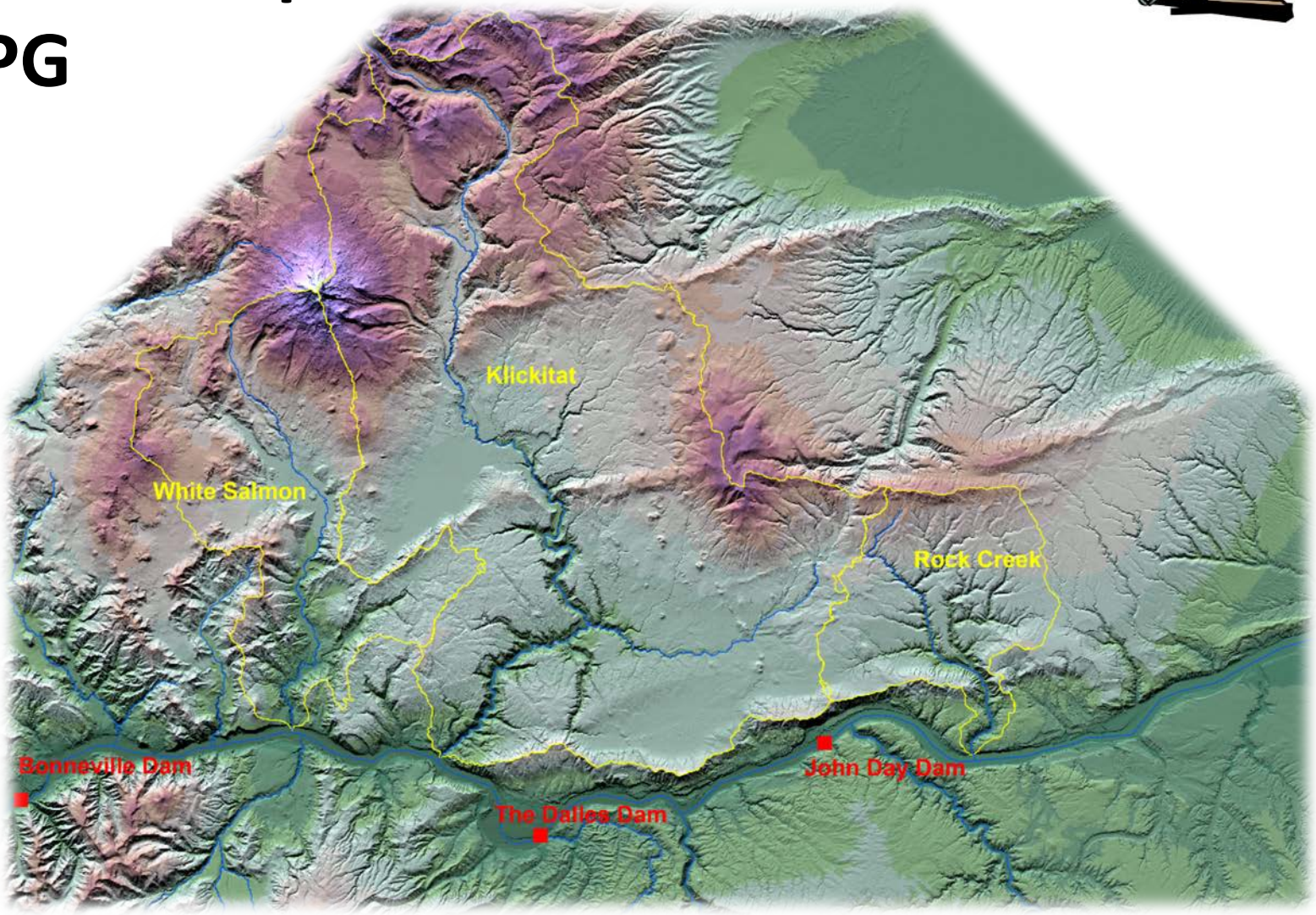
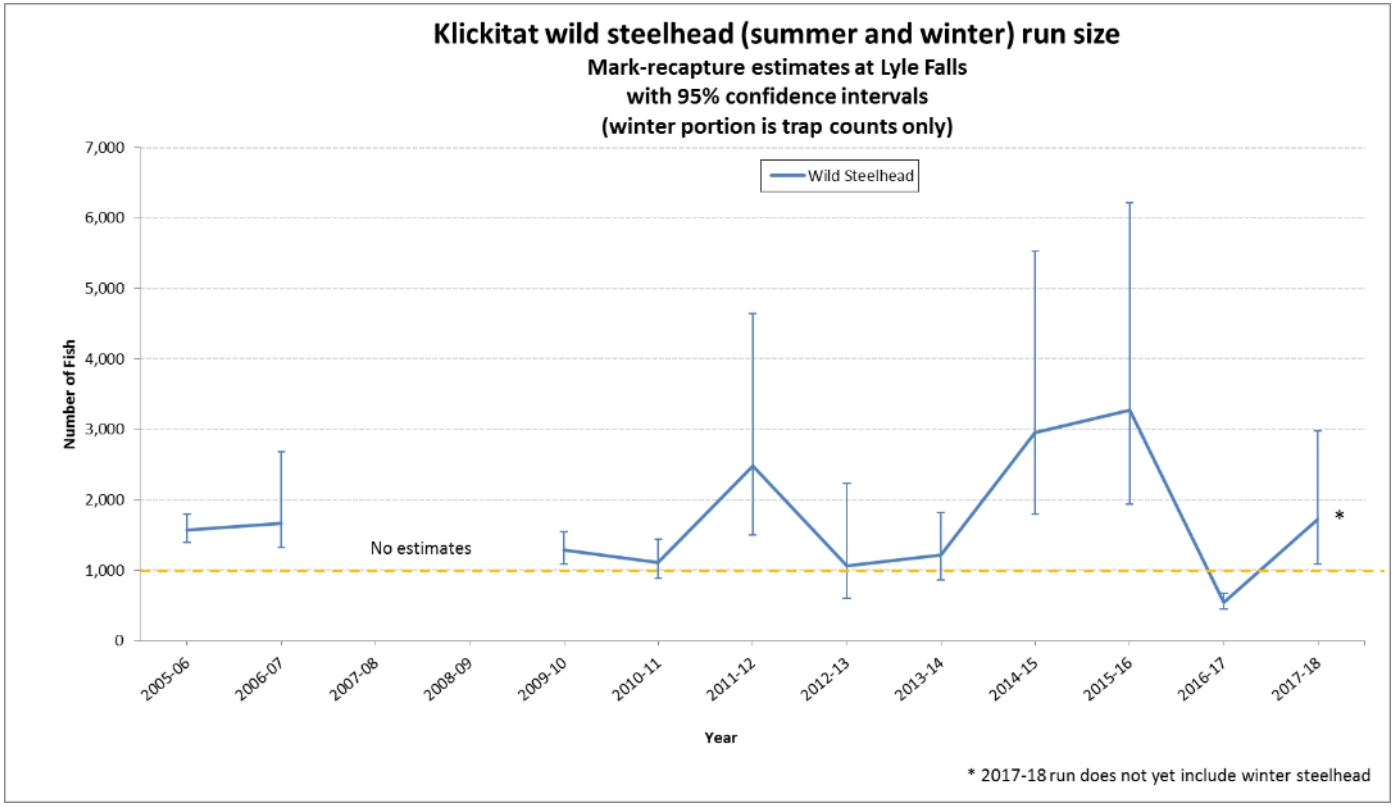
Washington Cascades Eastern Slopes MPG



