

Yakima River Basin Integrated Water Resource Management Plan Yakima Basin Science & Management Conference

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Presented by:

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Plan Overview

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.

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.



Reservoir Fish Passage

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

Surface Water Storage

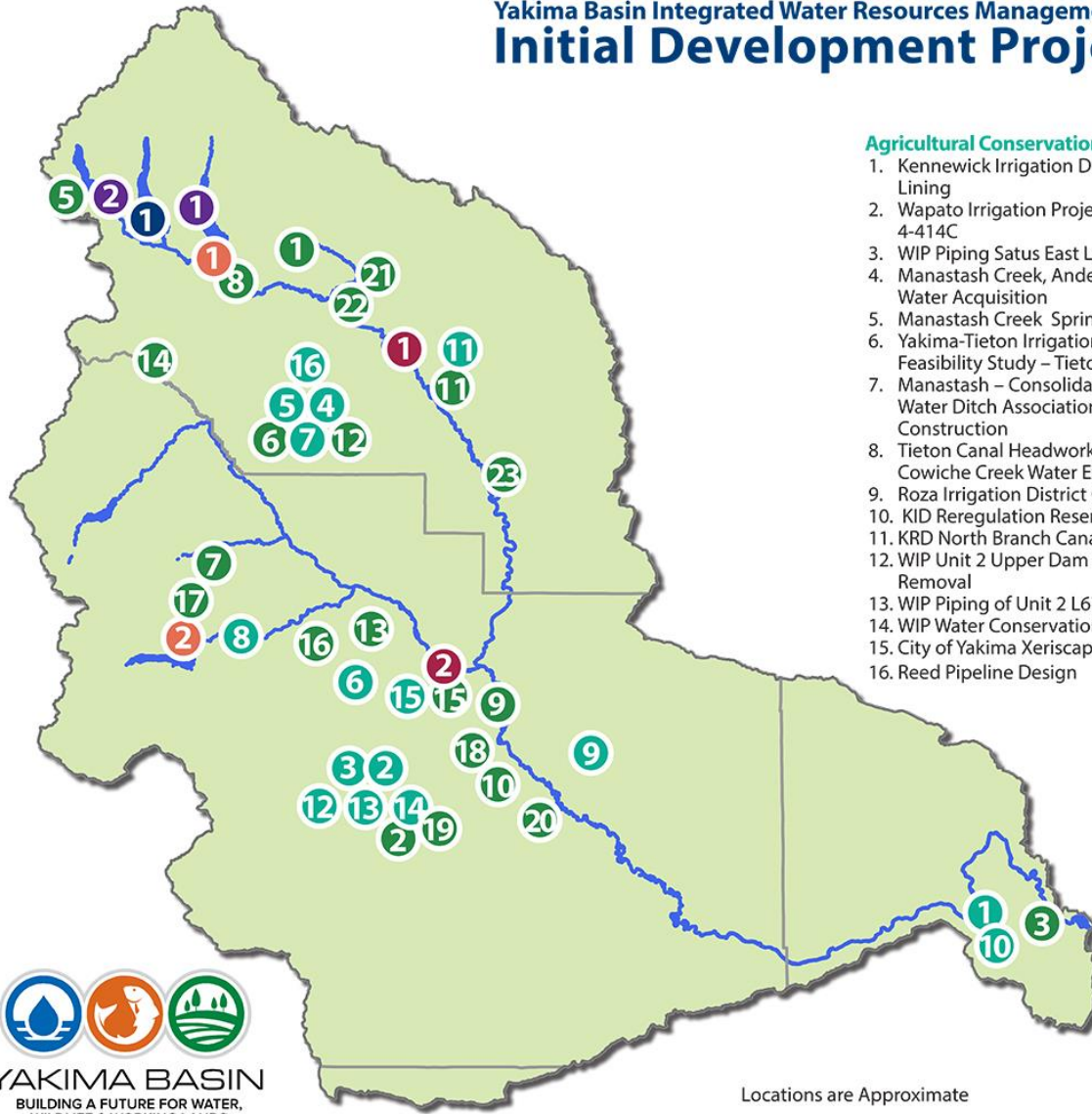
1. Build a 162,500 ac-ft off-channel surface storage facility at Wymer on Lmuma Creek.
2. Access an additional 200,000 ac-ft of water by tapping into inactive storage at Lake Kachess.
3. Construct a new dam at Bumping Reservoir to increase capacity to 190,000 ac-ft.
4. Begin appraisal of potential projects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



