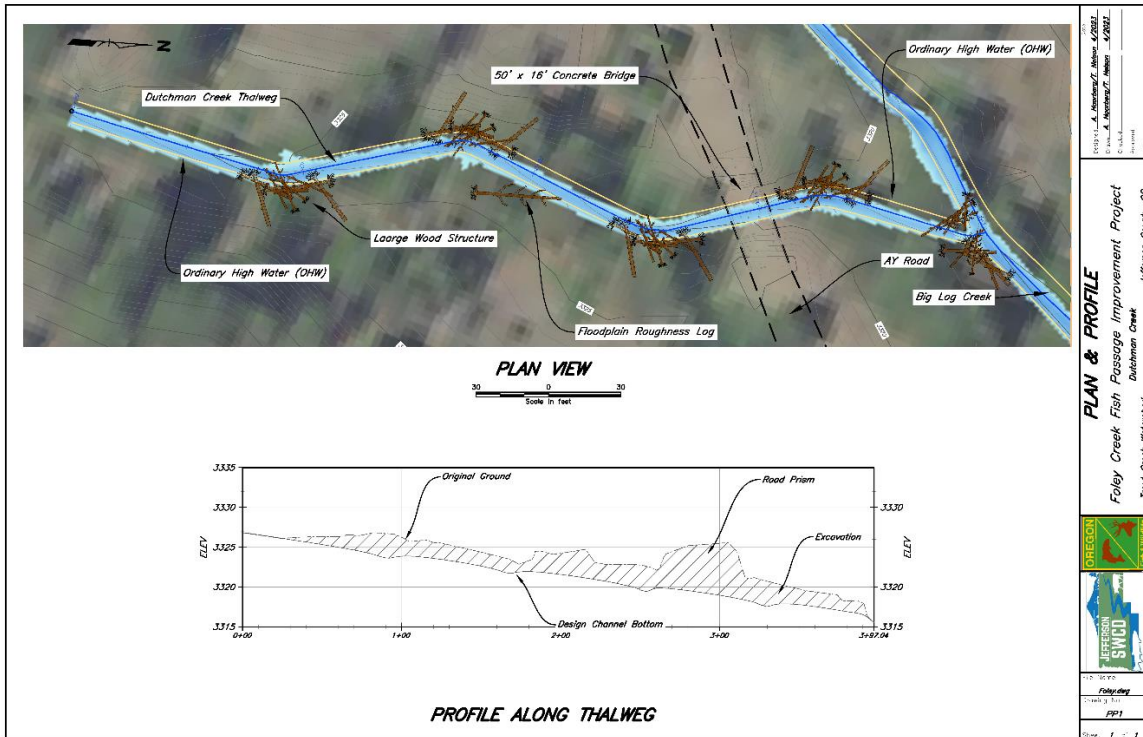
Watershed Coordination:

The JCSWCD will continue to assist ODFW on their day-to-day operations when timing allows. These activities include performing redd surveys, assisting with smolt trapping, operation of the video fish weir, and applying herbicides.

Habitat Restoration Project Development:

The Jefferson Co. Soil and Water Conservation District (JCSWCD) and the Oregon Department of Fish and Wildlife (ODFW) have developed a collaborative approach to project prioritization, development, and implementation. JCSWCD and ODFW Project Managers have collaborated from start to finish on habitat restoration project development, funding, design, construction, and monitoring. The experience and unique skillsets of the JCSWCD and ODFW personnel minimizes the need for expensive outside contracting, engineering, and consulting. This coordination has worked well on past projects and has resulted in quality habitat restoration at a low cost to BPA. BPA funding has allowed for the establishment of a quality population monitoring program that has given insight to the population size, as well as revealing information that assists in the planning and development of current and future habitat restoration actions. Based on 51 years of combined experience and observation in the Trout Creek Watershed, the ODFW and JCSWCD Project Managers have gained the necessary knowledge and relationships with the landowners in the watershed. This information along with numerous planning documents and assessments has allowed us to prioritize stream reaches and upland habitats that provide the best restoration opportunities. With the current funding level that BPA provides the JCSWCD, extensive on-the-ground habitat projects cannot be implemented without assistance from outside sources. These sources include the Oregon Watershed Enhancement Board (OWEB) and Portland General Electric (PGE). Once a project is identified, pursuing these funding sources for grant funding is a painstaking, time-enduring exercise necessary to continue to improve habitat in the Trout Creek Watershed.

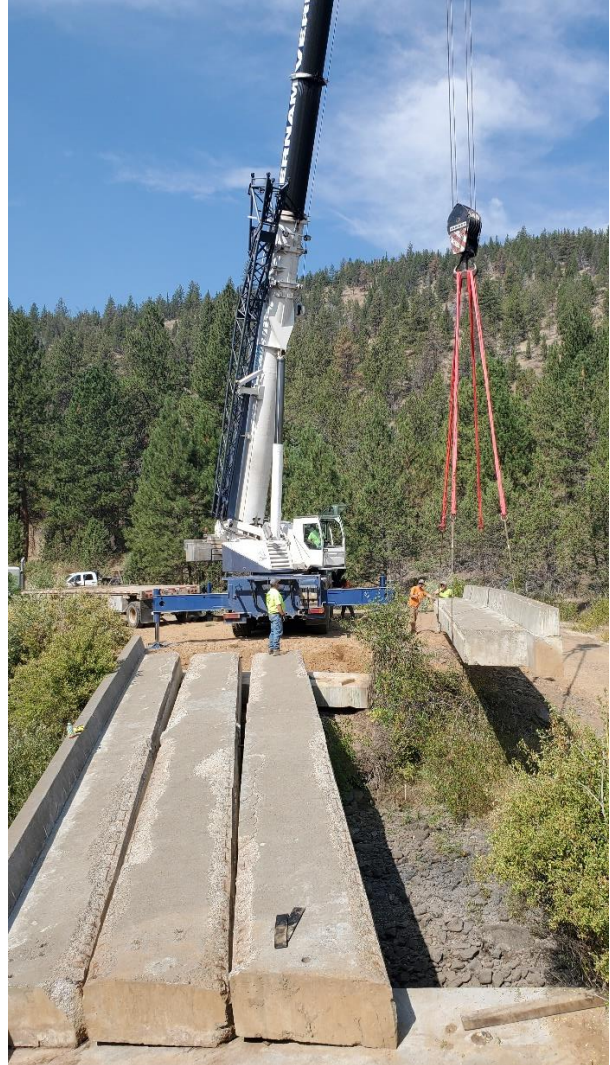
Foley Complex Fish Passage Improvement Project – Phase 1 (Watershed Coordination with ODFW) Fiscal Year 2023 Summary/Update