Federal Caucus Recovery Team meeting March 29, 2018

Klickitat

- Population may be meeting viability criteria (abundance/productivity?, spatial structure, genetic diversity)
- However:
  - Estimates are run size in lower Klickitat (not spawner abundance)
  - Potentially high pre-spawn mortality for summer steelhead
  - Some out-of-subbasin temporary strays in estimates
  - Continued monitoring required



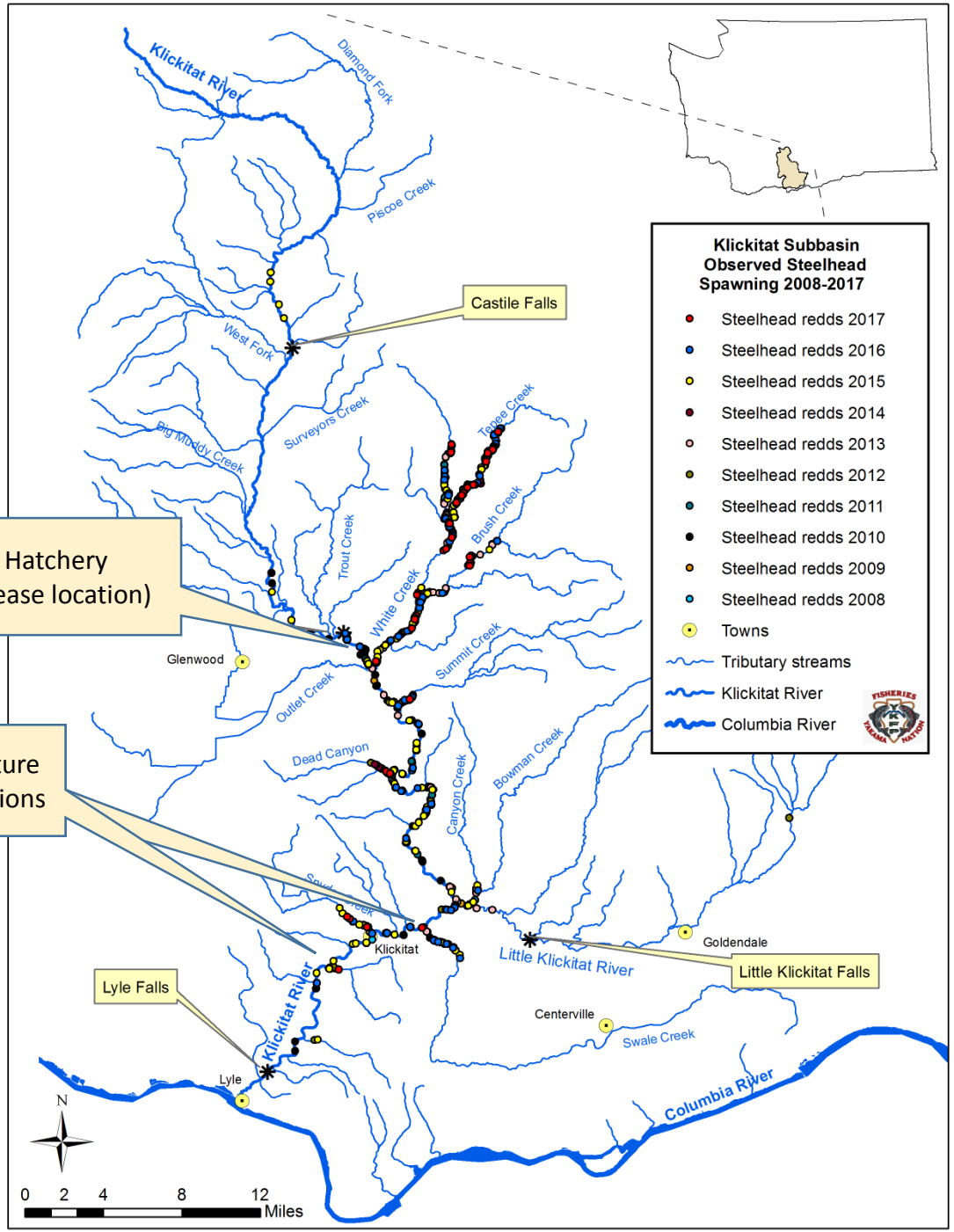
Klickitat Hatchery
Fall Chinook and Coho Releases

