

Early Actions Update

YRBWEP Workgroup Meeting
March 13, 2013



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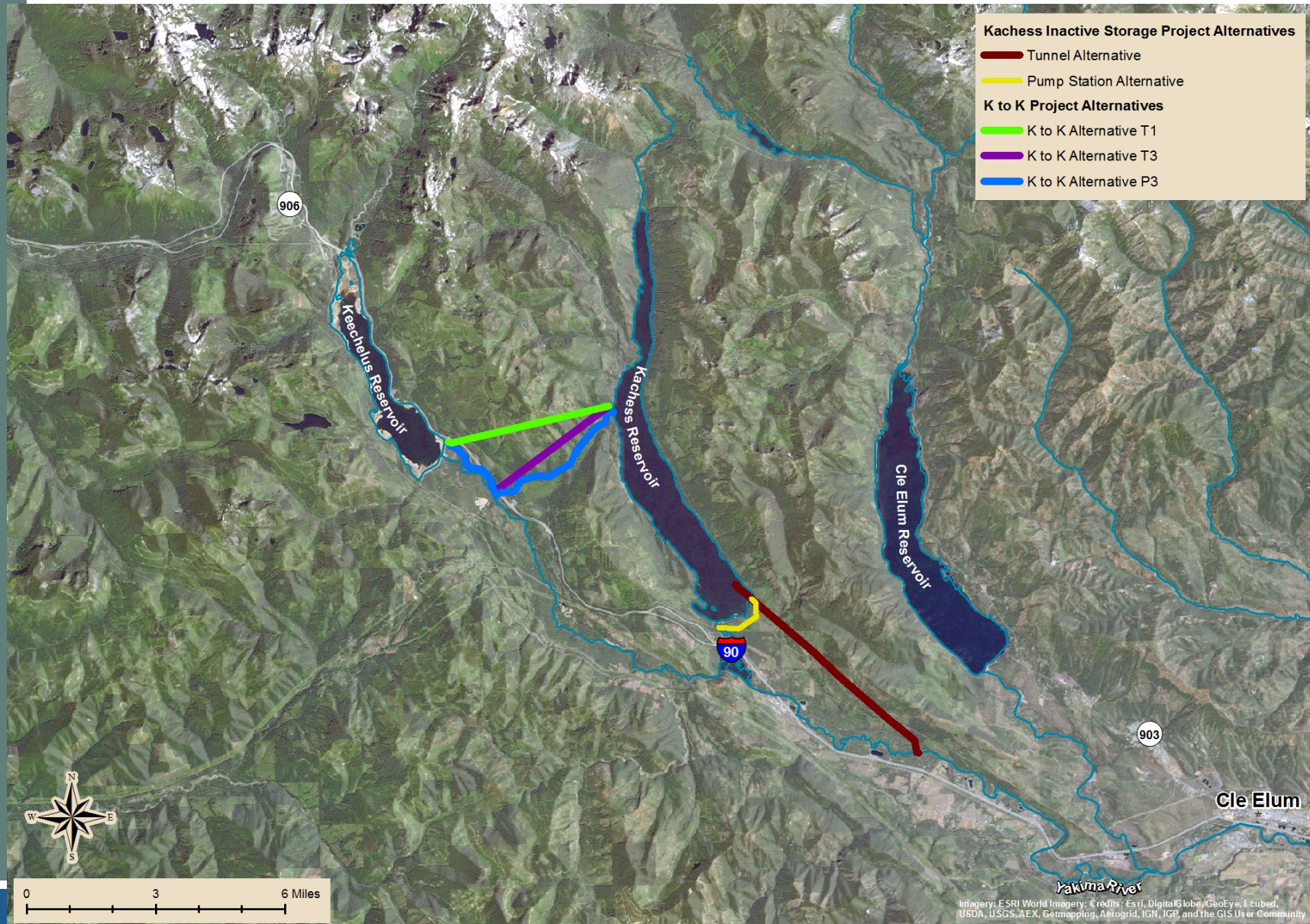


Projects With Funding for Early Actions (Spring 2013)