This project is located on three streams; Dutchman Creek, Big Log Creek and Foley Creek, both upstream and downstream of their confluences with each other. This largescale project has been broken into 2 phases, with implementation of Phase 1 being this fiscal year. ODFW Project #1992-042-00 is the lead on this project, so the Jefferson SWCD’s role is to assist them in implementation. As the project lead, ODFW will report all metrics for this work. Phase one of this project included restoring the original confluence of Dutchman Creek with Big Log Creek. Years ago, logging operations directed Dutchman Creek down the ditch adjacent to the AY Road and it finally met up with Foley Creek directly downstream of the 2 culverts on the AY Road. This configuration also had Big Log Creek joining Foley Creek directly upstream of those culverts. The new configuration has Dutchman meeting up with Big Log in its historical location, eliminating the ditch it used along the road. We also repurposed a concrete bridge that was installed in 1995 downstream on Foley Creek. This bridge lasted less than one year when the flood of 1996 undermined the abutments and made the bridge unpassable by vehicles. This summer, we moved the bridge up to Dutchman Creek to allow it to return to the historical confluence. Finally, to finish up phase one, we removed the 2 undersized culverts on Foley and created a ford that will only be in place for less than a year once Phase 2 is implemented.

ODFW's excavator was used extensively during this phase of the project, along with a small dump truck rental to help move materials from the old bridge site to the new bridge site as well as filling the old Dutchman channel/ditch. A crane and trucking company were hired to move both bridge stringers and abutments up to the Dutchman site.

Foley Complex Fish Passage Improvement Project Photos:



Left Photo - Exposing the Lower Foley bridge for transport to Dutchman Creek – August 8, 2023

Right Photo – Crane loading bridge stringers onto flatbed truck – August 16, 2023



Bridge abutments place at Dutchman Creek Crossing prior to bridge stringers – August 18, 2023



Mixing and pouring grout between bridge stringers – August 30, 2023



Grout work done, ready for backfill/road construction and temporary road removal – September 9, 2023



Completed Bridge, stream and floodplain work with water flowing – February 2, 2024



Aerial view of Dutchman Bridge – June 12, 2024



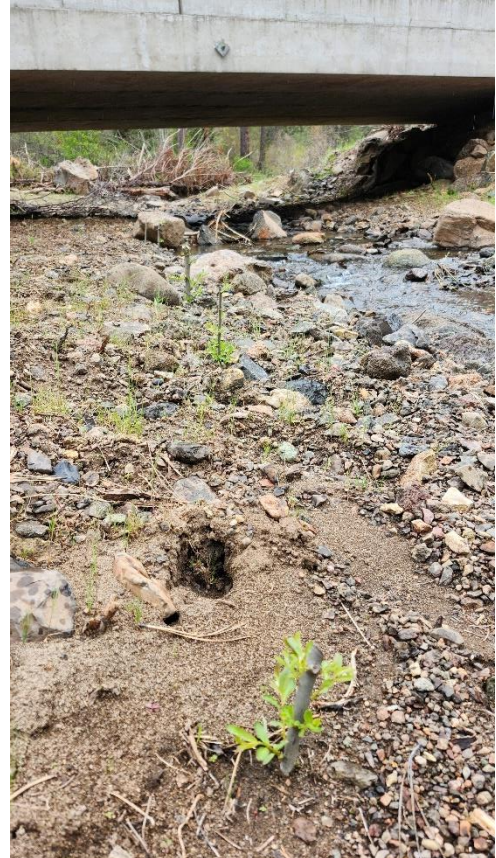
Aerial view of Dutchman Creek Bridge and new confluence with Big Log Creek, and the Foley Culverts that were Removed – June 12, 2024

Trout Creek Vegetation Improvement Project Fiscal Year 2023 Summary

Narrative Summary:

This fiscal year, our vegetative planting efforts were focused on two restoration project sites, Beaver Creek and Dutchman Creek. The Jefferson SWCD and ODFW had an expandable tree planter made at a local fabrication shop, and this was the first time it was used, and it was successful. We were able to plant 500 large, rooted trees and shrubs in a day and a half along Beaver Creek in February 2024. Earlier, in January 2024, ODFW and SWCD staff were able to cut willows and plant those cuttings by hand along Dutchman Creek upstream and downstream of the bridge. The Jefferson SWCD Program Manager was able to broadcast a native seed mixture on disturbed soil (2 acres) on the Foley Complex Fish Passage Improvement Project in the Fall of 2023.