- 4.0 M Fall Chinook
- 1.0 M Coho

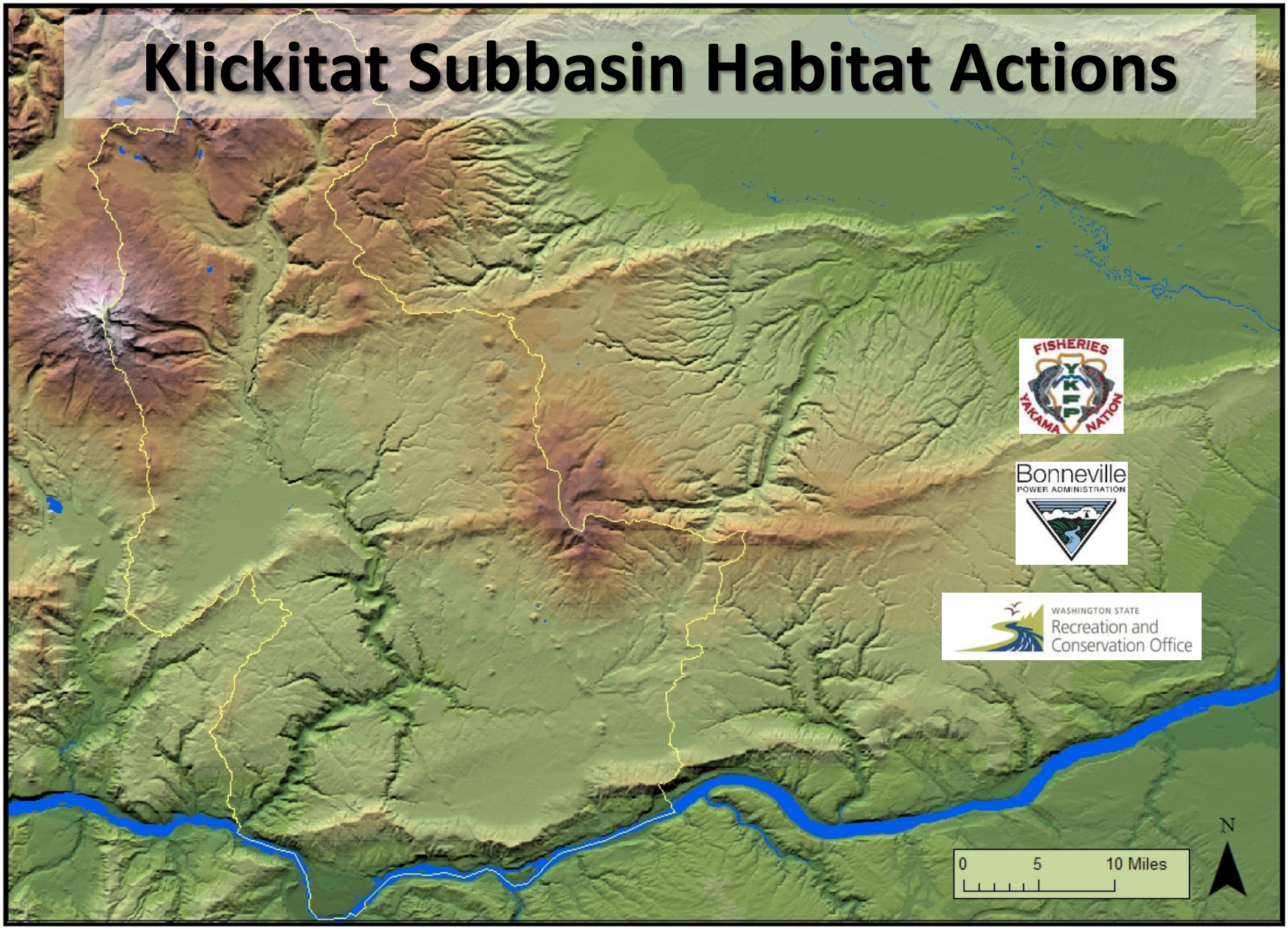
- Previous Klickitat Master Plan proposed Wahkiacus Hatchery and Acclimation Facility (26 miles downriver)

- Current Master Plan eliminates this
  - BPA funding reductions, in-lieu issues

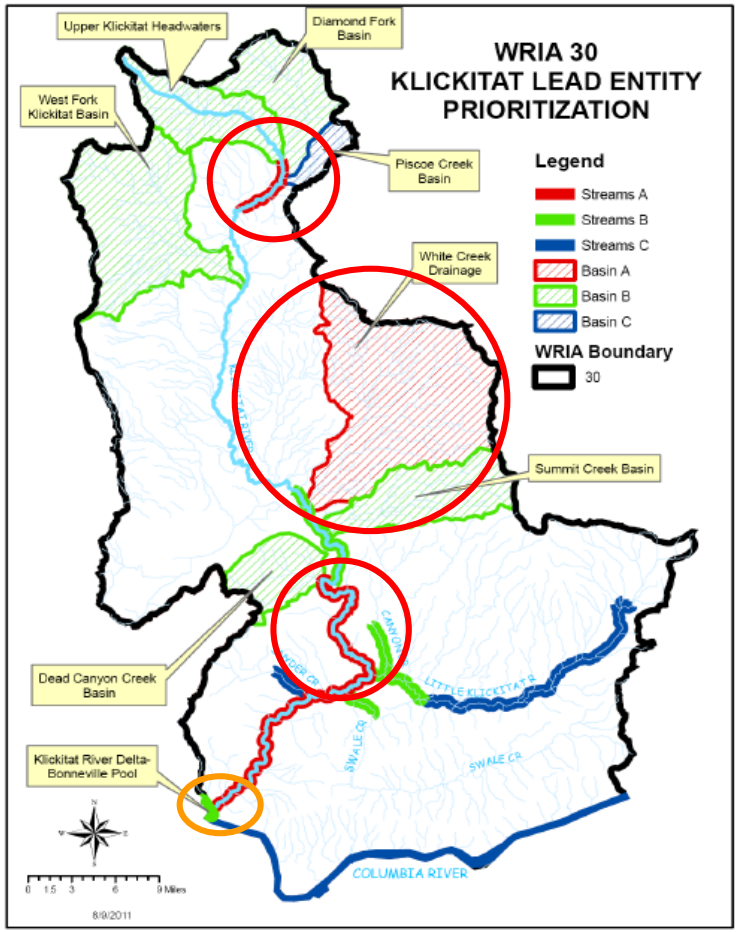
- Lower river releases would reduce interactions in high quality spawning/rearing habitat

