

**WELCOME!**  
Buck Creek  
Neighborhood Meeting

Underwood Conservation District

*Tova Tillinghast, District Manager*

[www.ucdwa.org](http://www.ucdwa.org) or 509-493-1936

*Joe Zendt, Yakama Nation Fisheries Program*

Wednesday, June 12, 2019

# Tonight's Program

- \* Introduction – Who is UCD?
- \* Overview of Buck Creek
- \* Updates on fish recolonization and current use
- \* Habitat needs, current work, and opportunities
  - \* White Salmon Irrigation District irrigation upgrade
  - \* Lower Buck Creek habitat enhancement planning
- \* Questions and next steps

# Who is UCD?

- ★ Underwood Conservation District (UCD) covers all of Skamania County and the western portion of Klickitat County.
- ★ Designed to be a local source of conservation assistance to landowners and farmers in order to protect and enhance natural resources.
- ★ Non-regulatory, locally-guided government agency.
- ★ 6 staff members: district manager, financial manager, 3 watershed resource technicians and a part-time forester.

# Our Roots...

Established on July 1, 1940

by orchardists and farmers from the Underwood Mountain area concerned with irrigation needs, the decline of forest productivity, soil erosion and water quality.

A 1941 Mt. Adams Sun article quoted Harry Card, then chairman of UCD, as follows:

“Many of the problems [brought to UCD], such as improvement of irrigation systems, drainage, storage or need for additional irrigation water, flood control, stream bank erosion, weed and rodent control, development of water holes on range land, and the improvement of range and woodland management practices, are **community problems** and can most efficiently be solved through coordinating community plans and action.”



UCD board of supervisors, the early days

# And We Grew...

- 1940 – formation of organization, office in Stevenson, boundary is Underwood area between Big White Salmon River and Little White Salmon River.
- 1941 – inclusion of West Klickitat County up to the Klickitat River and excluding Columbia National Forest Lands, except for Cities of Bingen and White Salmon; office is in White Salmon.
- 1943 – inclusion of additional parts of Skamania County excluding all municipalities.
- 1952 – inclusion of additional parts of Skamania County
- 1960 – inclusion of part of Yakima County west of reservation
- 1971 – transfer of all land within Skamania County from Clark-Skamania CD to UCD
- 1977 – undoing what was done in 1960, exclusion of land in Yakima County, went to SYCD
- 2003 – exclusion of additional land within City of Stevenson (City-annexed land)
- 2003 – exclusion of additional land within the City of White Salmon
- 2006 – addition of City of White Salmon
- 2011 – addition of Cities of Stevenson and Bingen



# Today...

Underwood Conservation District (UCD) serves as a convener for the public, landowners and other stakeholders, a clearinghouse of information, and a source of project support.

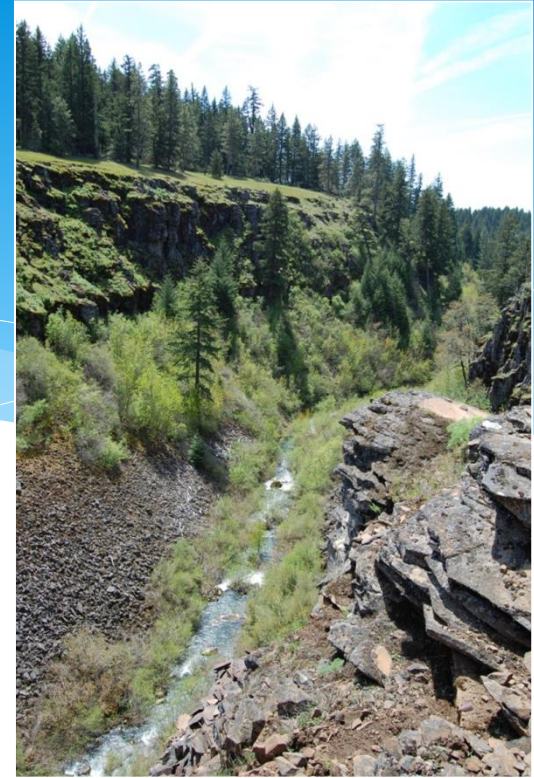
Locally-led

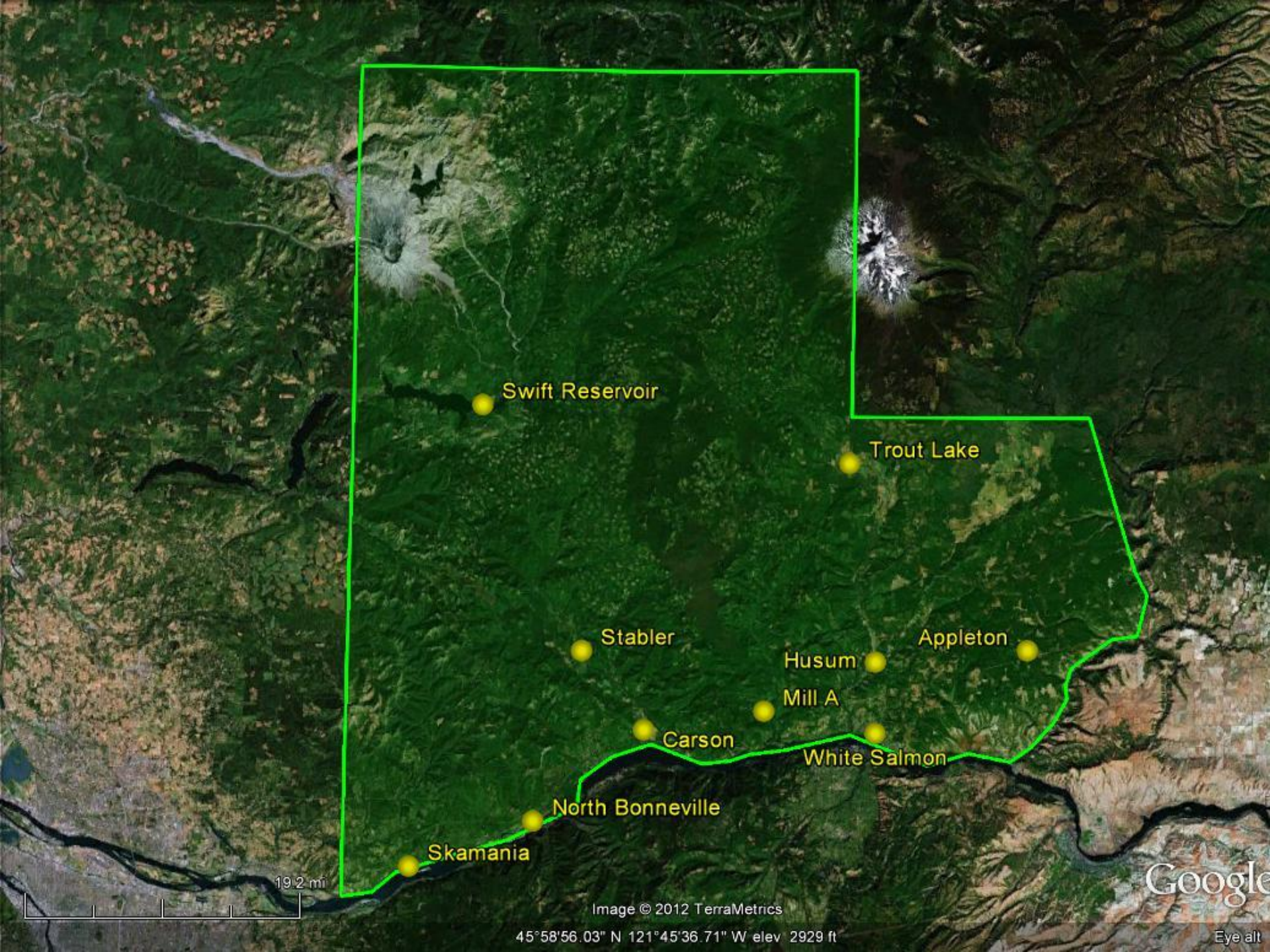
Non-regulatory

Neutral

Source of natural resource assistance for all kinds of needs: watershed health, water quality, forest health, wildfire risk reduction (Firewise), fish habitat restoration, upland habitat, native plants, noxious weeds, and more....