Vegetation Improvement - Photos:



Left Photo – Expandable Tree Planter planting a cottonwood along Beaver Creek (Feb 15, 2024)

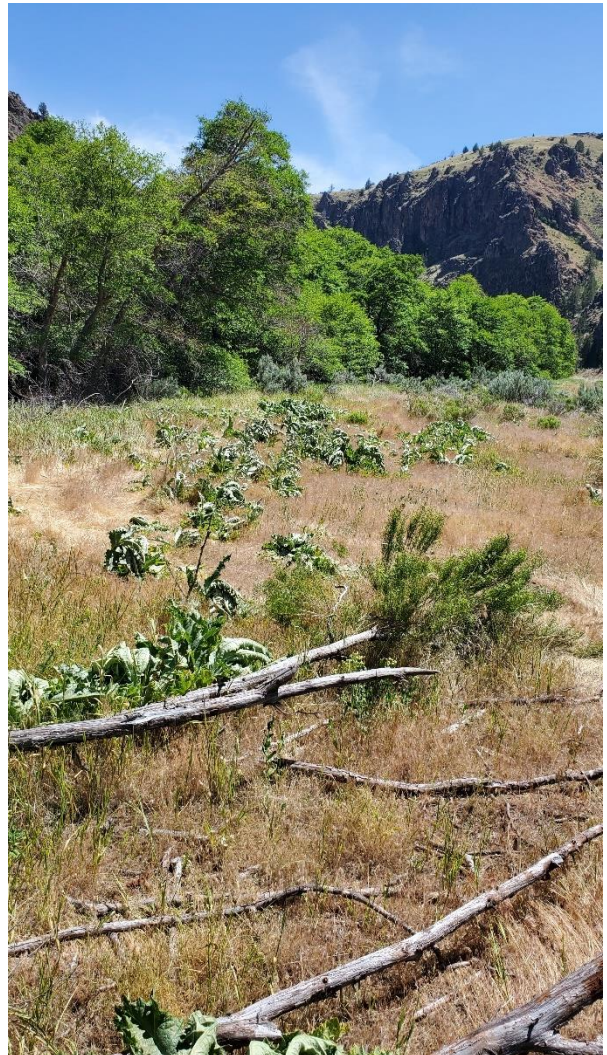
Center Photo – Dogwood planted with Expandable Tree Planter (Beaver Creek) (March 28, 2024)

Right Photo – Willow cuttings planted by hand along Dutchman Creek (May 21, 2024)

Trout Creek Noxious Weed Program Fiscal Year 2023 Summary

Narrative Summary:

The Jefferson SWCD along with ODFW – Trout Creek Project, has been treating known patches of yellow starthistle and Scotch thistle in the watershed for the past 14 years. This year, we focused our efforts on early spring weeds such as Scotch Thistle and whitetop. The locations that were treated were areas that we have treated the past 13 years, which include past restoration sites as well as important steelhead production corridors. These include remote, rugged areas with little access, the primary one being Degner Canyon along Trout Creek. We also targeted whitetop in upper Trout Creek tributaries. In total, 26.65 acres of “A” and “B” listed weeds were treated with the help of the Trout Creek Noxious Weed Program.



Spring of 2023 – Scotch thistle was extremely bad this year. Photo on the left before treatment on May 30, 2023, and the same patch on the right after treatment on June 6, 2023.



We treat noxious weeds in extremely rugged areas, using different techniques from backpack sprayers (left) and a good old-fashioned machete (right)

Identify and Select Projects Fiscal Year 2023 Summary

Narrative Summary:

This fiscal year, we focused our efforts to continue assisting the Middle Deschutes Watershed Council Coordinator in the creation of a watershed assessment document that will be used to acquire funding at the federal level to remove junipers in the Trout Creek watershed. The efforts last year on the state level resulted in more funding to treat junipers in the form of House Bill 2010. The Jefferson SWCD Program Manager identified 3 areas to utilize this funding to maximize the footprint of juniper treatment in 2 tributaries. The units are adjacent to previously treated areas. We also continued to administer the three OWEB grants we have received since 2019. The Little Trout Creek Juniper Removal Project joins two other ongoing upland projects funded by outside sources; the Beaver Creek Watershed Restoration and Stenersen Upland Habitat Improvement Projects. The primary funding sources were the Oregon Watershed Enhancement Board (OWEB) and Portland General Electric (PGE). In total, during fiscal years 2019, 2021 and 2023, the Jefferson Co. SWCD was able to secure \$1,130,321 from OWEB, \$51,000 from PGE and \$325,000 from House Bill 2010 for these projects. And finally, another project has been identified and funding secured for FY2025. This is the Foley Meadow Restoration Project, restoring habitat for beavers to reintroduce themselves in the meadow.

House Bill 2010 – Drought Relief:

With this funding, the Jefferson SWCD designated 3 different areas to remove junipers, one in the Little Trout Creek drainage, and the other two in Calf Gulch. This was a strategic move to maximize the footprint and effects of juniper removal on the landscape. Funding received for this effort was \$325,000. Due to the nature of this funding, we selected extremely rough terrain with heavy infestations of western juniper.

The project will be implemented in the years 2023-2024. Project components include:

- Juniper Cutting/Removal – 877.3 acres

In fiscal year 2023, approximately 191.8 acres of junipers were removed by hand crews using chain saws.

House Bill 2010 – Drought Relief Photos:



Juniper Removal Unit 15 after cutting – March 13, 2024



Juniper Removal Units 9, 10 & 11 after cutting (In the distance) – March 20, 2024

Little Trout Creek Juniper Removal Project:

The Little Trout Creek Juniper Removal Project is a comprehensive upland restoration project located in the Little Trout Creek drainage on 2 adjacent properties. See Project Location Map, page 4, for the project location within the Trout Creek Watershed. The primary funding sources for this project are OWEB, the Landowners, and the Ashwood-Antelope Rural Fire Protection Association (AARFPA). Funding secured for this project includes OWEB - \$466,912 (Cash), Landowners - \$270,532 (In-Kind), and AARFPA - \$185,693 (In-Kind).

The project will be implemented in the years 2022-2026. Project components include:

- Juniper Cutting/Removal - 1718 acres
- Firebreak Construction – 4.8 miles
- Prescribed Burning – 1718 acres
- Fireline Seeding – 11.7 acres

In fiscal year 2023, approximately 1322.5 acres of junipers were removed utilizing skid steer pullers, a thumbed excavator, and chain saws.