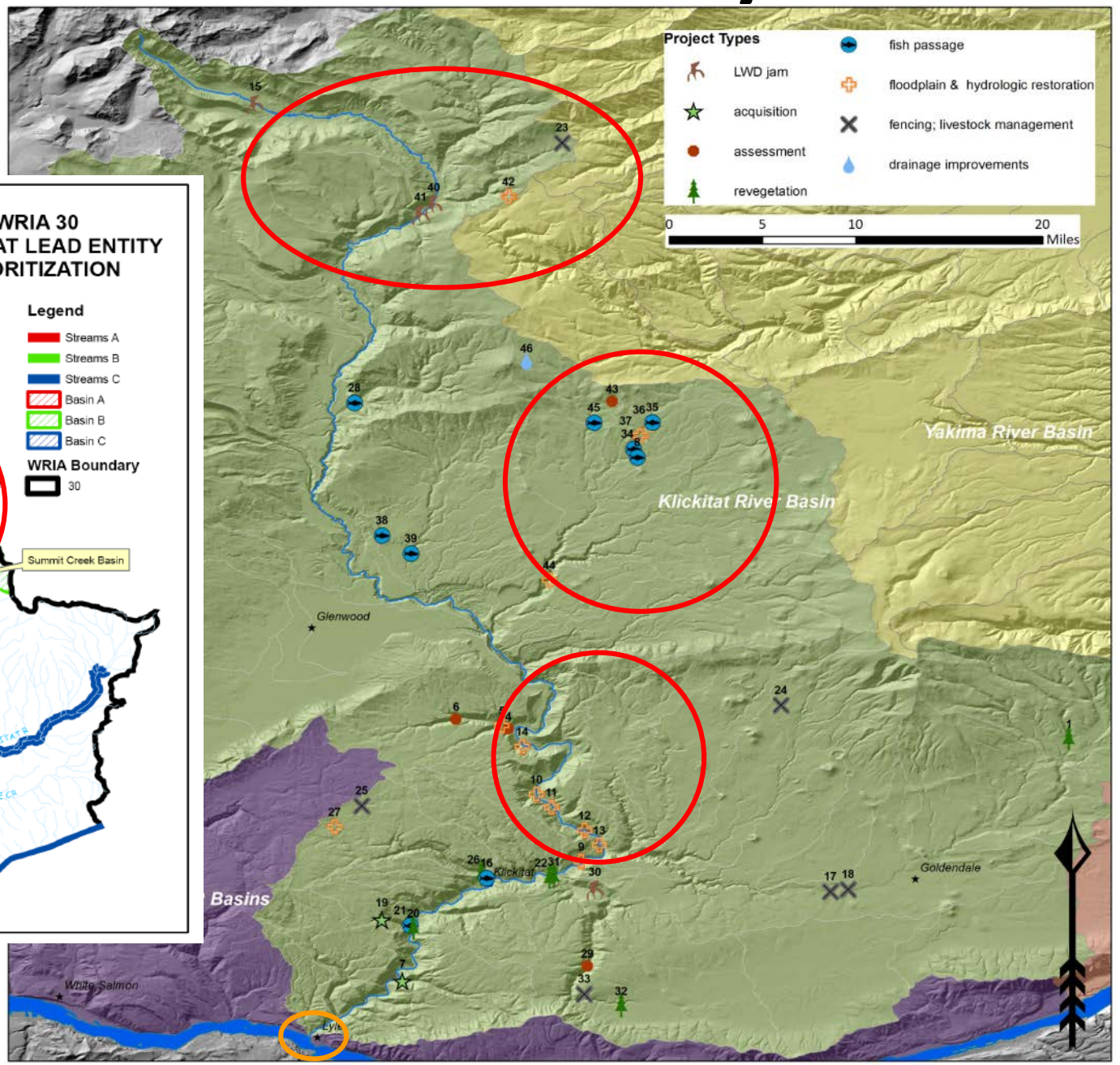


Klickitat Subbasin Habitat Actions



Link Project Actions to Priority Areas





Upper Klickitat Projects

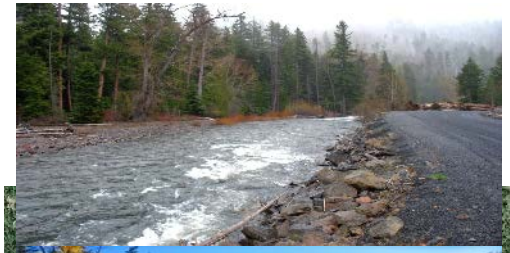
Phase 4

- Instream Habitat
- Floodplain/Side Channel Reconnection

Phase 3

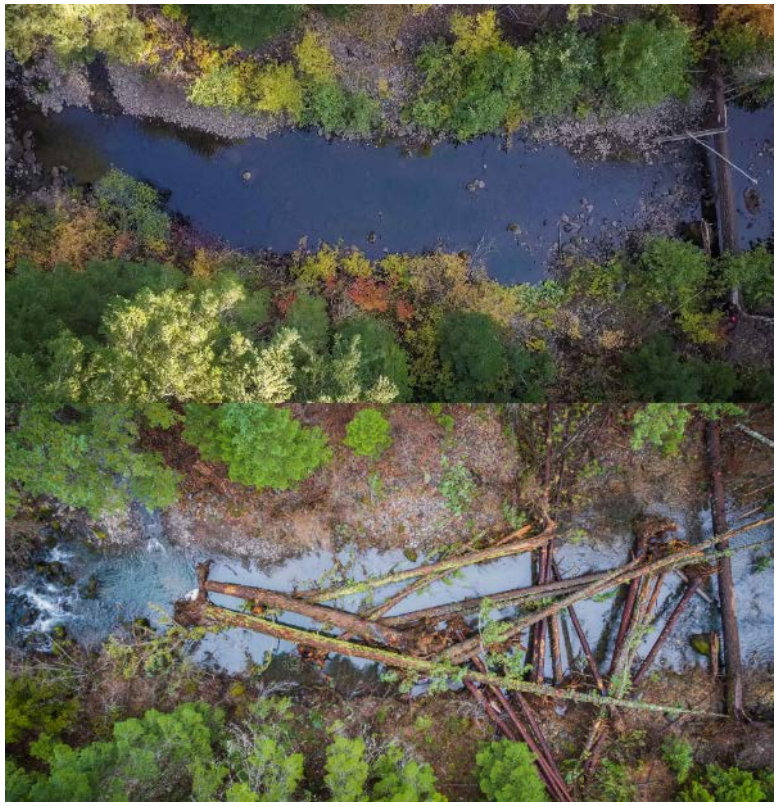
- Channel simplification/length
- Side Channel Reconnection