*Our Mission: to engage landowners and land users throughout Skamania and west Klickitat Counties in the voluntary conservation, enhancement, stewardship, and sustainable use of natural resources.*





Swift Reservoir

Trout Lake

Stabler

Husum

Appleton

Mill A

Carson

White Salmon

North Bonneville

Skamania

19.2 mi

Image © 2012 TerraMetrics

45°58'56.03" N 121°45'36.71" W elev 2929 ft

Google

Eye alt

# The Only Conservation District Statewide to cross the Cascade Divide!





# UCD Board of Supervisors

- ❖ Paul Newell, Underwood (Chair)
- ❖ Barbara Bailey, Snowden (Vice-Chair)
- ❖ Joyce Eastwick, Underwood (Auditor)
- ❖ Marie Perez, Washougal
- ❖ Bengt Coffin, White Salmon

Photo: Joy Markgraf

# UCD Employees

- Tova Tillinghast, District Manager
- Ann Gross, Financial/Administrative Manager
- Carly Lemon, Engineer in Training (EIT)
- Jan Thomas, Watershed Resource Technician
- Dan Richardson, Watershed Resource Technician & Firewise Coordinator
- Jim White, part-time Forester
- Loren Meagher, District Engineer, based in Goldendale

NRCS Area Conservationists:

for Klickitat County - Sergio Paredes in Goldendale

for Skamania County - Anitra Gorham in Brush Prairie



# District Programs



- \* Educational Workshops, Seminars and Field Trips
- \* On-Site Technical Assistance, Conservation Planning, Project Development and Cost-Share to:
  - \* Landowners
  - \* Small Farms, vineyards and orchards
  - \* Livestock Owners
  - \* Family Forests
  - \* Streamside landowners
- \* Native Plant Sale and Annual TreeFest
- \* Projects related to:
  - \* Soil Health
  - \* Invasive Weed Management
  - \* Integrated Beneficial Insect/Pollinator Habitat Support
  - \* Wildlife Habitat Enhancement
  - \* Fish Habitat Restoration
  - \* Fish Passage Inventories and Correction
  - \* Irrigation Improvements and Fish Screens
  - \* Water Quality and Flow Monitoring
  - \* Livestock Best Management Practices
  - \* Oak Woodland and Forest Management
  - \* Firewise

# How is UCD funded?

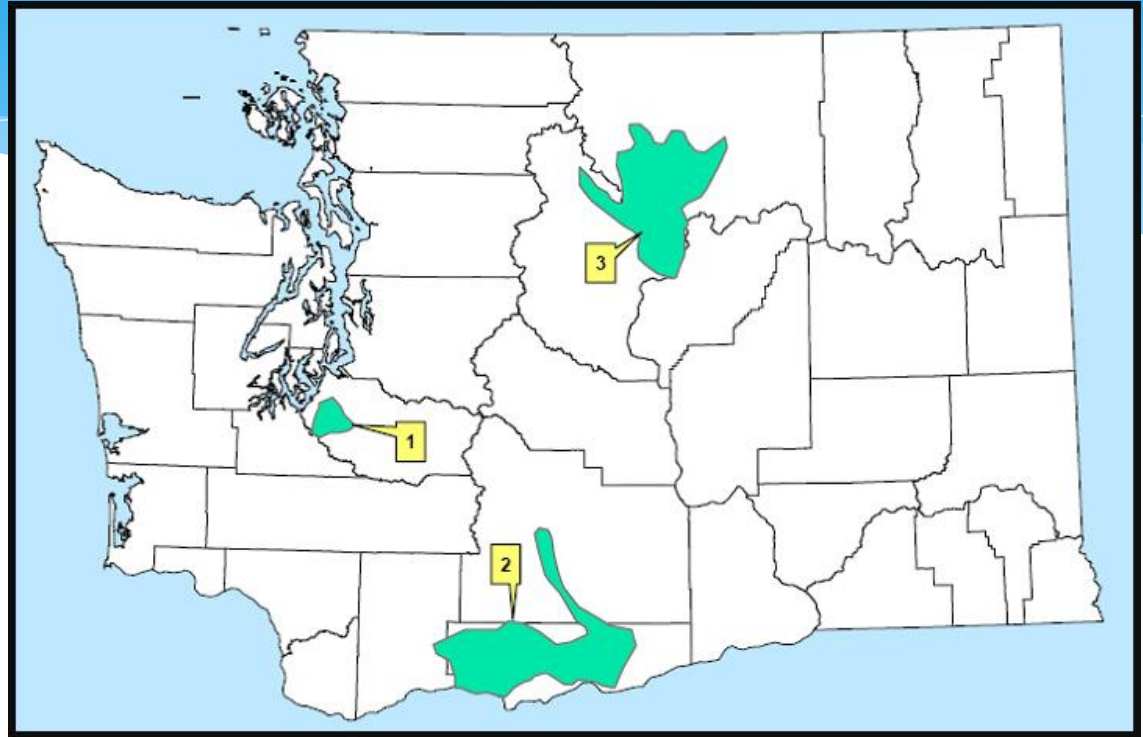
- \* All our programs and projects are funded from grants. We currently have funding support from:
  - \* WA State Conservation Commission
  - \* Bonneville Power Administration
  - \* Salmon Recovery Funding Board
  - \* Skamania County
  - \* WA Dept. of Ecology
  - \* WA State Dept. of Agriculture
  - \* US Forest Service
  - \* Columbia River Gorge Commission
  - \* and others...



# Oak Woodlands Habitat

Western Grey Squirrels, listed as Threatened in Washington State, are largely dependent on Oak Woodland habitat.

Distribution of western gray squirrels in Washington currently is limited to only three locations: 1.) south Puget Trough, 2.) south-central Washington, and 3.) the North Cascades.



- White Oak habitat provides natal den sites and acorns for food. Also associated with Doug fir and Ponderosa Pine.
- Causes of habitat loss include human development, conversion of oak woodlands to softwood stands through fire suppression, catastrophic wild fires, logging, changes in forest composition and structure resulting from commercial forestry practices, and invasion by non-native plants.