Yakima Basin Integrated Water Resources Management Plan Initial Development Projects



Agricultural Conservation (2013-2017)

1. Kennewick Irrigation District (KID) Division IV Lining
2. Wapato Irrigation Project (WIP) Piping Lateral 4-414C
3. WIP Piping Satus East Lateral E73
4. Manastash Creek, Anderson Diversion Irrigation Water Acquisition
5. Manastash Creek Sprinkler Conversions
6. Yakima-Tieton Irrigation District (YTID) Feasibility Study – Tieton to Ahtanum Exchange
7. Manastash – Consolidated Pipeline & Manastash Water Ditch Association (MWDA) Pipeline Construction
8. Tieton Canal Headworks Improvement and Cowiche Creek Water Exchange.
9. Roza Irrigation District Canal Lining
10. KID Reregulation Reservoir Design
11. KR D North Branch Canal Lining
12. WIP Unit 2 Upper Dam Rebuild and Lower Dam Removal
13. WIP Piping of Unit 2 L672
14. WIP Water Conservation Plan
15. City of Yakima Xeriscape Demonstration Project
16. Reed Pipeline Design

Locations are Approximate

Fish Passage

1. Cle Elum Dam
2. Tieton (Rimrock) Dam

Groundwater Storage

1. Upper Kittitas Aquifer Storage and Recovery
- Yakima City Aquifer Storage and Recovery

Structural and Operational Changes

3. Cle Elum Pool Raise
4. Keechelus to Kachess Conveyance

Surface Water Storage

1. Kachess Drought Relief Pumping Plant

Water Bank/Exchange Programs

Basin Wide

Habitat Enhancement (2013-2017)