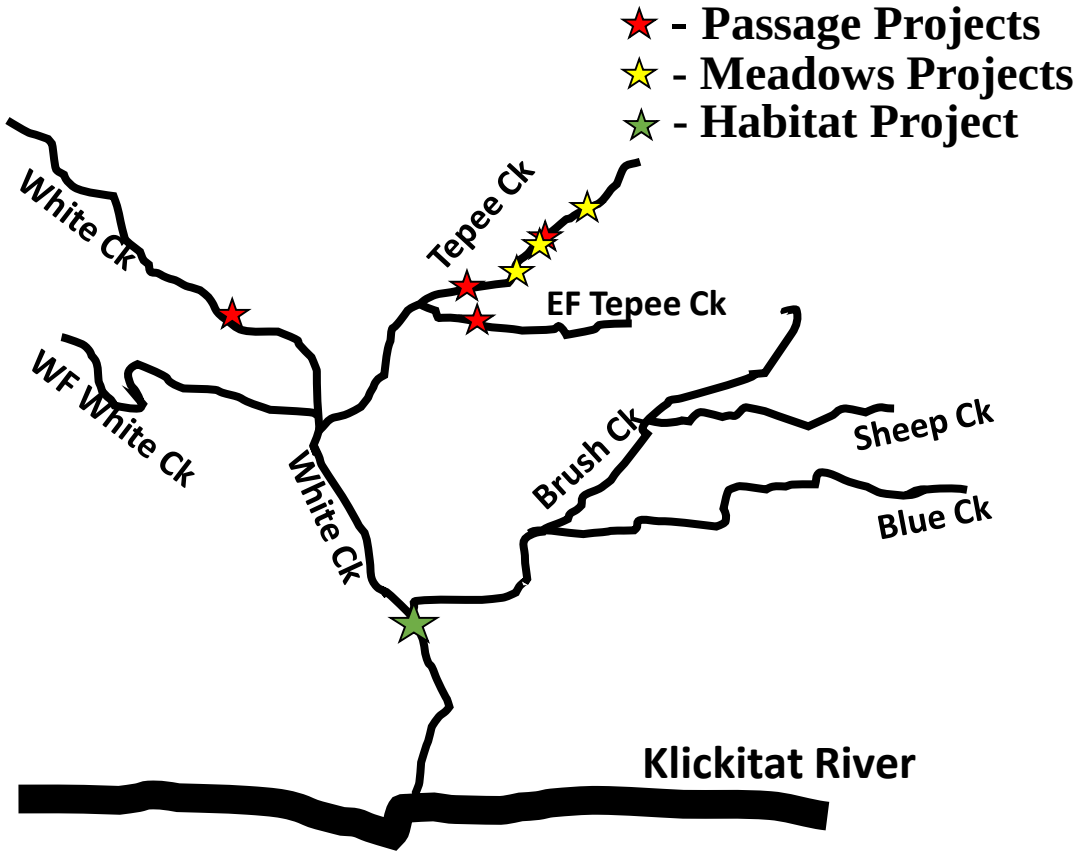
Phase 2



- Instream Habitat
- Floodplain/Side Channel Reconnection
- Reduce Road/River Interaction

White Creek Projects





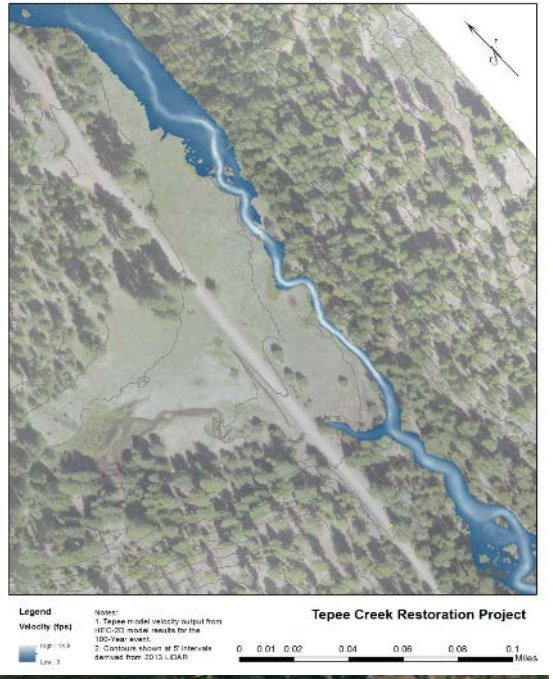
Haul Road Project

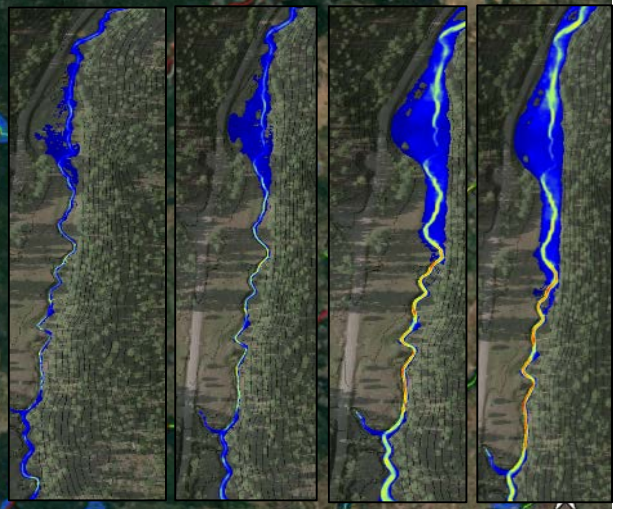
Haul Road Project Accomplishments (Phase 1-6):

- **480 acres of floodplain and associated uplands permanently protected**
- **9.2 miles of road removed, pulled back or re-graded**
- **1/2 mile of secondary channel constructed**
- **1 railroad bridge removed**
- **33 acres of asphalt removed along approximately 9 miles of road**
- **35 acres of floodplain and off-channel habitat reconnected**
- **2 fish-bearing tributaries reconnected and over 46 culverts removed**
- **Dozens of large woody debris jams constructed**
- **Tens of thousands of native plants installed on approx. 75 acres**