# Firewise and Wildfire Risk Reduction



before



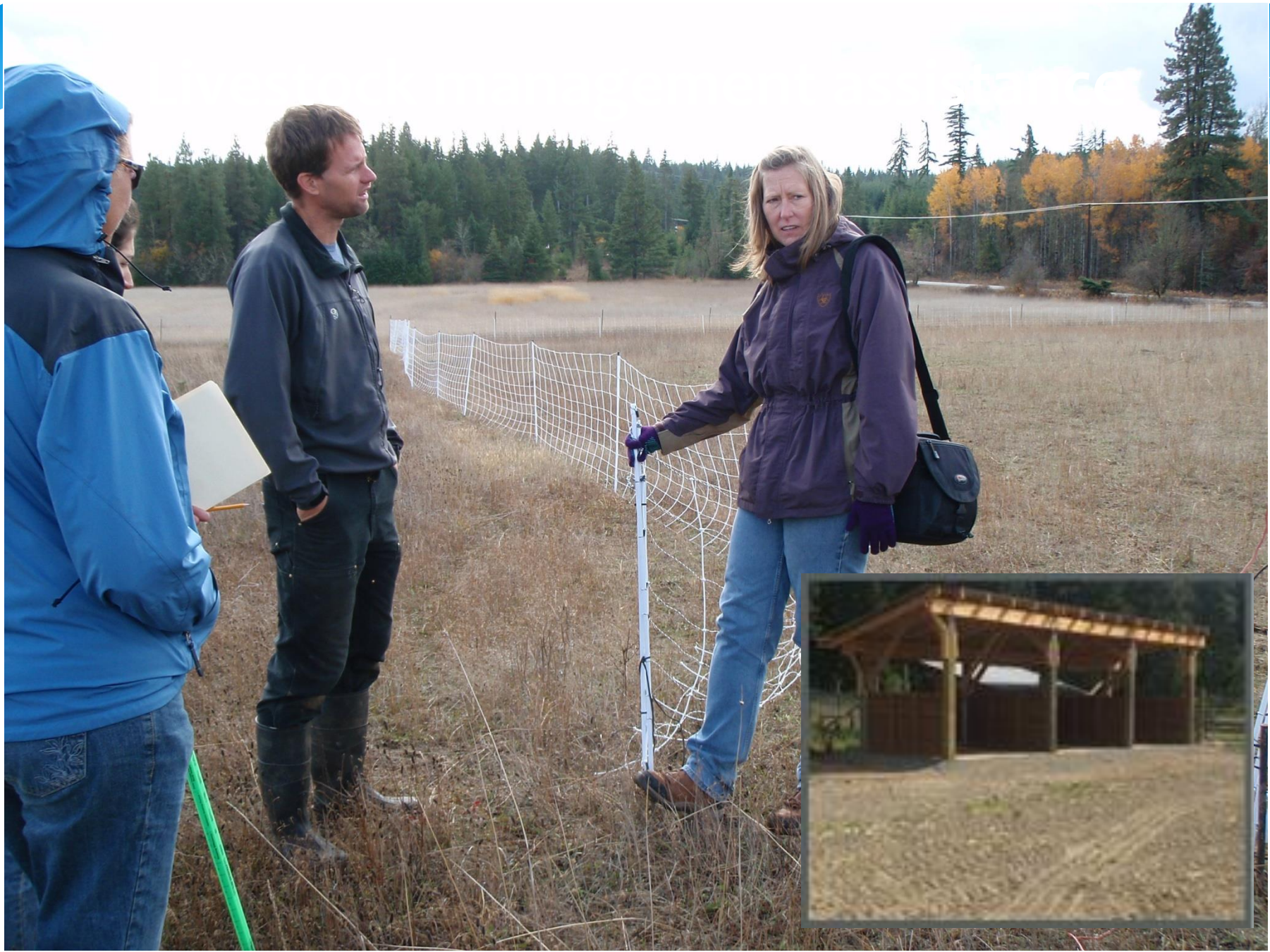
after

# The Future of Firewise?

In a **hotter, drier climate**, an era of **more catastrophic fires**, and **more homes in the woods**, the need for Firewise and forest management assistance has never been greater.

- Education and outreach to residents
- Home hazard assessments and site-specific technical assistance
- Firewise projects
- Mobile chipper
- Community projects
- [www.ucdwa.org](http://www.ucdwa.org)







# Farm assistance

- \* Soil testing and equipment such as soil sampling probes, soil moisture meter, and manure/compost spreader
- \* Irrigation efficiency and fish screen projects
- \* Beneficial insects and pollinator habitat enhancement



# Orchard and Vineyard assistance



- \* <http://ucdwa.org/2016/09/30/new-ucd-soil-health-project-video/>
- \* Search on Youtube for “UCD soil health”

# Hydrology and habitat



# Reconnecting floodplains



Improves stream function:

- Diffuses flood flows and reduces erosion
- Provides rearing and refuge for fish
- Helps store water

# Improving fish habitat

YouTube little wind river habitat



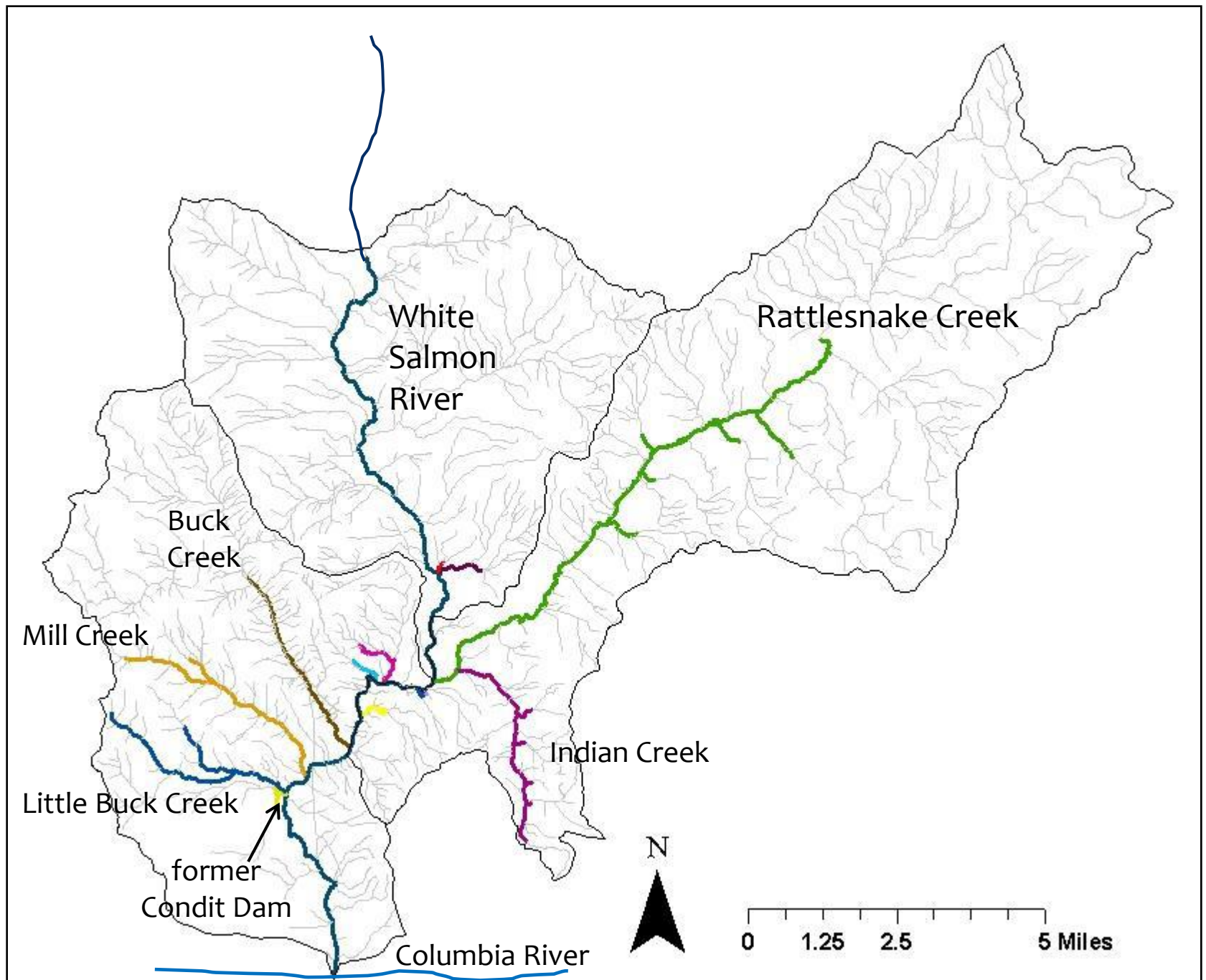
Gundersen reached out to the Underwood Conservation District, of Skamania County, Wash.

Salmon Return to the Little Wind River after Habitat Restoration

BonnevillePower

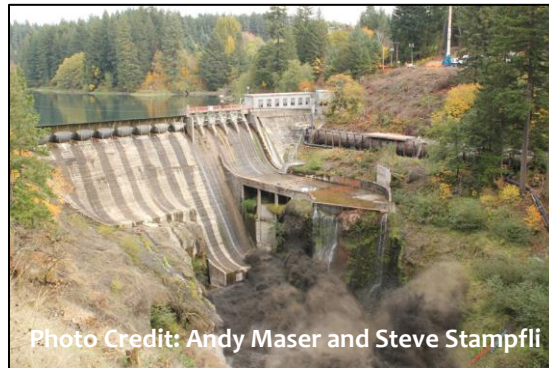
Subscribe 1.3K

3,079 views



# Background



- The White Salmon River likely supported Steelhead, spring and fall Chinook Salmon, Coho Salmon, Chum Salmon, coastal Cutthroat Trout, Bull Trout.
- Condit Dam - 125 feet high. Blocked upstream fish passage for nearly 100 years.
- Breached in 2011, completely removed in 2012, opened up to 50 km of Steelhead habitat.
- Prior to dam removal, a multi-agency workgroup agreed to a natural recolonization strategy.