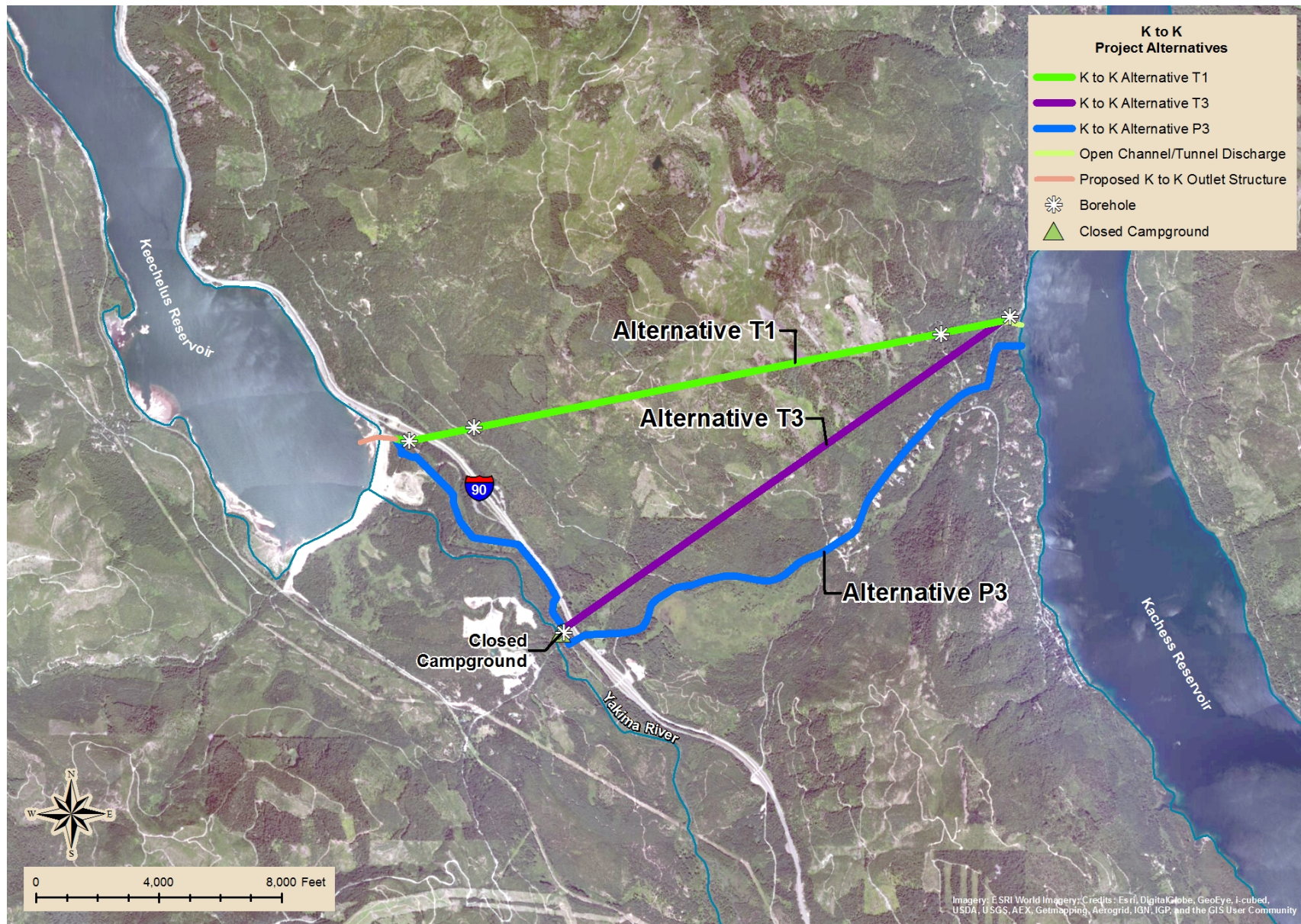
- K-to-K Conveyance
- Kachess Inactive Storage
- Wymer Reservoir
- Fish Passage at Clear Lake Dam
- Fish Passage at Cle Elum Lake Dam
- Subordinate Power Diversions
- Tributary Habitat Enhancement
- Groundwater Infiltration
- Bumping Reservoir
- Watershed Land Conservation - Land Acquisition