Future Direction

BRAT Modeling





BRAT Management Zones

- Potential Restoration
  - Low Hanging Fruit - Restoration/Conservation Zone
  - Quick Return Restoration Zone
  - Long-Term Possibility Restoration Zone
- Potential Conflicts
  - Living with Beaver (Low Source)
  - Living with Beaver (High Source)
- Habitat Limiting
  - Unsuitable: Naturally Limited
  - Unsuitable: Anthropogenically Limited

N

Management Challenges in Rock Creek

1. **Water Quantity**

- Low flows each spring
- Disconnected pools in summer months
- Population growth & increased number of exempt wells in the county

2. **Water Quality**

- High summer water temperatures during juvenile salmonid rearing

3. **Instream habitat**

- Lack of instream cover for juvenile salmonids for summer rearing in pools

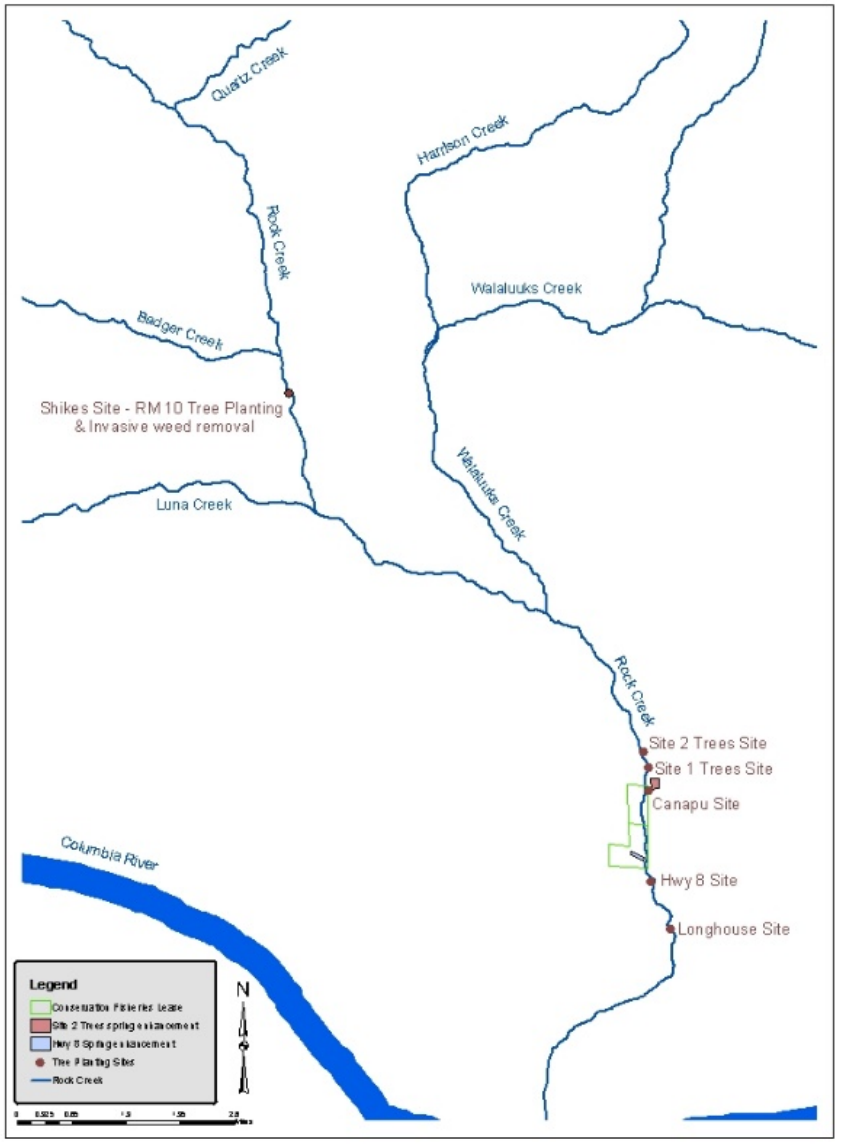
4. **Invasive Species**

- Invasive piscivorous fish in lower reaches of Rock Creek and in the inundated lake
- Invasive trees (walnut & tree of heaven) and weeds taking over the riparian corridor (star thistle, canary reed grass, etc.)