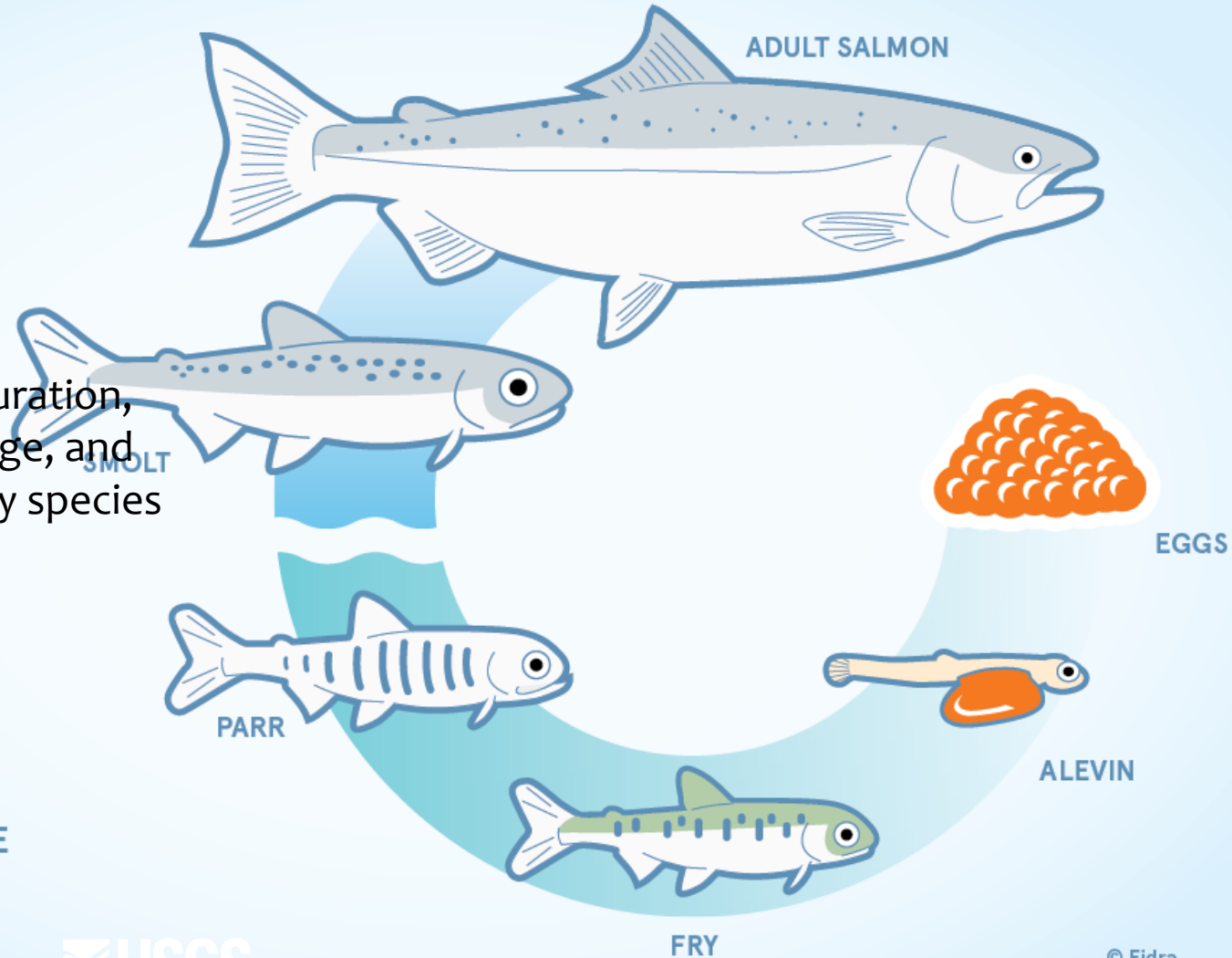


# Salmon lifecycle

Freshwater rearing duration, spawn timing, adult age, and migration time vary by species and run.

**Traits = Life history.**

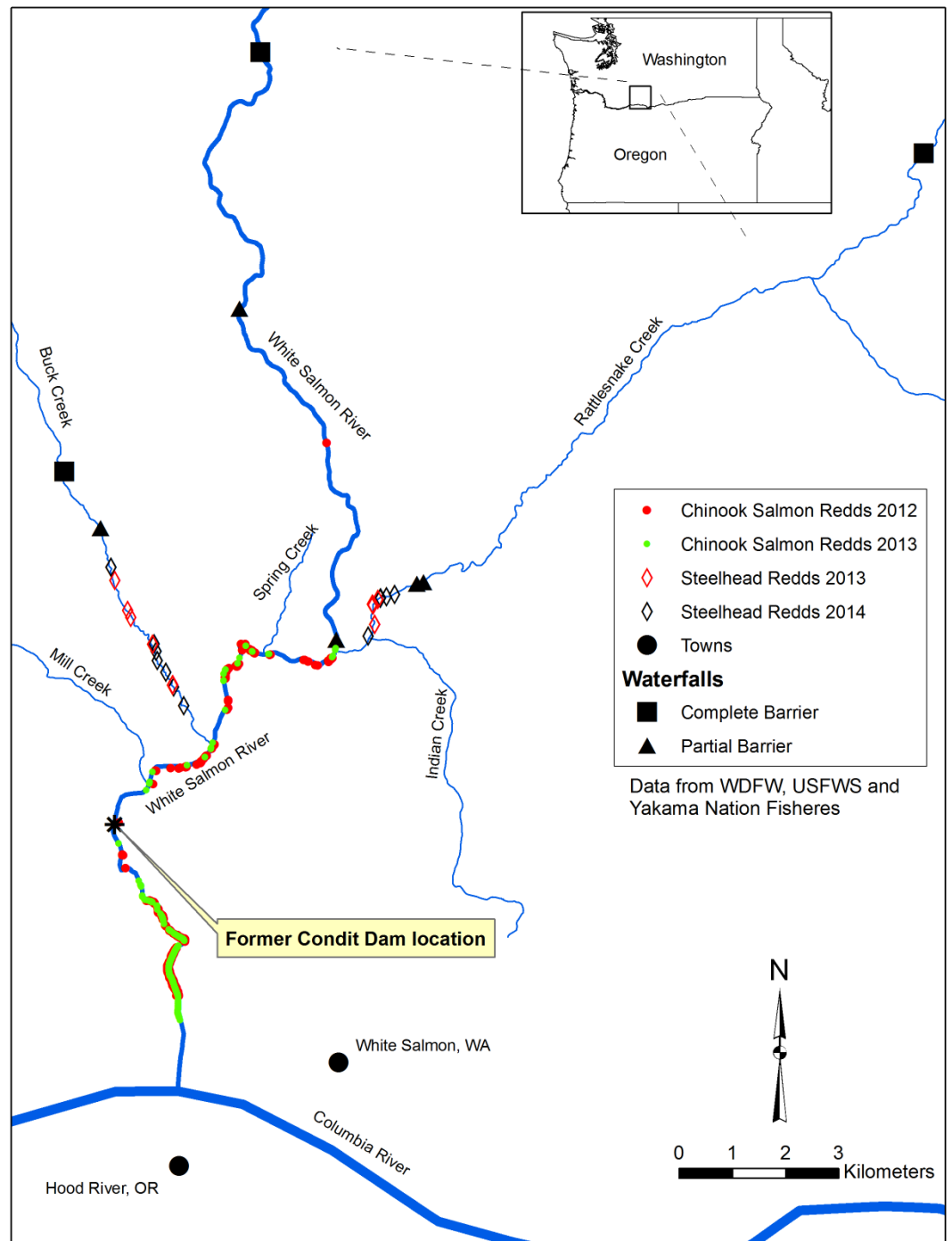
-  = FRESHWATER PHASE
-  = SEAWATER PHASE





# White Salmon Subbasin Post-Dam Removal Monitoring

- Steelhead (tributaries)
- Spring Chinook
- Fall Chinook
- Tule and Upriver Bright
- Coho (currently no monitoring)
  
- Limited funds





# Overview of Buck Creek

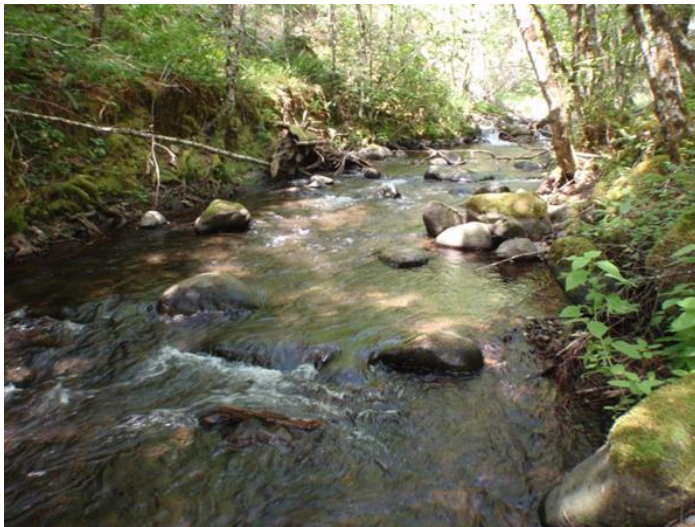
- ☆ Historically, forestland adjacent to stream was logged.
- ☆ Most of watershed continues to be forested, mostly owned and managed by Washington State Dept. of Natural Resources.
- ☆ Stream serves as a water source to the City of White Salmon, as well as the White Salmon Irrigation District (WSID serves the Husum area).