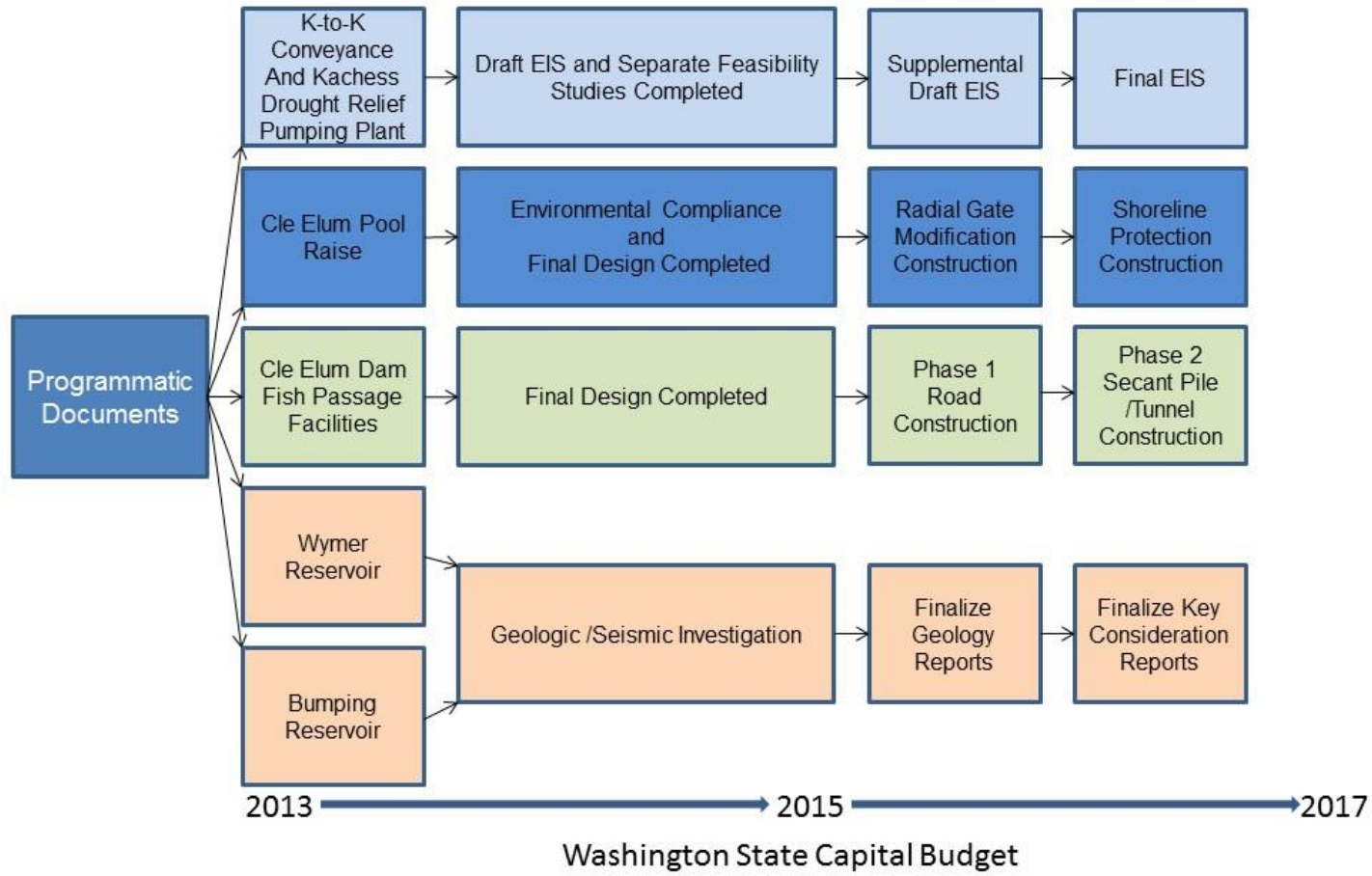
1. Teanaway Acquisition
2. Toppenish Fan Habitat Restoration
3. Bateman Island Causeway Modification Conceptual Design/Outreach/Permitting
4. Bull Trout Habitat Improvements
5. Gold Creek Habitat Assessment and Conceptual Design
6. Reed Diversion design Barrier Removal
7. Little Rattlesnake Road Decommissioning
8. Cle Elum River Side Channel Restoration Project, Phase 2
9. Gap-to-Gap Property Acquisitions
10. Upper Wapato Riparian Restoration
11. Ellensburg Water Company / Coleman Creek Restoration
12. Reed Diversion Barrier Removal
13. Trout Meadows Acquisition / Enhancement
14. Manastash/ Little Naches Land Acquisition
15. Gap-to-Gap Outfall Relocation, Land Acquisition and Levee Removal design and Restoration
16. Cowiche Easement/Design
17. South Fork Tieton Bull Trout Passage Feasibility and Design
18. Rivermile 89.5 Levee Breach
19. Island Road Floodplain Reconnection - Toppenish Creek
20. Wapato Reach - 3-way Levee Setback
21. Teanaway/Indian Creek Restoration
22. Teanaway Habitat Restoration
23. Upper Yakima Floodplain Acquisition and Design Ringer Loop Road