Area Map: K to K and Kachess Projects



K to K Route Alternatives



Kachess Inactive Storage Alternatives



Kachess Inactive Storage: Alternate Pump Station Sites and Borehole Locations



Wymer Reservoir Geotechnical Fieldwork

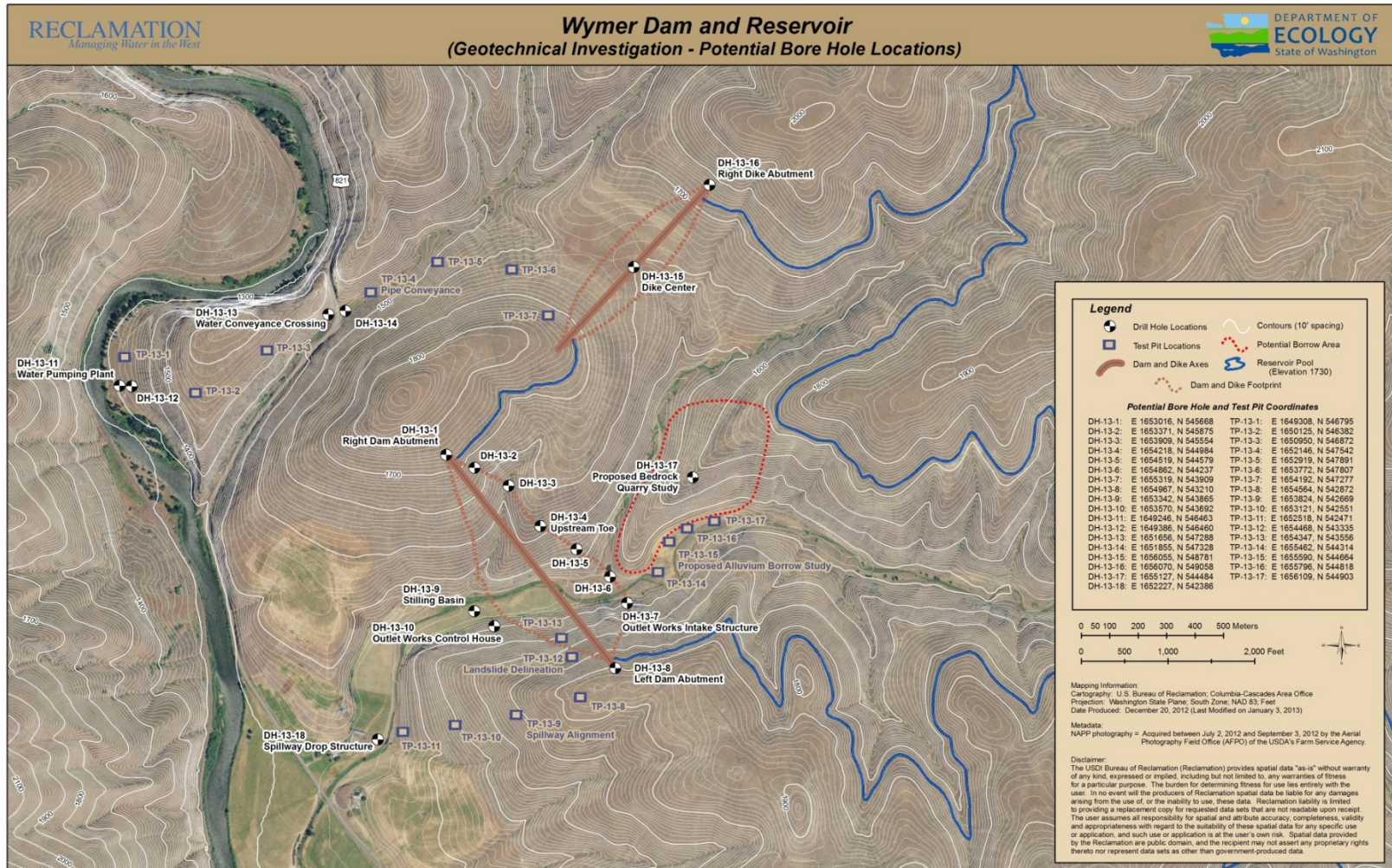


Figure 1

Fish Passage at Clear Lake Dam Clear Creek Dam Passage Study - Location

YAKIMA RIVER BASIN INTEGRATED WATER RESOURCE MANAGEMENT PLAN

Structural & Operational Changes

1. Raise the Cle Elum Pool by three feet to add 14,600 ac-ft in storage capacity.
2. Modify Kittitas Reclamation District canals to provide efficiency savings.
3. Construct a pipeline from Lake Keechelus to Lake Kachess to reduce flows and improve habitat conditions during high flow releases below Keechelus and to provide more water storage in Lake Kachess for downstream needs.
4. Decrease power generation at Roza Dam and Chandler power plant to support outmigration of juvenile fish.
5. Make efficiency improvements to the Wapatox Canal.