# Important Fish Habitat

- \* Fish present in Buck Creek are Mid-Columbia Steelhead, Lower Columbia Coho, rainbow trout, cutthroat, and potentially Lower Columbia Chinook, Bull Trout.
- \* Buck Creek provides important rearing, refuge, feeding, and spawning habitat to fish.
- \* Buck Creek provides consistent, clear, cool water that is valuable refuge from the mainstem White Salmon River, especially during storm flows, when turbidity and velocities in the mainstem are high.

Naturally confined,  
very limited floodplain.  
Channel dominated by  
large cobble.

Reach	Total survey Length (m)	Total surface area (m2)	Glide	Habitat Type (%)		
				Pool	Large cobble riffle	Small cobble riffle
<b>Buck Creek total</b>	<b>4,612</b>	<b>28,365</b>	<b>1</b>	<b>15</b>	<b>83</b>	<b>1</b>



Habitat analysis data, sourced from USGS-CRRL and YNFP

Adjacent riparian vegetation is typically small diameter hardwood (Big leaf maple, red alder, vine maple)

Evidence of historic large conifer removal in riparian area



## Summary of Habitat Conditions

- Large cobble riffle dominates, pools were simple and shallow, formed by bedrock
- Reduced channel complexity, limited floodplain and side channel access.
- LWD moderately low; future LWD recruitment reduced but improving
- Little gravel for spawning
- Good riparian shading and good temperatures for fish

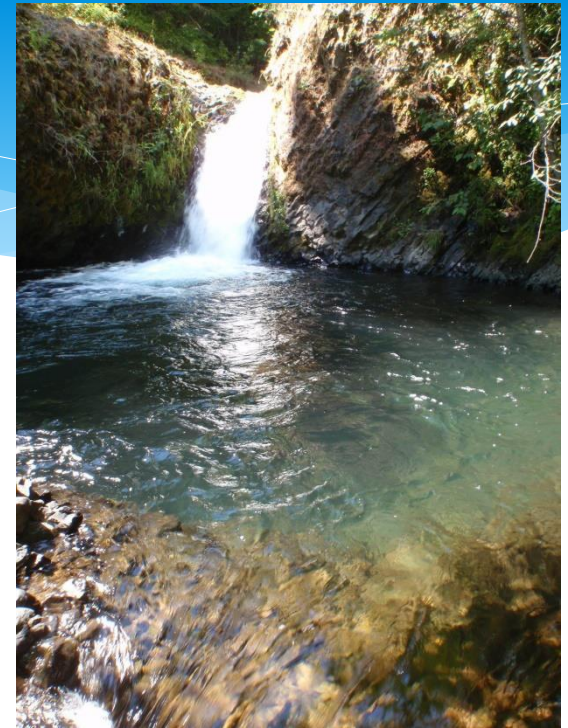




Photo 1. Typical channel conditions. Plane bed morphology.



Photo 2. Typical channel conditions. LWD accumulation on an outside bend. Wood likely to mobilize in next high flow.



Photo 3. Typical channel conditions. Plane bed morphology, bordering on step pool morphology.



Photo 4. Typical channel conditions. Relatively immature riparian forest.



Photo 5. Typical channel conditions. Stable LWD.

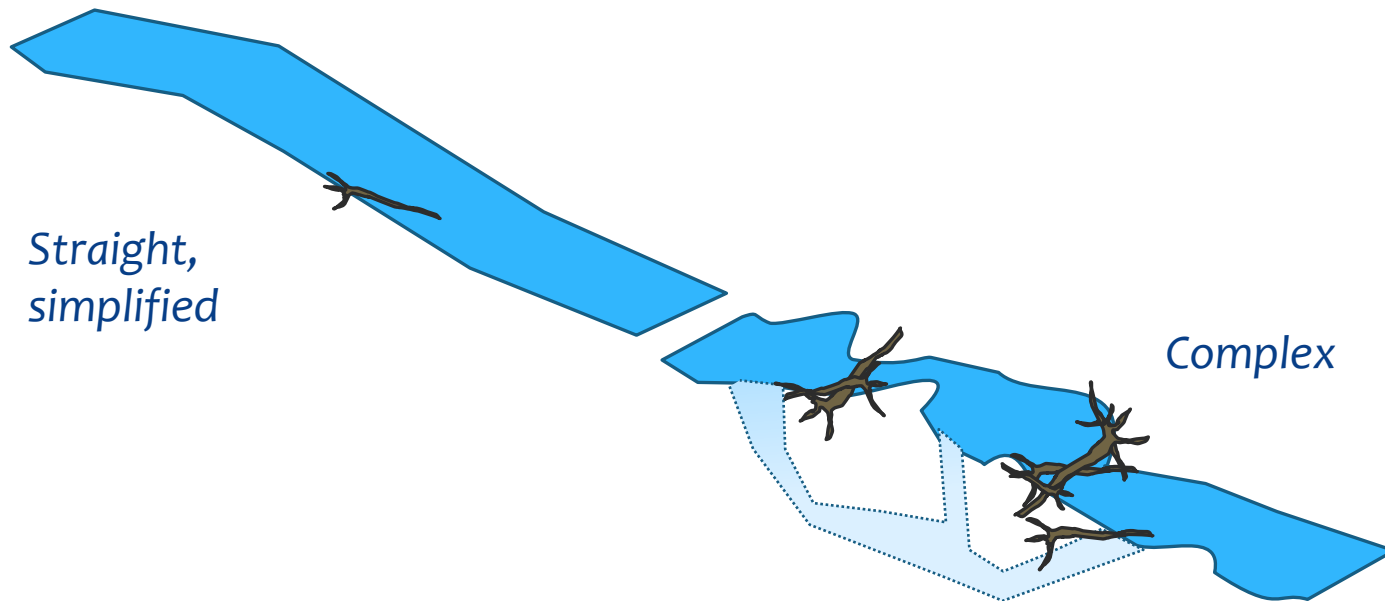


Photo 6. Typical channel conditions. Forced pool morphology at bedrock outcropping.



# Potential habitat improvements

**In-stream habitat complexity, floodplain and side channel reconnection, & healthy stream-side vegetation**



# Potential habitat improvements

## In-stream habitat complexity & healthy stream-side vegetation

*Looking for appropriate places to...*

- ☆ Re-build habitat: pools, riffles & glides
- ☆ Add engineered log-jams
  - To capture spawning gravel, create pools, provide cover
- ☆ Reconnect side channel areas
  - Flood relief, refuge, complexity, fish rearing habitat
- ☆ Planting stream-side conifer trees & removal of weedy, invasive species
  - Future large wood recruitment, shading, cooler stream temperature

# PLEASE LEAVE LOGS

IN AND ALONG  
THE STREAM CHANNEL.  
THEY CREATE  
IMPORTANT HABITAT  
FOR SALMON,  
STEELHEAD AND TROUT.

WITH

WITHOUT

REMOVING WOOD REMOVES FISH!