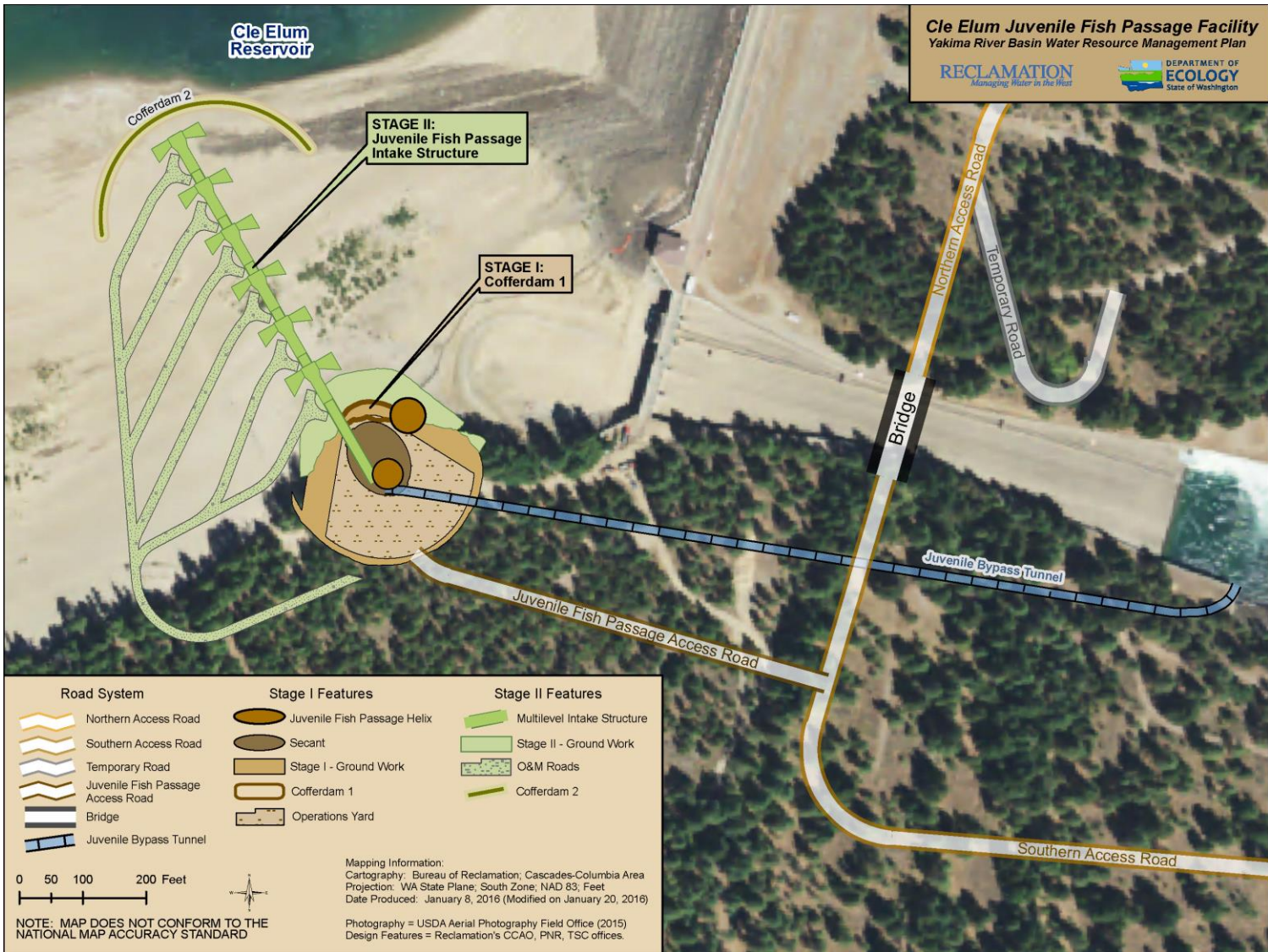
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BUILDING A FUTURE FOR WATER,
WILDLIFE & WORKING LANDS