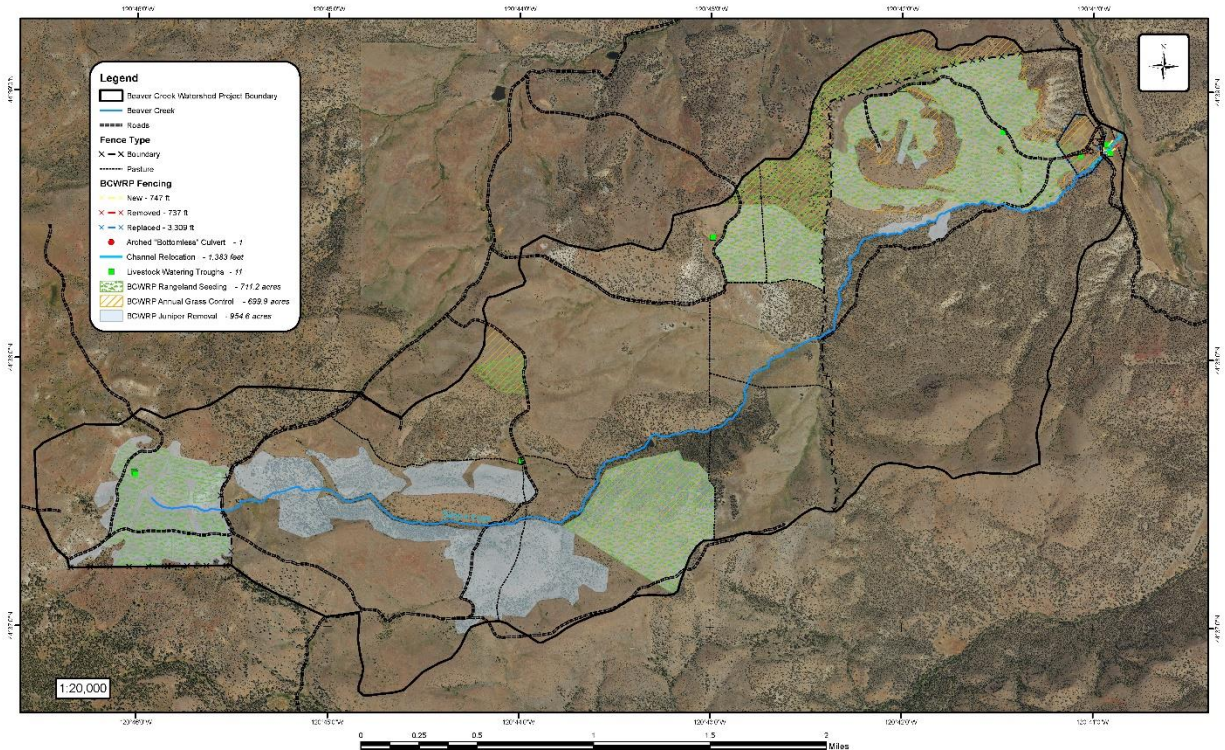
Little Trout Creek Juniper Removal Photo:



Juniper Removal Unit 9 after cutting – September 8, 2023

Beaver Creek Watershed Restoration:

Beaver Creek Watershed Restoration Project - Work Completed



The Beaver Creek Restoration Project is a comprehensive upland, riparian, and fish passage project that encompasses the entire Beaver Creek watershed, which includes three different landowners. See Project Location Map, page 4, for Beaver Creek's location within the Trout Creek Watershed. Funding sources for this project include OWEB, PGE, and FSA (USDA) for CREP portion, and Jefferson Co. Public Works (Culvert Replacement). Cash funding secured for this project includes OWEB - \$278,833, PGE - \$51,000, and BPA - \$60,442

The project will be implemented in the years 2020-2024. Project components include:

- Juniper Cutting/Removal - 758 acres
- Noxious Weed Control (Primarily Medusahead rye) – 720 acres
- Rangeland Seeding – 711 acres
- Prescribed Burning – 234 acres
- Spring Developments – 6 each
- Culvert Replacement – 1 each
- Channel Reconstruction/Relocation – 0.15 miles
- CREP Enrollment – 7.7 acres

In fiscal year 2023, 132.8 acres of junipers were cut/removed and 365.9 acres of rangeland was seeded utilizing a range drill and a broadcaster.

Beaver Creek Watershed Restoration Photos:



Upper Beaver Creek Juniper Removal/Seeding/Spring Developments (June 12, 2023)

Stenersen Upland Habitat Improvement:

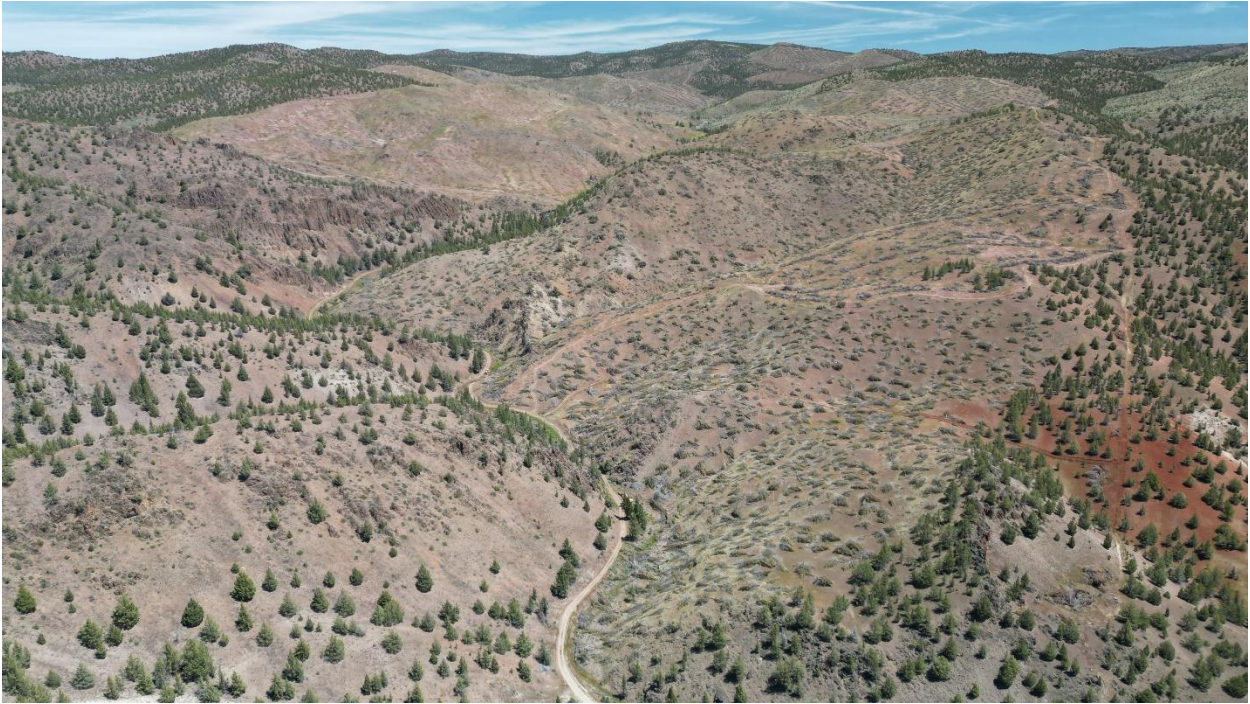
The Stenersen Upland Habitat Project is a comprehensive upland restoration project located in the Calf Gulch drainage. See Project Location Map, page 4, for the project location within the Trout Creek Watershed. The primary funding sources for this project are OWEB and the Ashwood-Antelope Rural Fire Protection Association (AARFPA). Funding secured for this project includes OWEB - \$253,609 (Cash), and AARFPA - \$73,068 (In-Kind).

The project will be implemented in the years 2020-2024. Project components include:

- Juniper Cutting/Removal - 1143 acres
- Noxious Weed Control (Primarily Medusahead rye) – 93.1 acres
- Rangeland Seeding – 175.2 acres
- Prescribed Burning – 1207.6 acres

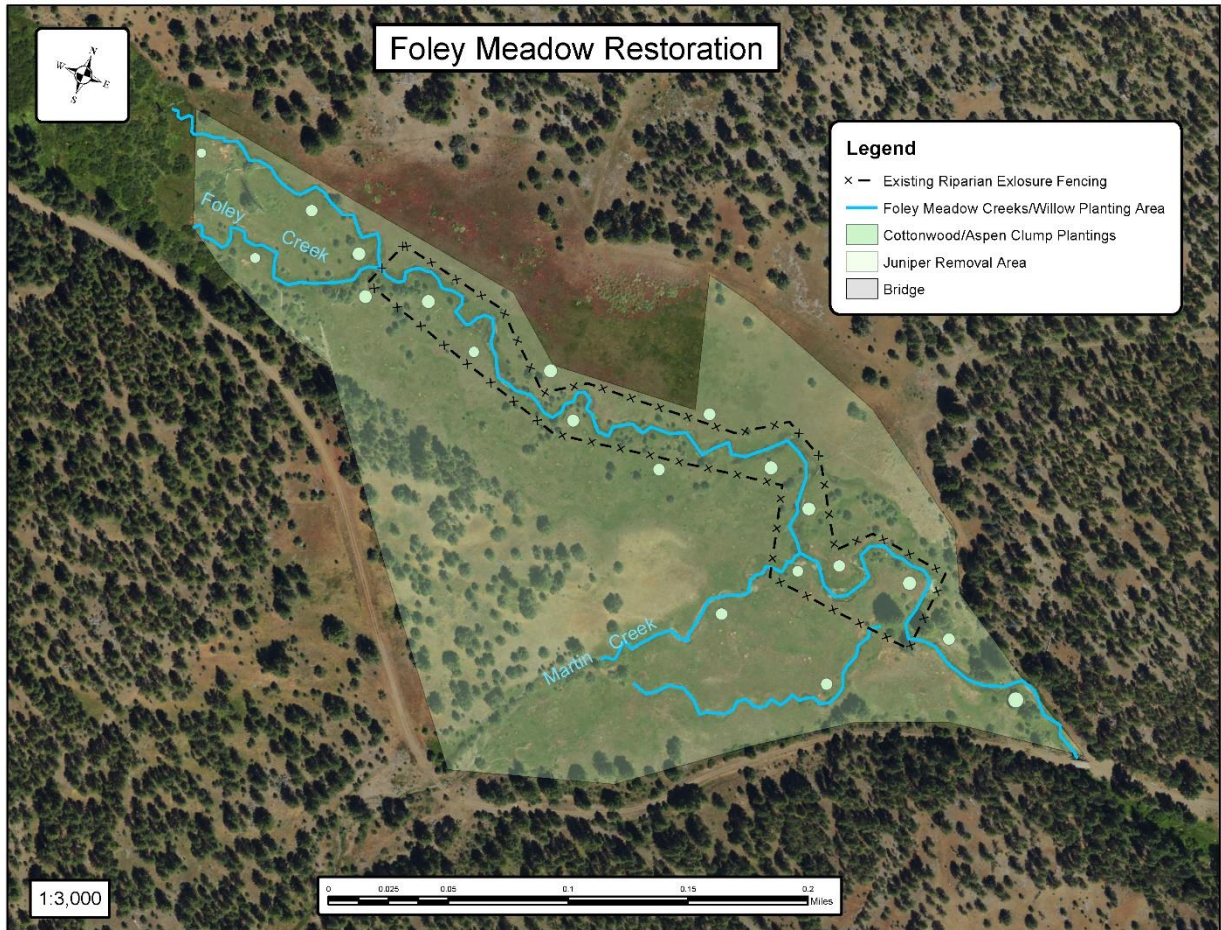
In fiscal year 2023, approximately 43.3 acres of juniper were cut/removed, and 171 acres of rangeland were seeded with a native seed mixture.