Reservoir Fish Passage

- Provide fish passage at:
1. Clear Lake
 2. Cle Elum
 3. Bumping
 4. Tieton (Rimrock)
 5. Keechelus
 6. Kachess

Enhanced Water Conservation

1. Implement an agricultural water conservation program designed to conserve up to 170,000 acre-feet of water in good water years.
2. Create a fund to promote water use efficiency basin-wide using voluntary, incentive-based programs. Focus on outdoor uses as top priority.

Habitat/Watershed Protection & Enhancement

1. Protect ~70,000 acres of land by acquiring high elevation portions of the watershed and forest and shrub steppe habitat.
2. Evaluate potential Wilderness, Wild and Scenic River, and National Recreation Area designations to protect streams and habitat.
3. Create a habitat enhancement program to address reach-level floodplain restoration priorities and restore access to key tributaries.

Market Reallocation

Employ a water market and/or a water bank to improve water supply in the Yakima River basin. Market reallocation would be conducted in two phases:

The near-term phase would continue existing water marketing and banking programs in the basin, but take additional steps to reduce barriers to water transfers.

The long-term program would focus on facilitating water transfers between irrigation districts. This would allow an irrigation district to fallow land within the district and lease water rights for that land outside the district.

Surface Water Storage

1. Build a 162,500 ac-ft off-channel surface storage facility at Wymer on Lmuma Creek.
2. Access an additional 200,000 ac-ft of water by tapping into inactive storage at Lake Kachess.
3. Construct a new dam at Bumping Reservoir to increase capacity to 190,000 ac-ft.
4. Begin appraisal of potential projects to transfer water from the Columbia River to the Yakima Basin.

Groundwater Storage

1. Construct pilot projects to evaluate recharging shallow aquifers via groundwater infiltration. Full scale implementation may follow.
2. Build an aquifer storage and recovery facility allowing Yakima City to withdraw water from the Naches River during high flow periods and store it underground for use during low flow periods.



Fish Passage at Clear Lake Dam

Clear Creek Dam Passage Study



Clear Creek Dam Passage Study– The Problem



Clear Creek Dam Passage Study – Elevation 3012.20



Clear Creek Dam Passage Study – Elevation 3011.00



Clear Creek Dam Passage Study – Spillway Channel



Clear Creek Dam Passage Study – Denil Ladder



Clear Creek Dam Passage Study

Cooperative study

USFWS, U.S Bureau of Reclamation, WDFW

Study objectives

- Determine when North Fork Tieton River bull trout attempt to migrate upstream past Clear Creek Dam
- Assess success under various hydrologic conditions
- Determine extent of Clear Lake use

Goal

- Provide effective fish passage
 - Modify current facilities?
 - Construct new facilities?
 - Real-time spillway flow control (automation)



Clear Creek Dam Passage Study – Picket Weir Trap



Clear Creek Dam Passage Study – Spillway Sill



Fish Passage at Clear Lake Dam

Clear Creek Dam Passage Study

- 4 Year Study (2012-2015)
- Progress to date:
 - 10 bull trout tagged
 - Detection at top of spillway and ladder entrance/exit
 - Monitoring Sept-Dec, 2012
 - Annual Progress Report by end of March, 2013
 - 2013 Planning



Fish Passage at Clear Lake Dam

Clear Creek Dam Passage Study 2013

- 3 additional detection arrays
- Solar and/or Commercial Power
- Additional PIT tagging
- Expanded Detection Window



Fish Passage at Clear Lake Dam

Clear Creek Dam Passage Study 2013

- Funds expended in 2012 approached \$64,000
- YRBWEP has been, and is expected to continue to be, a major financial supporter of the assessment
- \$300 K to be used through 2015