# Large logs = habitat complexity

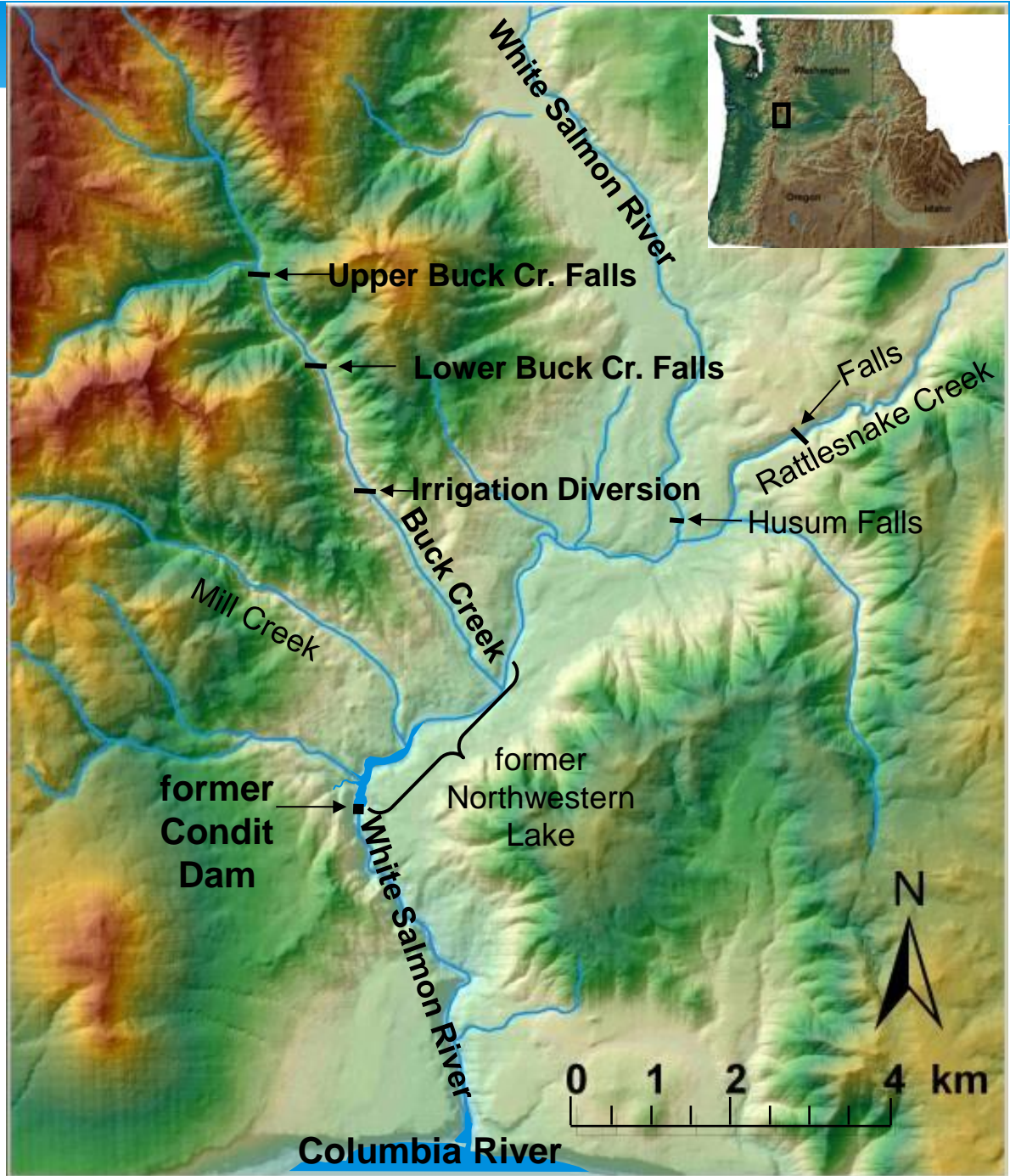
Small log-jam, on Rattlesnake Creek, caught between riparian alders. Notice the pool and sediment capture: much more complex than this:



# Large logs = habitat complexity in small streams

One log, with  
immediate effects  
of sediment  
capture upstream  
and scour pool  
starting  
downstream.





Map credit:  
USGS

# Current work in the Buck Creek watershed



☆ White Salmon Irrigation District upgrades (this summer):

☆ Fish passage

☆ Fish screen

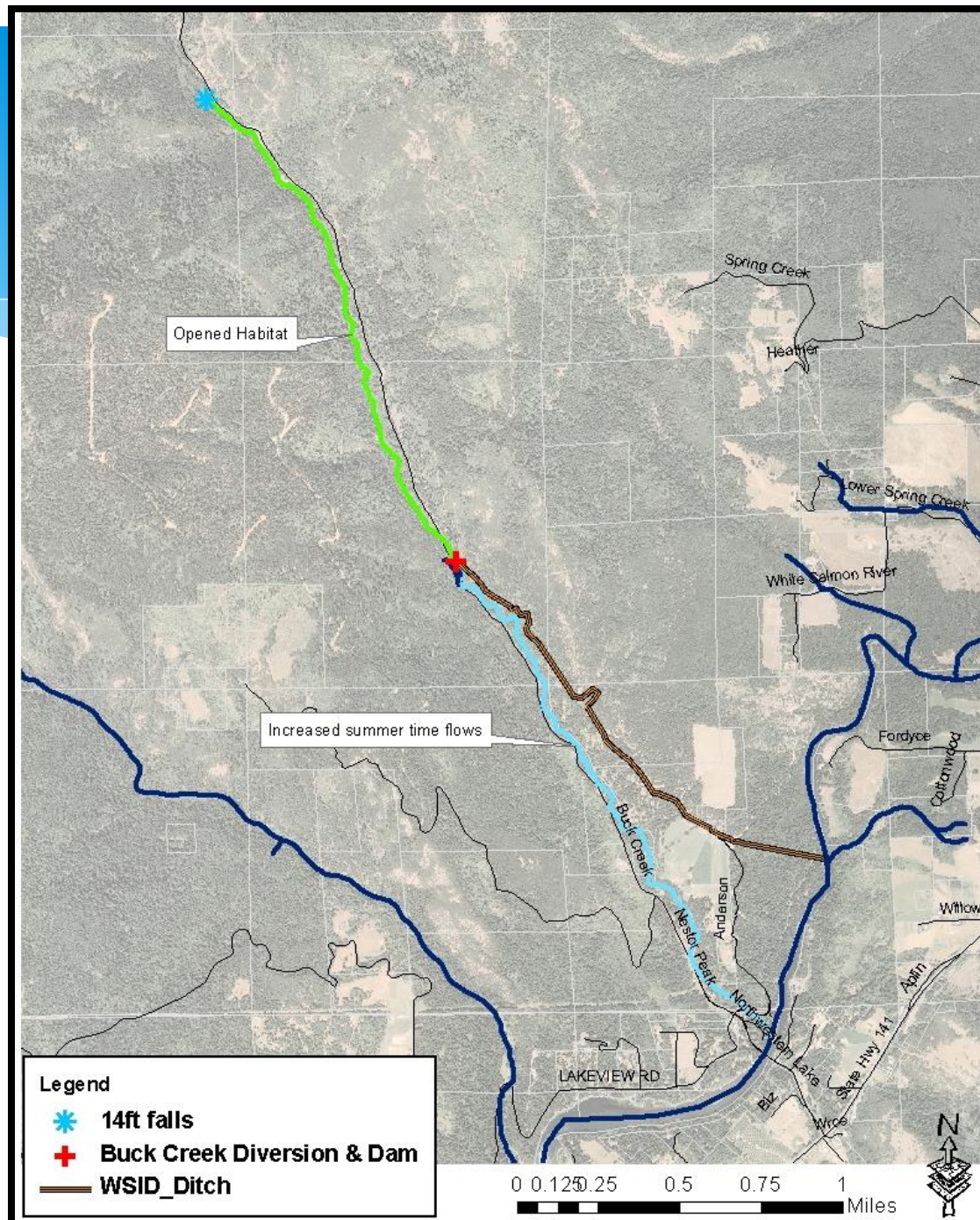
☆ Piping to save water instream

☆ Lower Buck Creek Habitat Enhancement Planning

☆ Nearby... Mill Creek Fish Passage Project (2016)