Stenersen Upland Habitat Improvement Photo:



Calf Gulch Drainage – June 1, 2024

Foley Meadow Restoration Project:



This project will consist of vegetation management to improve conditions/habitat for beaver re-introduction. Historically, Foley Meadow had a small population of beavers primarily near the Nye/Norton property boundary. This area has a large population of very old willows that the beaver utilized. In recent years, the beavers moved away, probably due to the very dry/droughty conditions. Our (Jefferson SWCD & ODFW's) goal is to plant large, rooted stock with an expandable tree planter mounted to an excavator along the streams located in the meadow to establish willows throughout the site. In addition to the willows, we would like to plant approximately 20 clumps of cottonwoods to create groves throughout the meadow. We plan to protect a percentage of the clumps with 8-foot-tall fencing to keep the elk from damaging the plants. Once fully established (5-8 years), the fencing would be removed so that the beavers can access the cottonwoods for dam material and food.

Juniper removal will occur in fall 2024. The tree planting and elk exclusion fencing will take place in the fall of 2025. Once successfully established the fencing around the cottonwood galleries will be removed and beavers will be re-introduced to the site if they haven't already found their way to the meadow.

Foley Meadow Restoration Project Photos:



Lower end of meadow showing confluence of Martin and Foley Creeks (and historic Martin Creek)



Middle Foley Meadow, showing juniper encroachment and riparian fencing

Watershed Coordination Fiscal Year 2023 Summary

Narrative Summary:

In 2023, the Jefferson SWCD assisted ODFW in their normal operations, when possible, as we have done for many years. The bulk of this assistance came in the summer months in the form of equipment operation and manual labor on the Foley Complex Fish Passage Improvement Project. The SWCD Program Manager also assisted with the video weir operation, smolt trap, Redd surveys, and coordinated herbicide application.

Watershed Coordination Photos:



Assisting with salvaging and securing screw trap when water came up quickly – May 10, 2023



Helping with disassembly and cleaning of the video weir – June 8, 2023

C. Project Updates:

Weather Station

In June 2020, we installed a remote weather station near the confluence of Trout and Antelope Creeks in Willowdale, Oregon. This weather station allows us to monitor the temperature, relative humidity, barometric pressure, wind direction & speed, and precipitation. Here is a link to this weather station, which updates every hour when connected to a cellular tower:

[https://dashboard.hobolink.com/public/9564/Willowdale#/
/](https://dashboard.hobolink.com/public/9564/Willowdale#/)

Our hope in the future is to add water level sensors to the station to monitor the stage of both Trout and Antelope Creeks in near real-time. Having this ability would be a great asset to both the SWCD and ODFW, especially when it comes to maintenance of riparian fencing.

We have been able to create different charts with the data collected, the one below showing the monthly average maximum, minimum and average temperatures, along with total monthly precipitation. The total precipitation measured for water year 2023 (October 2022 through September 2023) was 6.26 inches, down from the previous 8.69 inches. Temperatures have continued to be extremely variable in 2023 vs. 2022, as you can see in the chart and tables below. Monthly precipitation was down in all months in the comparison, except for the fall (August-November). On the bright side, the precipitation trend line is headed in an upward trajectory