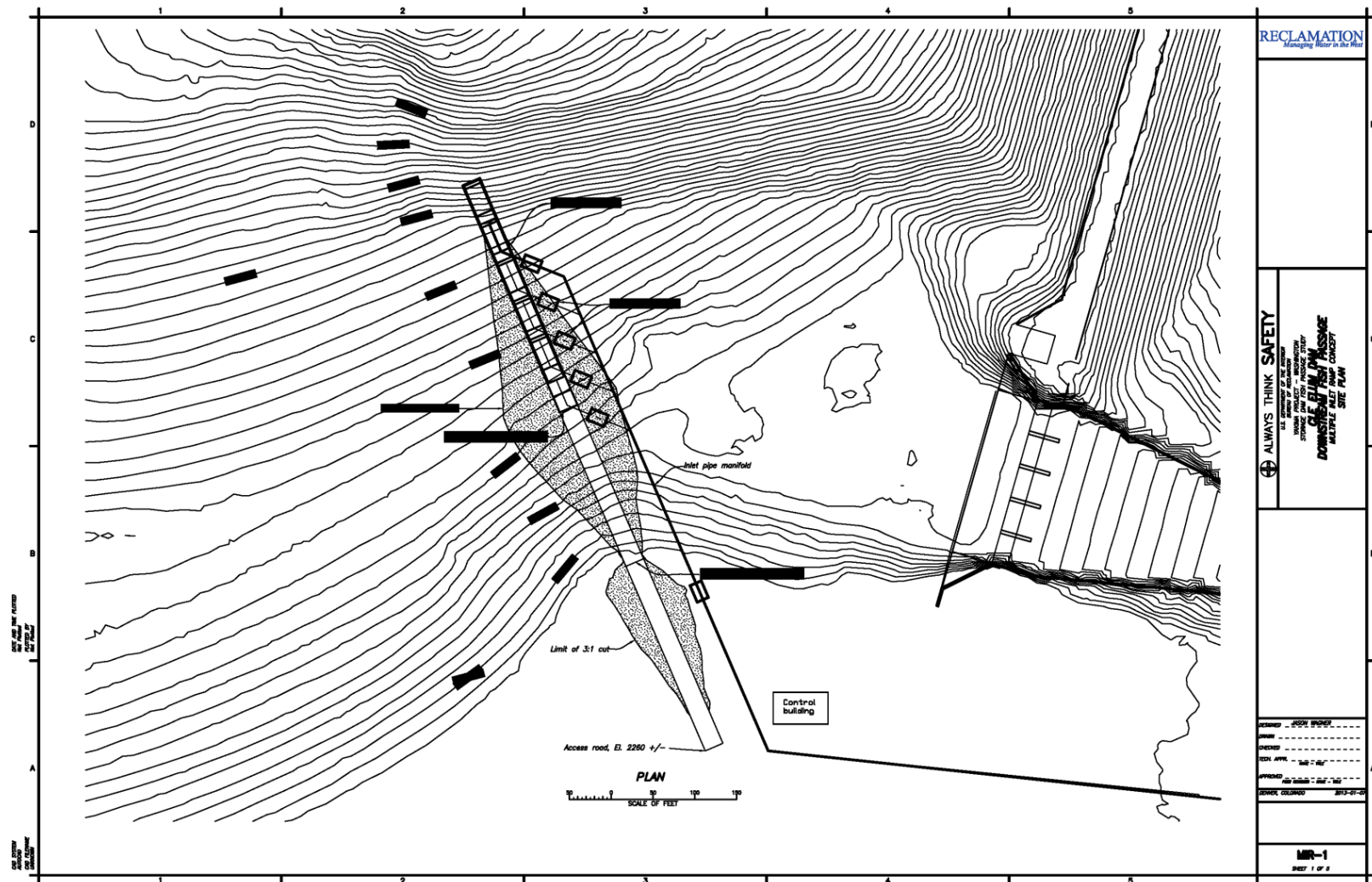
Fish Passage at Clear Lake Dam

Clear Creek Dam Passage Study 2013

- Bull trout spawn above Clear Creek Dam
- The NF Tieton River is designated critical habitat
- There is currently an obvious, and fixable, passage impediment at the dam
- Correcting this problem has been on Reclamation's radar screen for nearly 10 years
- We need to determine the best approach