YRBWEP Phase III (Integrated Plan) Initial Development Phase



Cle Elum Dam Fish Passage Construction



Cle Elum Dam Fish Passage Construction - Schedule

- **Phase 1 construction contract awarded July 2015.**
- **Phase 1 construction of roads and bridges in progress.**
- **Phase 1 scheduled to be completed in Fall 2016**
- **Award Phase 2, Secant Pile – September 2016.**



Cle Elum Dam Fish Passage Construction

Trees being stacked



Timbering pushing over tree



Cle Elum Dam Fish Passage Construction



Northern Access Road



Northern Access Road Entrance



Cle Elum Dam Fish Passage Construction



Northern Access Road



Northern Access Road



Cle Elum Dam Fish Passage Construction



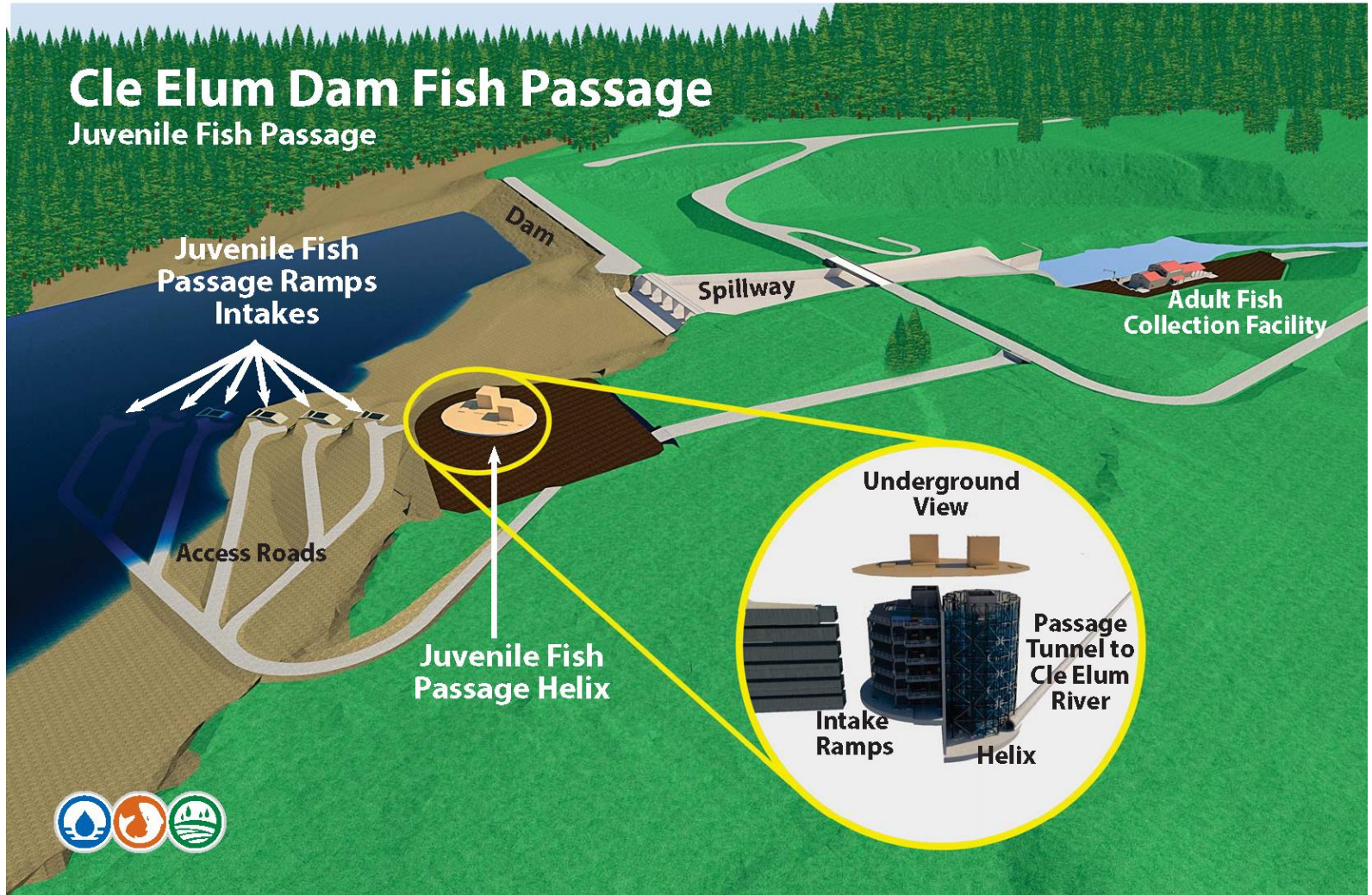
Temporary Bridge In Place



Southern Access Road to Collection Facility



Cle Elum Fish Passage - Adult Facilities



Cle Elum Fish Passage - Adult Facilities

Whooshh Fish Transport System

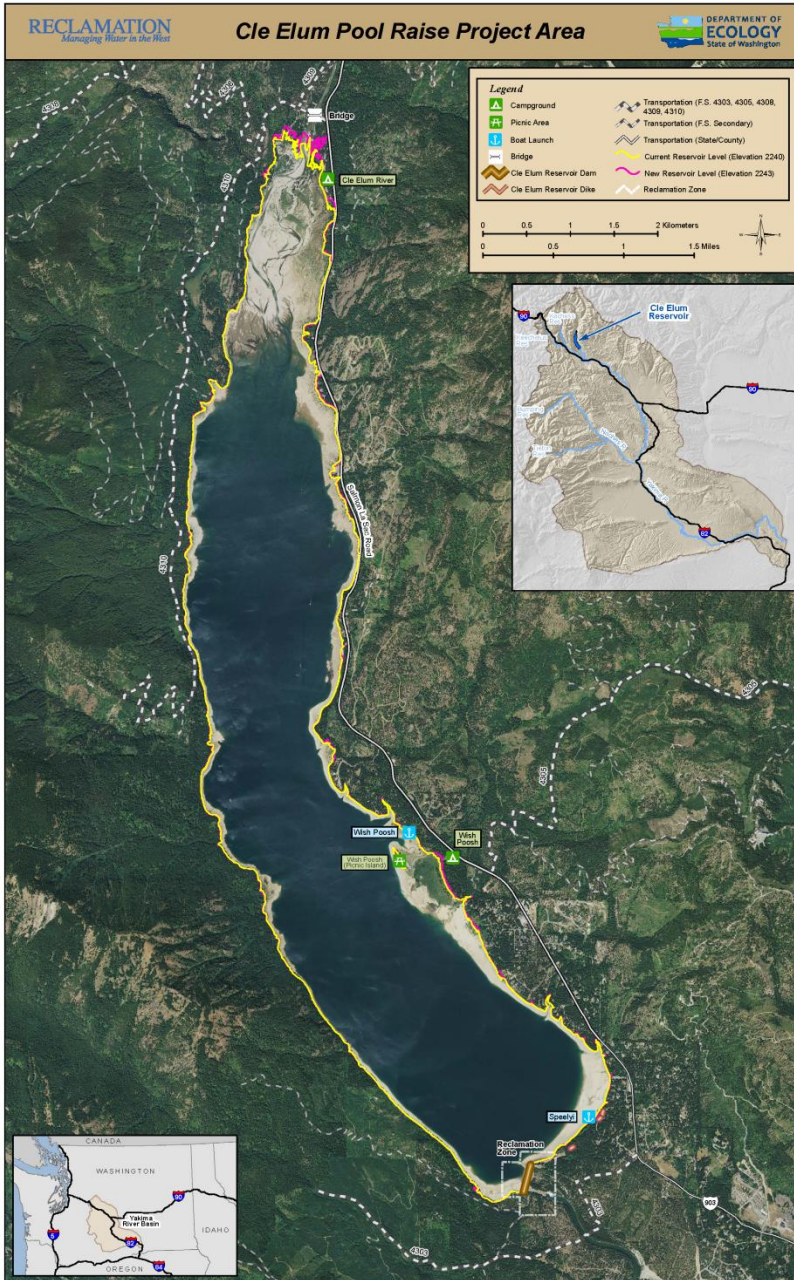
- **Moves fish through a flexible conduit, using pressure differentials to either push or pull the fish through the tube**
- **The Yakama Nation in cooperation with Reclamation, is working with Whooshh Innovations to test the technology for the Cle Elum Fish Passage Project at Roza Dam, June 2016**
- **Initial indications are that this technology is economical and fish friendly**
- **<http://www.whooshh.com/fish-passage.html>**