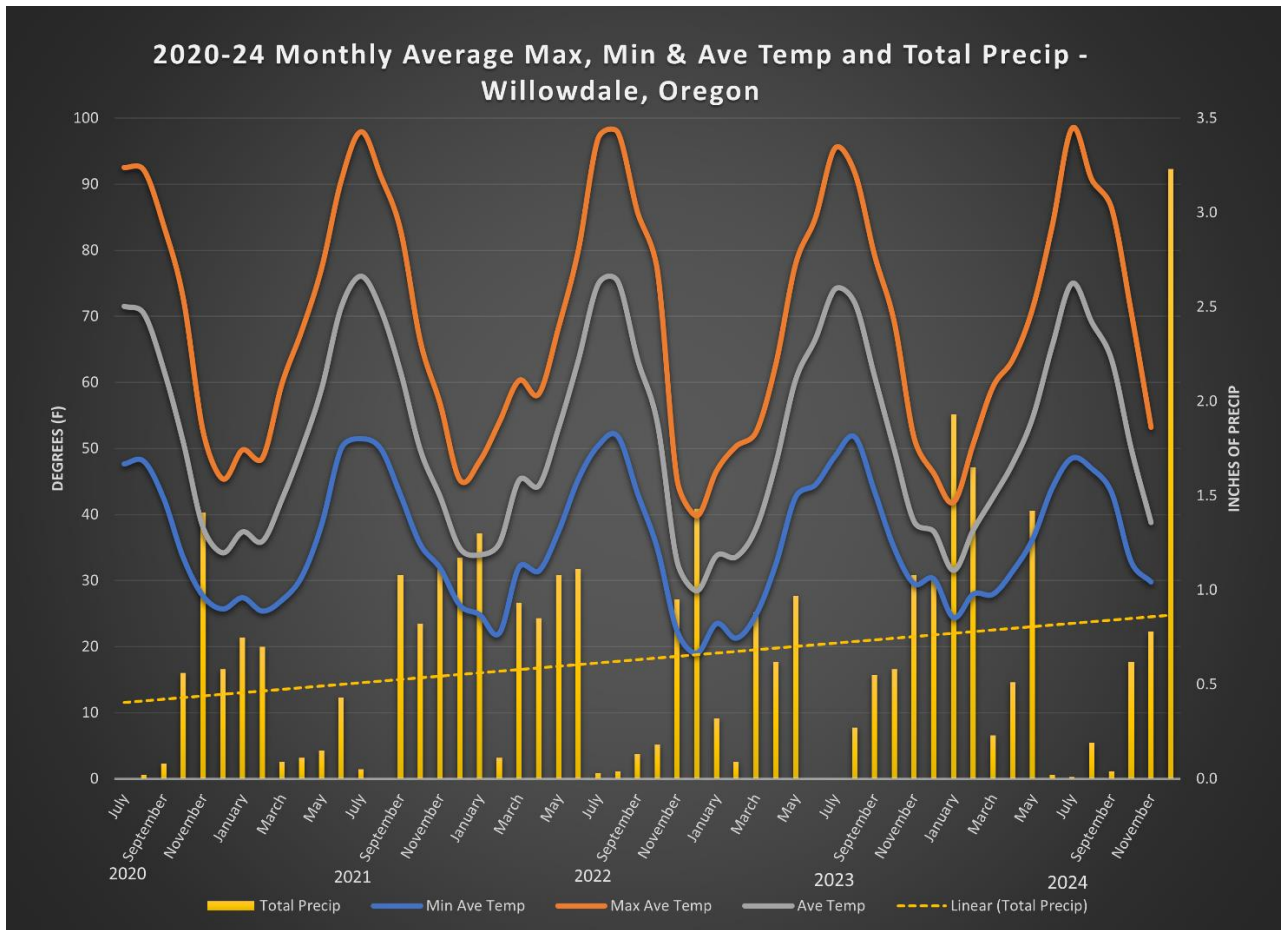


Chart showing monthly average temperatures and total precipitation (and trend line) since station installation

2022-2023 Comparison

Month	Year	Min Ave Temp	Max Ave Temp	Ave Temp	Total Precip
Jan	2023	-1.35	-1.43	-0.12	-0.98
Feb	2023	-0.76	-3.64	-2.02	-0.02
Mar	2023	-7.20	-7.80	-7.27	-0.05
April	2023	1.03	4.52	3.36	-0.23
May	2023	5.18	9.55	7.25	-0.11
June	2023	-0.88	4.84	3.16	-1.11
July	2023	-1.58	-1.46	-0.73	-0.03
August	2023	-0.08	-6.14	-3.26	0.23
September	2023	0.29	-6.49	-2.55	0.42
October	2023	0.04	-7.86	-4.04	0.40
November	2023	7.17	6.38	6.03	0.13
December	2023	11.25	6.43	8.96	-0.37

Table Comparing 2023 to 2022 – Ave Temps and Total Precipitation

Trout Creek Stream Gage Data

The lack of precipitation that our weather station is showing correlates with the stream flow data compiled from the stream gauge on lower Trout Creek. The chart below shows the average daily flow in cfs from December-June for each water year dating back to the year 2000. You will notice the 4 of the past 7 years show some of the lowest streamflows since the data has been collected. These factors have made very difficult conditions for summer steelhead to successfully migrate, spawn and rear in the Trout Creek watershed in recent years. However, the 2-year moving average has been trending up in the last 4 years, which is a good thing. We are hopeful that this can continue, as all signs of this upcoming water year are looking outstanding. If flows continue to increase over the next few years, the summer steelhead population will no doubt respond positively.