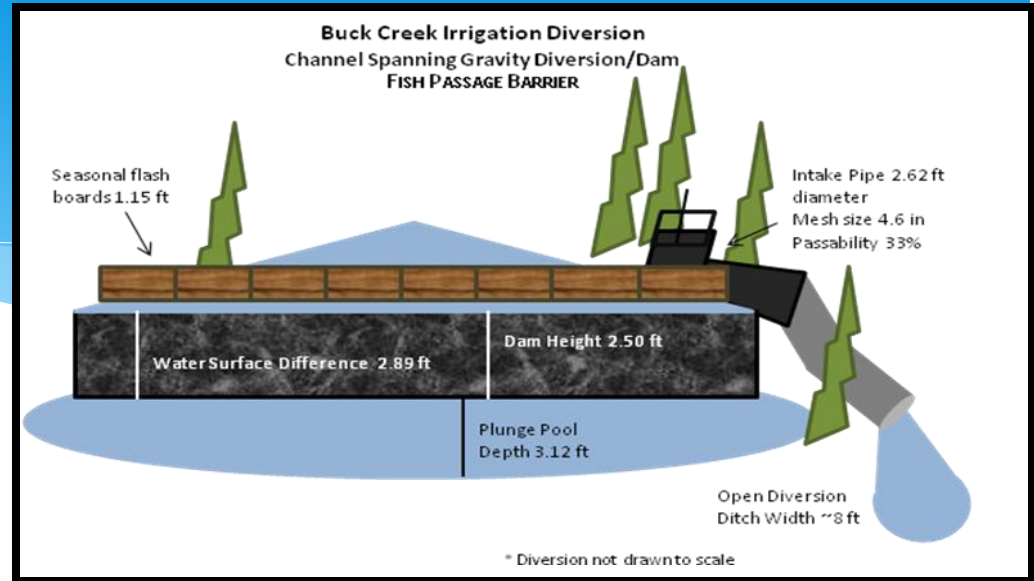
# WSID Irrigation Project

- Irrigation diversion is unscreened. There is a debris rack. We are installing a modular drum **fish screen** with a bypass channel.
- We are building a roughened channel for **fish passage**. Minimum of 1.3 miles of spawning & rearing habitat inaccessible due to the barrier dam in Buck Ck.
- 2.39 cfs water has gone into the state water trust with the **piping** of the conveyance system.

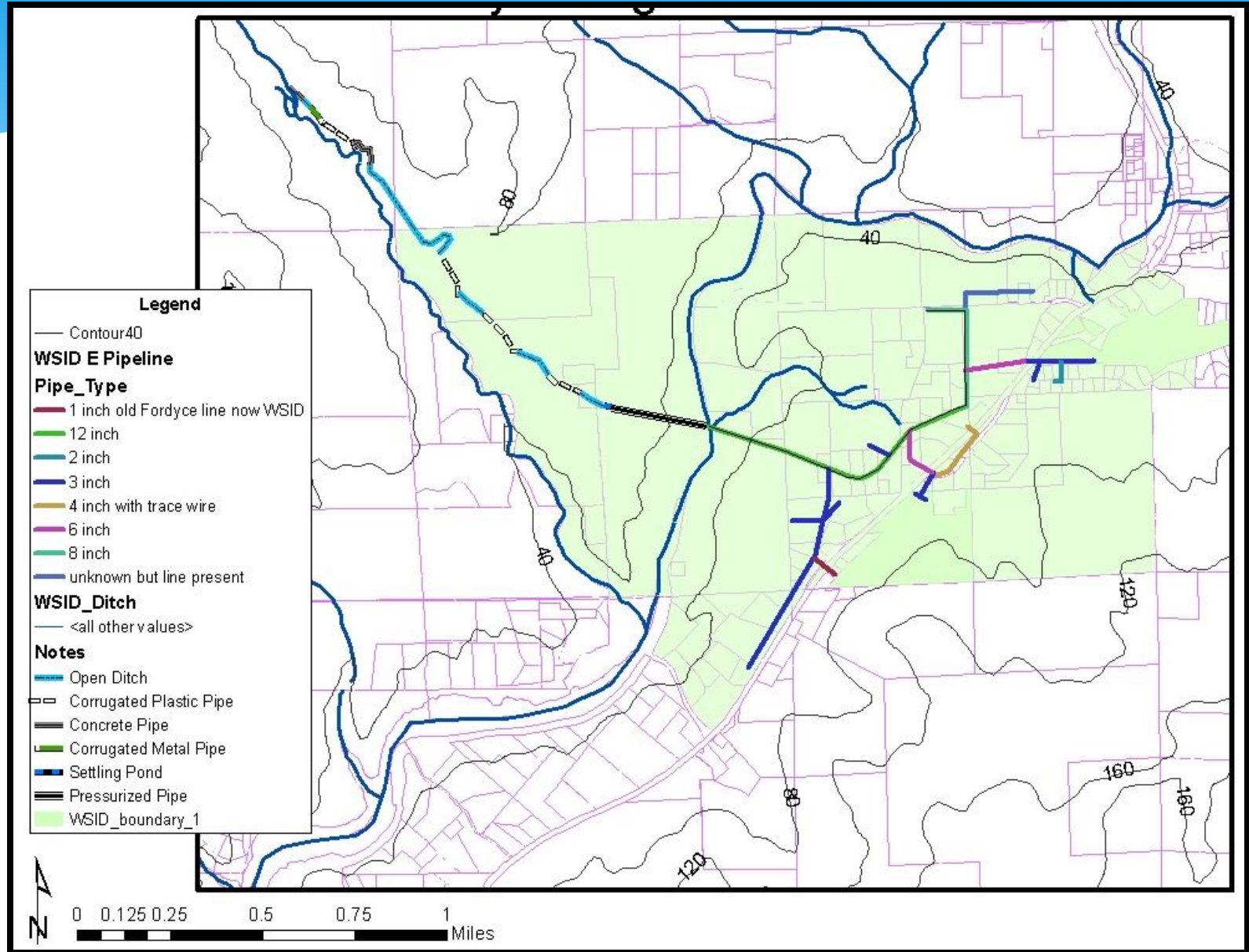




# White Salmon Irrigation District (WSID) Diversion



# WSID System



# Community Benefits

- Provides reliable source of irrigation, stock and domestic water for irrigation district: supporting small-scale agricultural activities for over 90 users and over 400 acres in the Husum area.
- Reduces irrigators' risks with system failures and risks to fish.
- Demonstrates responsible irrigation water management to the larger community, and offers an opportunity to teach others about balancing human use of a natural resource with stream stewardship.
- Project location is public, and will include an educational sign to interpret the benefits of the project. Site is seen by recreationists, hunters, and other visitors daily.

# What to expect...

- Truck traffic up and down the road, dust abatement
- Trucks and equipment staged at the WSID diversion, possible temporary traffic control as needed
- July 1 in-water work may begin, including a temporary dewatering and diversion system
- Work going on until around November 1

# Work nearby... Mill Creek



\* <http://ucdwa.org/portfolio/mill-creek-fish-passage-project/>

# Lower Buck Creek Habitat Enhancement Planning

Underwood Conservation District will work with Mid-Columbia Fish Enhancement Group and landowners to **assess feasibility, identify appropriate restoration activities and coordinate the design and planning of habitat restoration and enhancement.**

**Feasibility assessment, alternatives analysis, conceptual design, preliminary design, and vegetation enhancement planning** will be completed. Permits, cultural resources review and community outreach will be initiated.

Currently funded with a planning/design grant through WA State Salmon Recovery Funding Board.

# Goals of Lower Buck Creek Habitat Enhancement

- Increase the quantity, quality and accessibility of juvenile coho, steelhead, and Chinook **rearing habitat** in the main channel, floodplain and off-channel areas.
- Increase the amount of coho, steelhead, and Chinook **spawning habitat** by retaining and protecting spawning gravels and providing a diverse array of spawning habitat types and patches.
- Reduce the potential for **stream channel incision** by enhancing the connectivity of floodplains and side-channels.
- Increase long-term **riparian function** by increasing the abundance of coniferous trees and canopy cover in the riparian zone.
- Explore and evaluate opportunities to **address existing infrastructure** to allow floodplain reconnection and enhance side channel habitat.

# Project Vicinity







## Project Need:

- \* The *Klickitat Lead Entity Region Salmon Recovery Strategy* has listed “**limited availability of pools and spawning gravel,**” as well as “low summer flows and higher stream temperatures” as limiting habitat factors in Buck Creek, a Tier A stream.
- \* Recommended Actions are:
  - \* **Increase LWD**
  - \* **Place structures to retain spawning gravels**
- \* Buck Creek is steep, confined, and bedrock-constrained, so the **opportunities for floodplain reconnection are limited.**

## Project Need:

- The *Mid-Columbia Steelhead ESA Recovery Plan for the White Salmon River* states that habitat quality in Buck Creek is limited by **insufficient pools and spawning gravels**, as well as low flows.
- One of the threats to habitat identified for Mid-Columbia steelhead is **floodplain disconnection** and the **loss of associated habitat-forming processes**: “Floodplain function and the availability of floodplain habitat for salmon [should be] restored.... This restoration should include connectivity between river and floodplain and the restoration of altered sediment routing” (NMFS June 2013).