Management Opportunities in Rock Creek

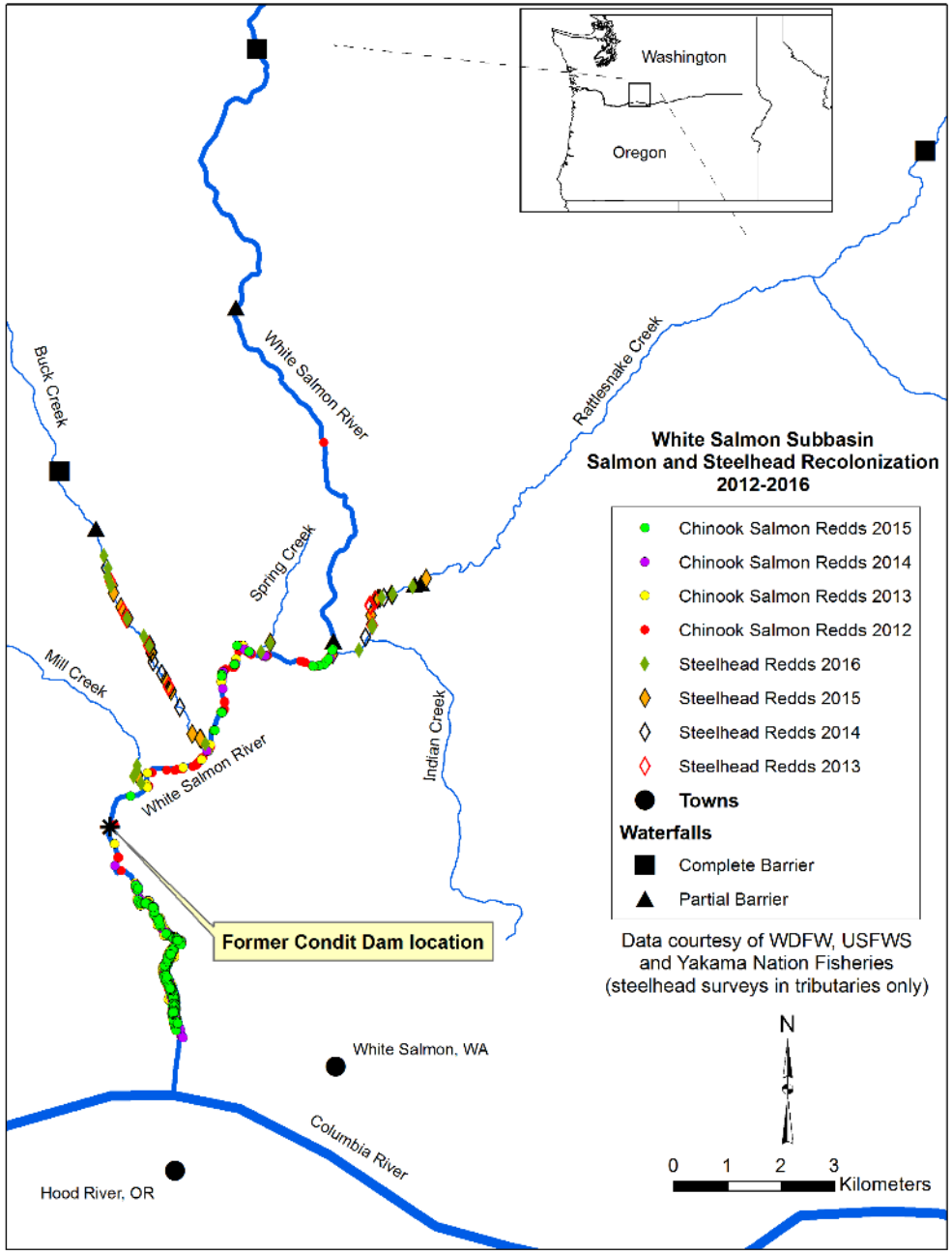
- WDFW recently purchased property in the headwaters of Rock Creek
- Headwater Assessment of fish presence, riparian condition, and meadow restoration potential
- Continued monitoring
  - PIT tags, genetic analysis, redd counts
  - Population status, out-of-subbasin influence
- Assessment of confluence/inundated area
  - Predation, invasive aquatic plants

2015 – 2017 Riparian Re-vegetation at Multiple Sites in Lower Rock Creek

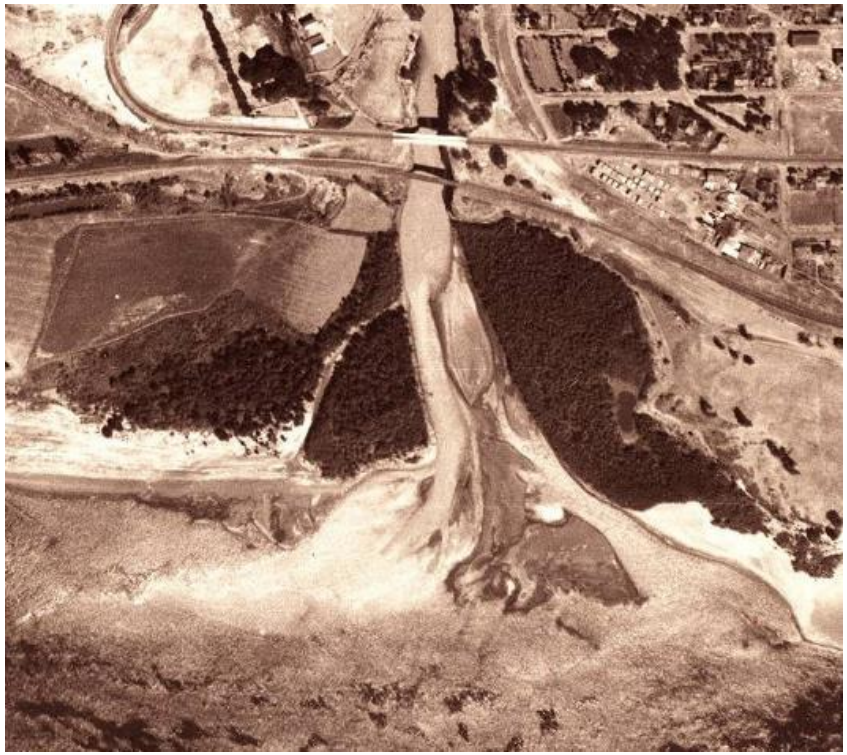


White Salmon

- Condit Dam removed 2011-12
- Recolonization occurring naturally
- Monitoring of adults and juveniles (limited funding)
- Key tributary passage barriers fixed
- Buck Creek irrigation diversion screening, piping
  - Greater benefits if moving to mainstem WS withdrawal
- Habitat improvements needed:
  - Pool/LWD/floodplain/flow
- Pacificorp lands in lower mainstem



Klickitat River – Pre-Bonn. Dam & 2017



Klickitat River – Delta Assessment Phase 1 (2009-2014)

- **Project Objective:** Characterize existing water surface elevation frequency and duration at the confluence of the Klickitat and Columbia Rivers.
- **Context:** Data will be used to evaluate inundation frequency of landforms in the delta area as well as to provide a foundation for subsequent study of aquatic vegetation growth, fish migration patterns, predation effects, and design of restoration treatments.
- **Project Approach:**
  - Design spatially distributed temperature and water elevation sensor network
  - Deploy water temperature and stage sensors
  - Operate sensor array ~ 5 years
  - Analyze stage and temperature data, evaluate seasonal flow dynamics/interactions between Rivers

Outcome:

- West Delta and Daybeacon sites aligned; WL below 76.5' = West Delta sensor dry (1x year)
- East Delta and Daybeacon sites aligned; WL below 77.6' = east delta feature disconnected
- Basalt Cliff and Daybeacon track most of the year; @ low Klickitat flows and low Bonneville Pool (below 77.3') Klickitat stage elevated
- Inter-site data demonstrates that stage records are within 0.1-0.3' of each other

Klickitat River – Juvenile *O. mykiss* Survival Study (2018-2020)

- **Project Objective:** Estimate **migration survival** for juvenile ***O. mykiss*** through the 1.3 mile reach of the **Klickitat River** that is **influenced hydrologically** by the **Columbia River**.