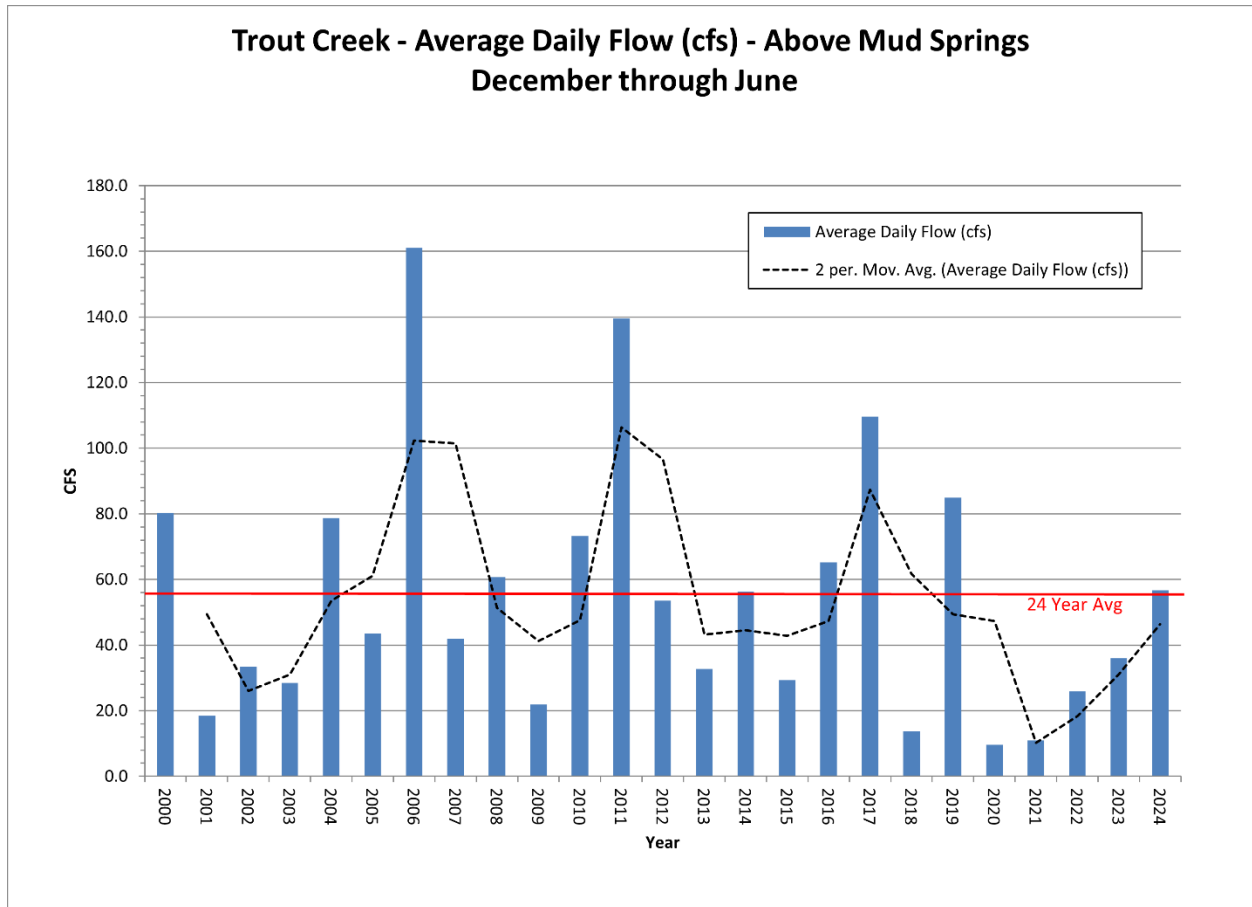


Chart showing annual average daily streamflow in Trout Creek from December through June

D. Lessons Learned/Adaptive Management:

After analyzing streamflow data for years in the Trout Creek Watershed, it has come to my attention that using the median instead of the average is much a better way to show actual streamflow. Trout Creek is flashy, and most of the time using average doesn't show the reality of the situation, coming in with a much higher number than what the fish are enduring over periods of time. I shared this revelation with Tom Nelson (ODFW), and he agreed, and felt they could better predict future run sizes based on median much better than using the average. Comparing the two charts (Median below & Average Above), you will notice that the median daily flow is much less than the average. This reflects what we have observed in the field, considering the long periods of low to no flow, as opposed to having a couple days with huge flows skew the data. For example, the long-term average daily flow for Trout Creek above Mud Springs from December through June is 54 cfs as opposed to the median daily flow of 24 cfs, more than double the amount. Comparing the last 7 years between the two charts, using the median makes it very apparent how bad of a situation this relentless drought has been for the Trout Creek summer steelhead.

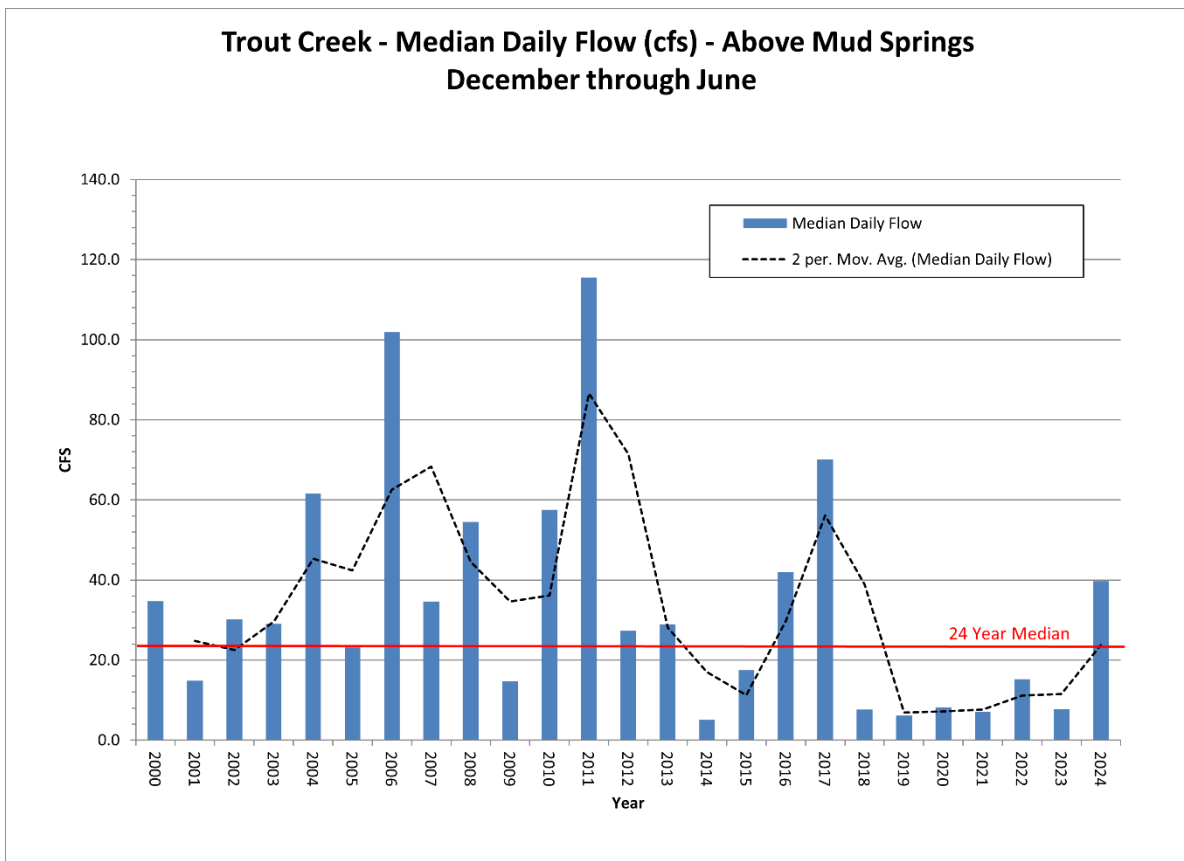


Chart showing annual median daily streamflow in Trout Creek from December through June