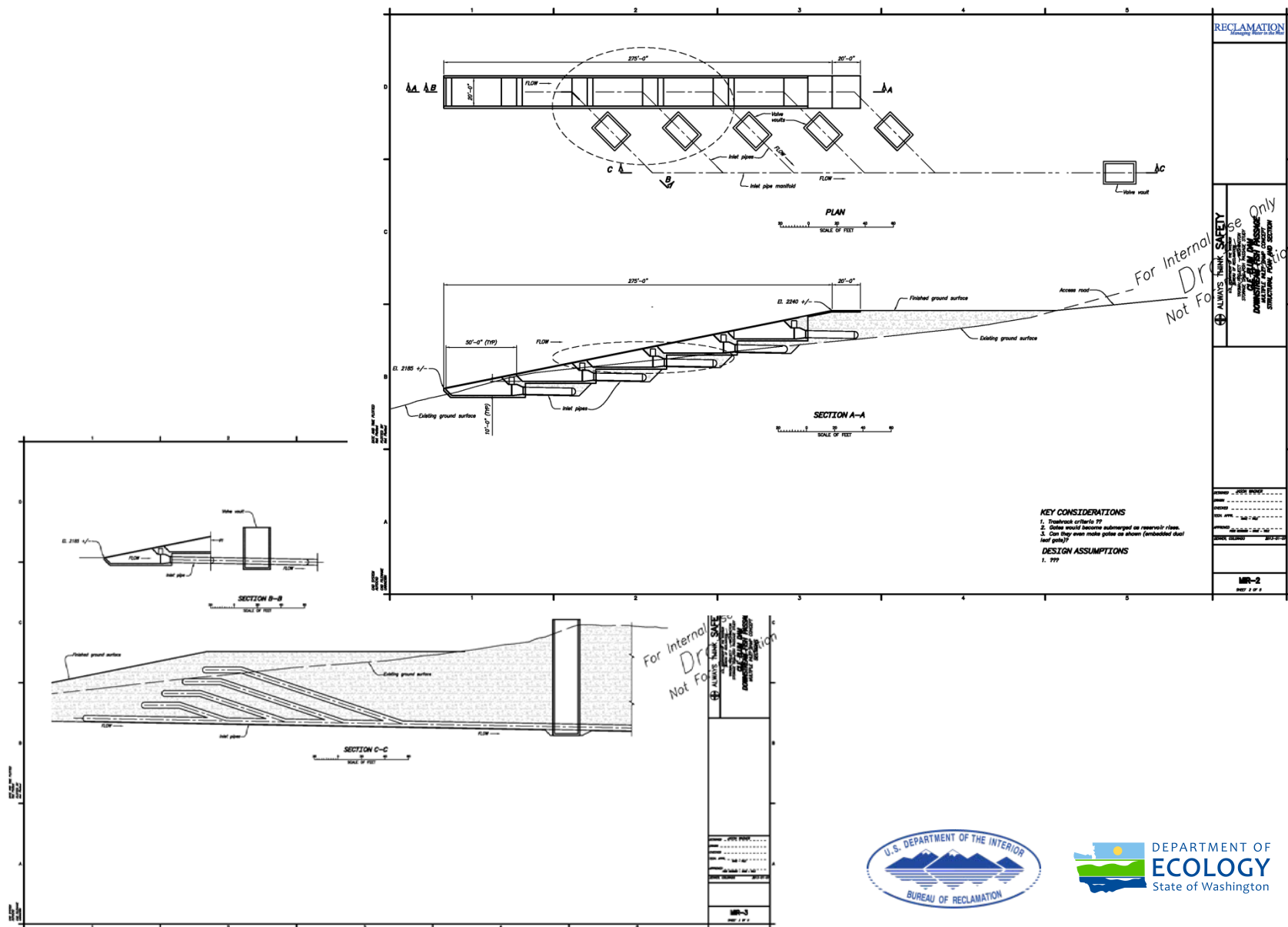


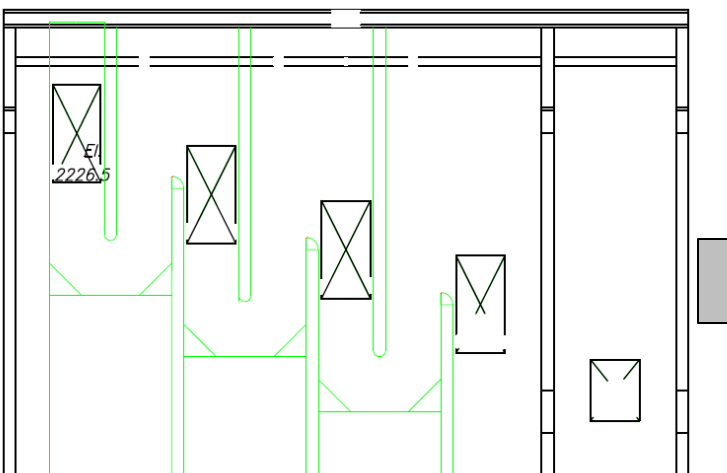
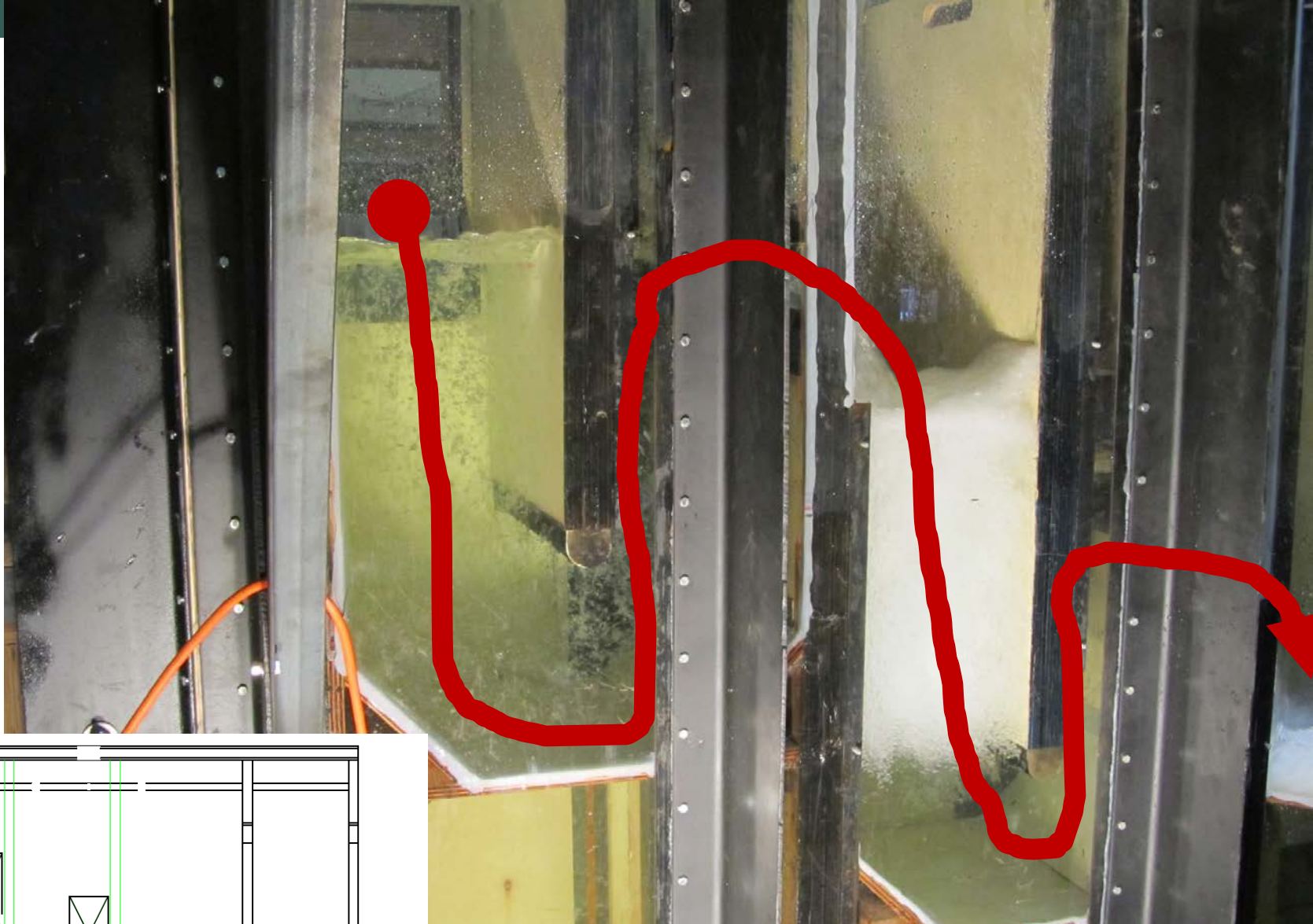
Fish Passage at Cle Elum Lake Dam Multiple Intake Ramp Concept



Fish Passage at Cle Elum Lake Dam

Multiple Intake Ramp Concept





Cle Elum Downstream Passage: Upwelling Design





Cle Elum Upstream Passage Model



Subordinate Power Diversions, Roza Roza Reach Smolt Survival Study Update

2013 Study Design

<u>Release Number</u>	<u>Scheduled Release Date</u>	<u>Target Flow (cfs)</u>	<u>Number of Fish</u>
1	March 20 th	High flow- 1200 - 1500	50
2	March 28 th	Low flow- 400 - 600	50
3	Approx 2 nd week of April	High flow- 1200 - 1500	50
4	Approx 3 rd week of April	Low flow- 400 - 600	50
5	Approx 4 th week of April	Higher flow- 2000 - 2500	50