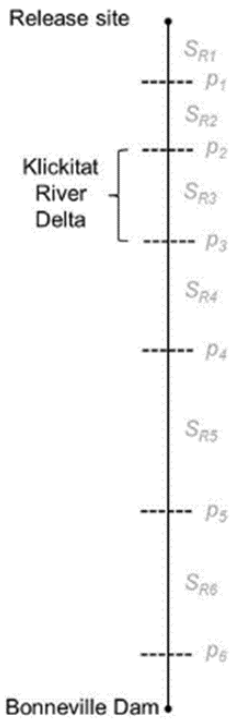
- **Context:** Changes in physical habitat conditions at the Klickitat Delta may result in longer migration times for *O. mykiss* and decreased survival.

- **Project Approach:**
  - Collect *O. mykiss* at YN operated rotary screw trap (RM 2.8)
  - Tag captured *O. mykiss* with PIT tag and acoustic radio transmitter
  - Release tagged fish upstream of screw trap
  - Detect fish at telemetry arrays: Klickitat RM 0.5, Klickitat/Columbia River confluence, Hood River, and near Bonneville Dam

Outcome: Results will be used to guide restoration/modification efforts of the lower Klickitat River to mitigate loses in salmonid production.

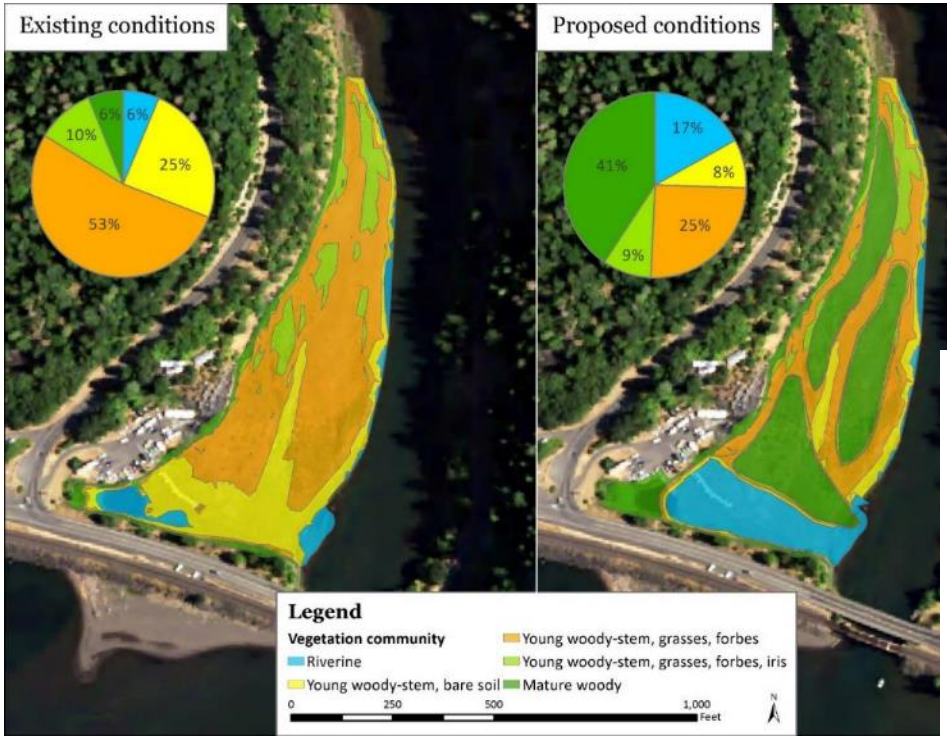
Klickitat River – Juvenile *O. mykiss* Survival Study (2018-2020)

Map of Screw trap and telemetry monitoring array locations.



Release/recapture design schematic. Multiple parameters for survival (S) and detection probability (p) can be estimated.

White Salmon River – Revegetation Mix & Hydrologic Conditions.



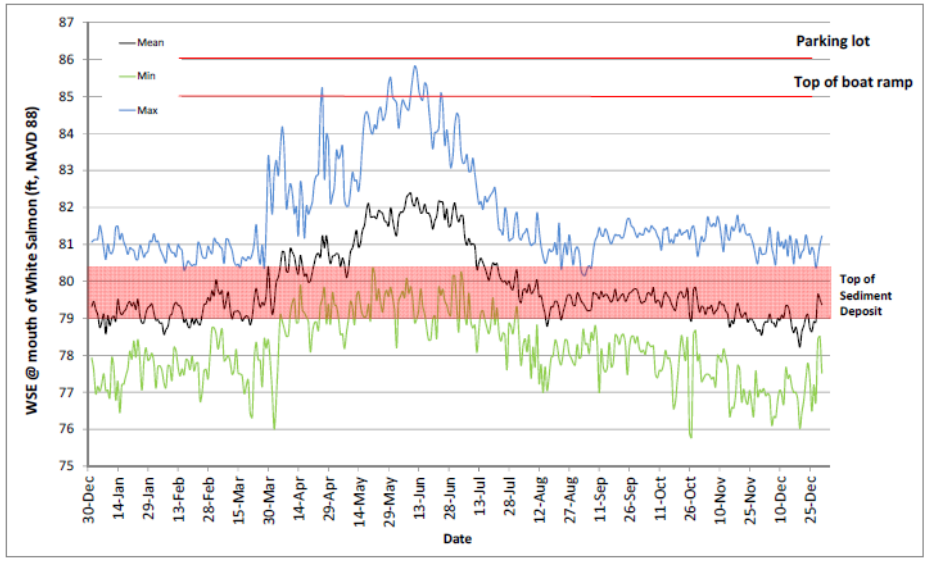


Figure 16. Mean, minimum and maximum average daily water surface elevations based on interpolation of USGS gage data. Note project site elevations shown, including the top of bank, the parking lot and the sediment deposit.

White Salmon River – Oct. 2017 & Mar. 2018

- ~15,000 cu. yds.
- 5.6 acres of Riparian Wetland Islands
- Fish friendly river cobbles used.

Project Photos