# Community Benefits

- Great location in the watershed with a landowner willing to use the site for educational opportunities.
  - Project supports the Atlan group mission and may foster future habitat opportunities with community.
  - Excellent location with easy access for salmon habitat stewardship, education, and volunteerism.
  - Project will seek and demonstrate a balance of ecological benefits with human infrastructure.
  - Opportunity for stewarding the community during post-dam removal transition.



# Project Scope

- **Project Coordination** – including stakeholder and landowner communication with the goal of defining constraints and objectives from stakeholders' point of view.
- **Geomorphic site investigation and data collection** – supplemental survey and elevation data
- **Hydrologic and Hydraulic Modeling** – started already, but should include inundation mapping.
- **Geomorphology and Risk Analysis** – would look at potential for bed changes (aggradation or incision), trends since Condit Dam removal, potential for channel capture, potential effects of wood placements, potential risks to road or structures, etc.
- **Alternatives Evaluation** – a more detailed look at restoration alternatives based on the analysis, including feasibility; select a preferred alternative.
- **Preliminary Design and Report** – including construction cost estimate for preferred alternative.
- **Cultural Resources Review** – with subcontracted archaeologist.
- **Permit Application Preparation**
- **Vegetation Enhancement Planning** – including a plan for noxious weed control
- **Community Outreach and Education Planning** – At least one community education tour and presentation, and at least one student field trip to conduct site evaluations or pre-project monitoring

# Project Timeline

- **Today** – Project kick-off
- **Soon** – Contract with Inter-Fluve, Inc. for design services
- **Summer-Fall 2019** – Ongoing consultations with landowners, and additional site review and data gathering
- **Winter-Spring 2020** – Alternatives development and feasibility assessment
- **Spring-Summer 2020** – Alternatives discussion and selection with landowners
- **Fall 2020** – Preliminary design complete and cultural resources review initiated
- **Ongoing** – pursue funding for final design and project construction
- **Summer 2021 or 2022** – Project construction

# What does it mean to have a project on my property?

## Bottom line:

We're talking about cooperative stream projects

For the greater good of the natural system (fish, water, people)

Voluntary participation from landowner

Paperwork, financing and management from UCD



# *Example of stream habitat project:* Little Wind River



Before construction



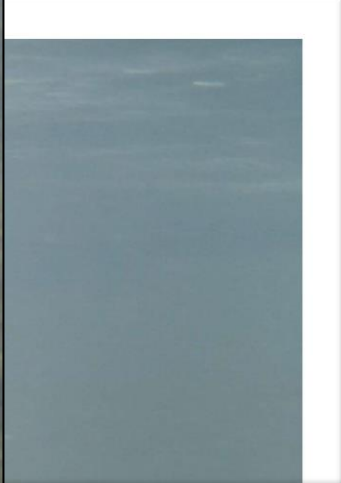
After construction



Root wads  
interacting with  
stream

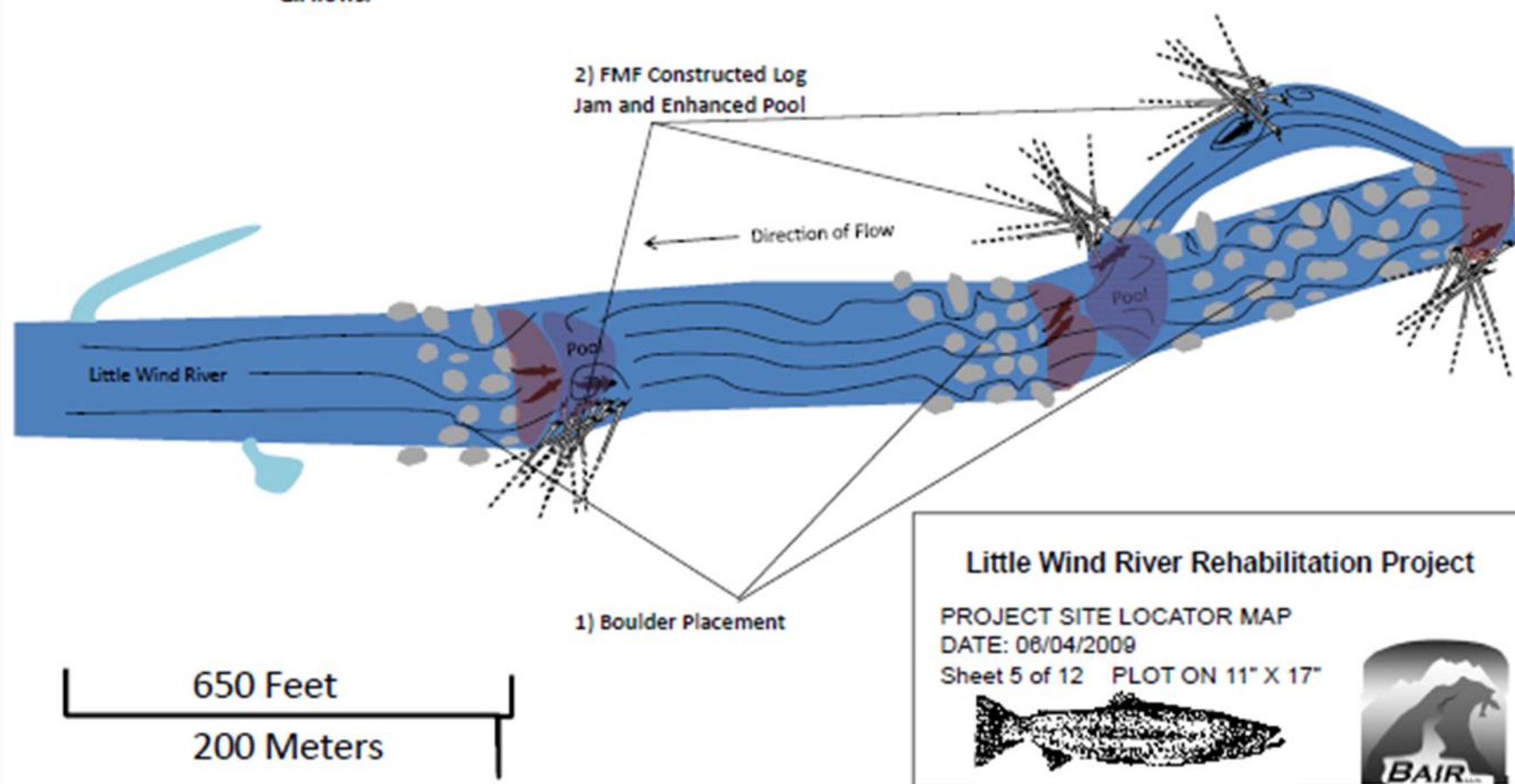
Deeper pool with  
undercut beneath  
logs

Added stream features = added complexity = fish habitat



## Little Wind River Restoration Project Site #2 "The Lower Reach" River Mile 0.25-0.75

- NOTES:**
- 1) Large wood and boulders structures and side channels, groundwater channels and alcoves would be enhanced and/or created to increase salmonid holding, rearing and spawning habitat. Boulder placement would be designed to accumulate spawning gravel above the riffle sections reduce the width to depth ratio and define the thalweg and low flow channel to facilitate adult and juvenile fish immigration.
  - 2) Formidable Multi-Faceted Log Jam (see sheet 6) would be constructed to increase pool depth and provide margin holding and hiding cover habitat and increase bank stability. The log jam would be designed to function at all flows.



# Tell us about your stream...

- ☆ What have you seen? (Wildlife, fish, floods?)
- ☆ What's changed?
- ☆ What concerns do you have?
- ☆ What goals do you have?

# Thank you for attending!

*Please feel free to contact us at:*  
Underwood Conservation District  
509-493-1936  
[tova@ucdwa.org](mailto:tova@ucdwa.org)

or Margaret Neuman at Mid-Columbia Fisheries  
Enhancement Group

[fish@midcolumbiafisheries.org](mailto:fish@midcolumbiafisheries.org)



[www.ucdwa.org](http://www.ucdwa.org)

We look forward  
to our next 75  
years...  
of striving to  
transform  
community  
challenges into  
community success!

BZ Falls

White Salmon River

July 2012

< 1 year after breach of Condit Dam

Photo: Jeanette Burkhardt, Yakama Nation Fisheries