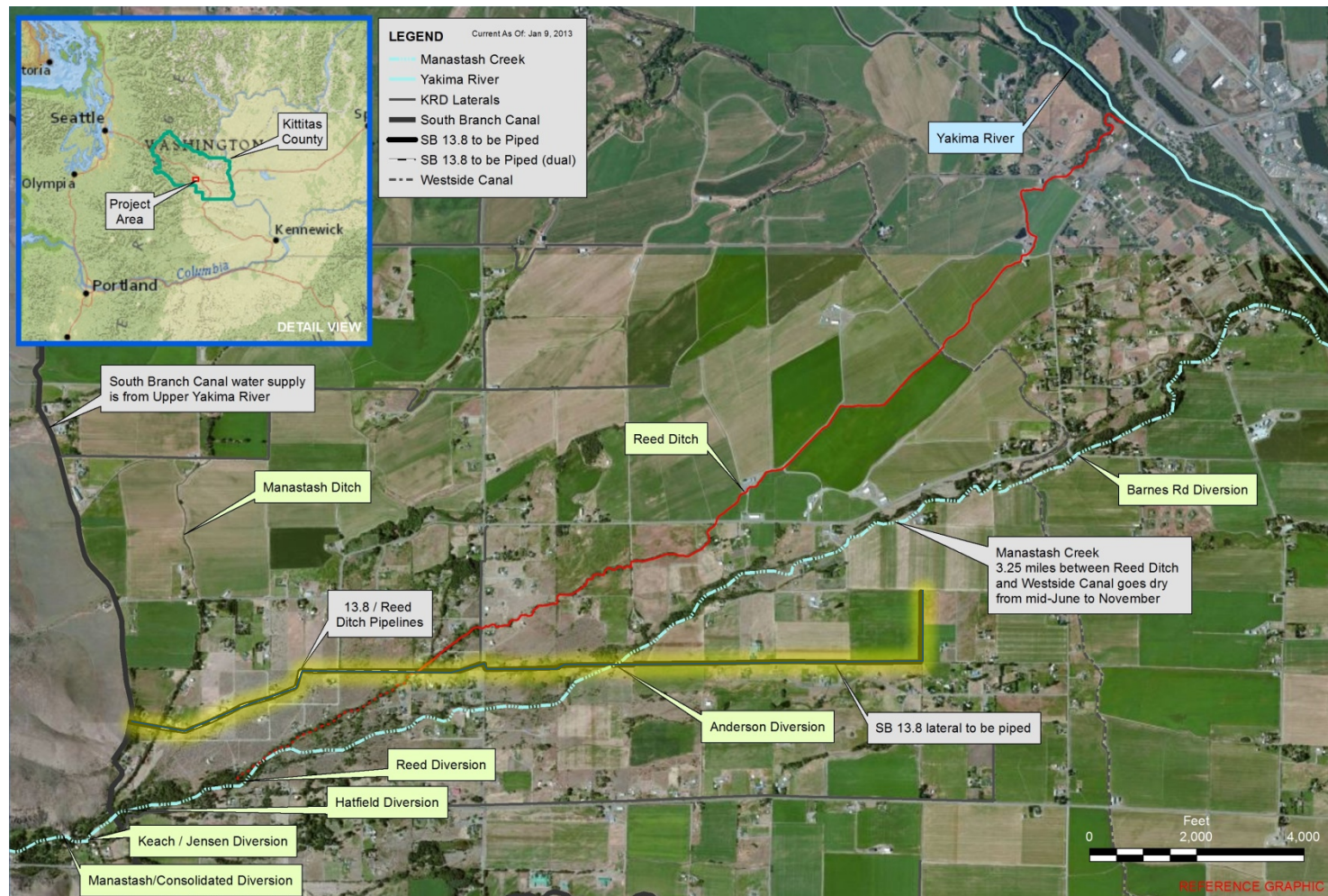
In-River PIT Tag Detection Array System

- Prototype installation- March 18th
- Test throughout the smolt outmigration period.



Tributary Habitat Enhancement Program

Manastash Creek Enhancement Project



Other Early Action Activities

- Additional Activity Beginning on Wymer Reservoir
 - Value engineering and temperature modeling
 - Cost estimate for alternate pump station site
- Bumping Reservoir –Geotechnical exploration program under development
- Teanaway Property – land acquisition discussions and funding request