Cle Elum Fish Passage- Adult Facilities

Whooshh Fish Transport System at Roza





Cle Elum Pool Raise

- Modify radial gates
- Shoreline protection
- Land acquisition



Cle Elum Pool Raise - Schedule

- **Final EIS; Record of Decision signed June 2015**
- **Radial Gate Modification**
 - Awarded contract in September 2015
 - Construction ongoing
- **Shoreline Protection**
 - Preparing bid packages
 - Continued coordination with USFS and landowners
 - Award contract 2016

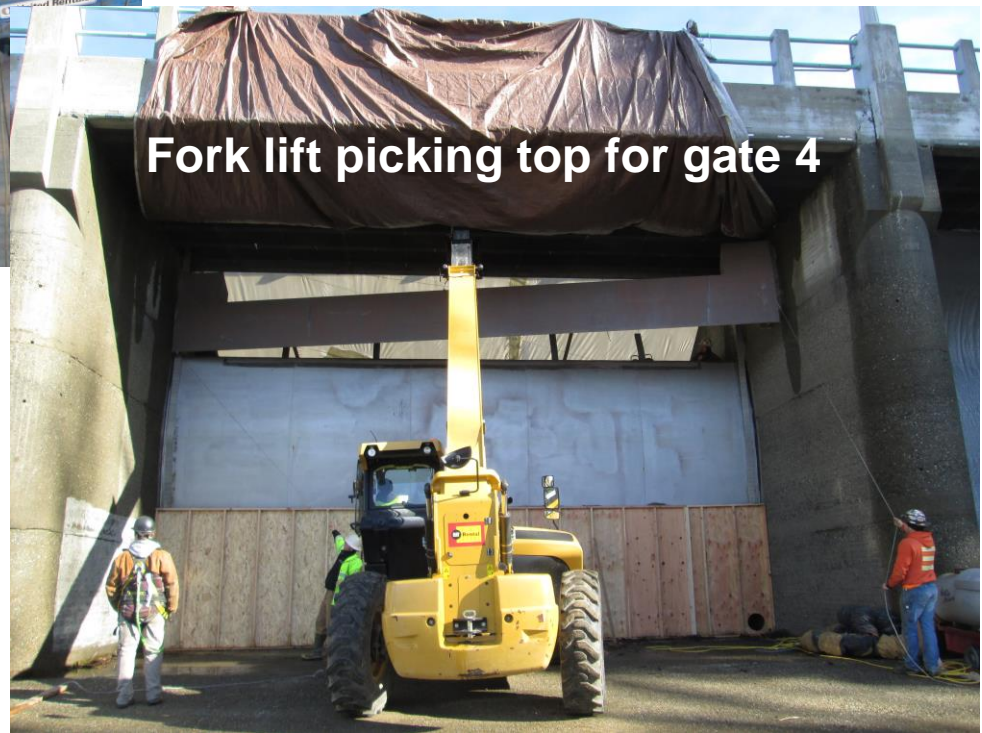


Cle Elum Pool Raise Construction

Working on north side arm, bay 4



Fork lift picking top for gate 4



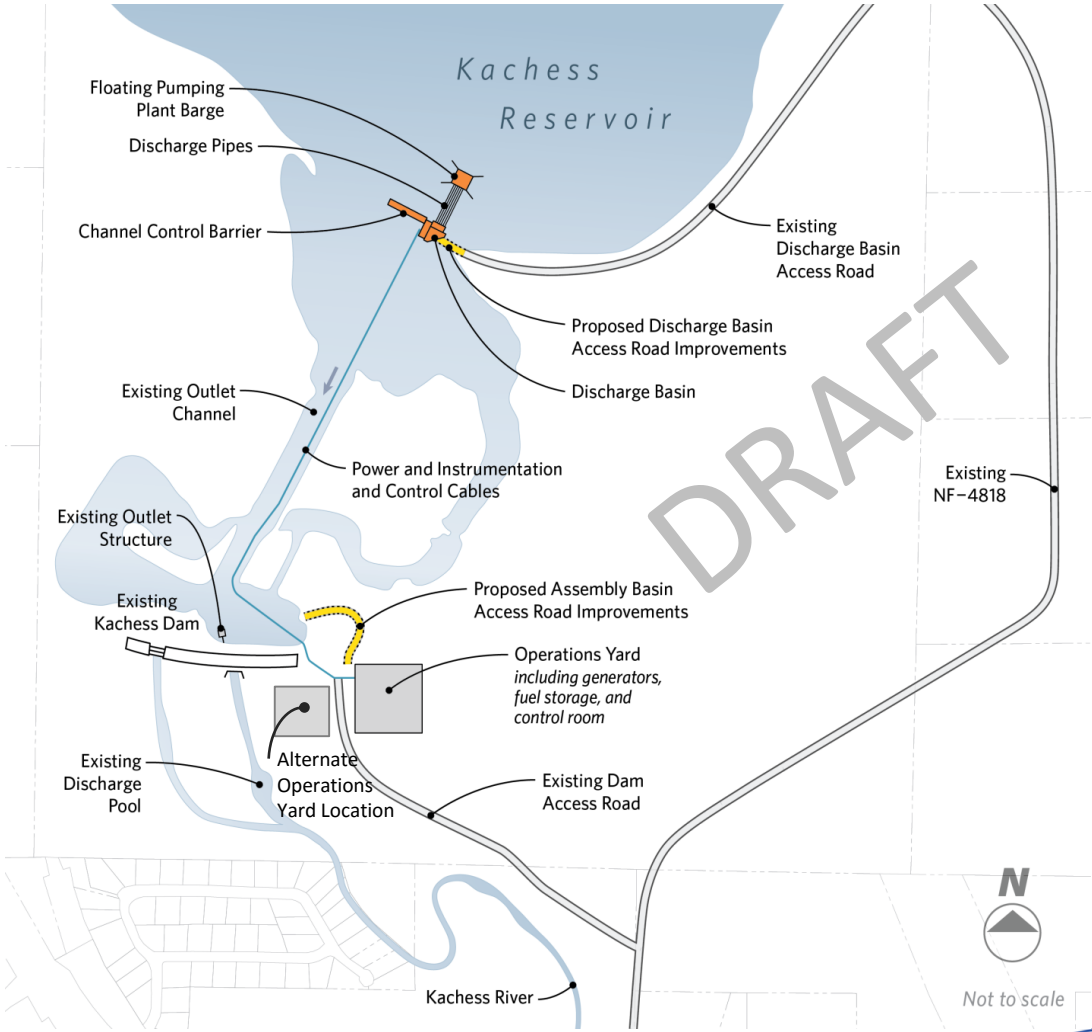
Cle Elum Pool Raise Construction



Kachess Drought Relief Pumping Plant and Keechelus Reservoir to Kachess Reservoir Project Locations



Kachess Drought Relief Pumping Plant Floating Pumping Plant Alternative



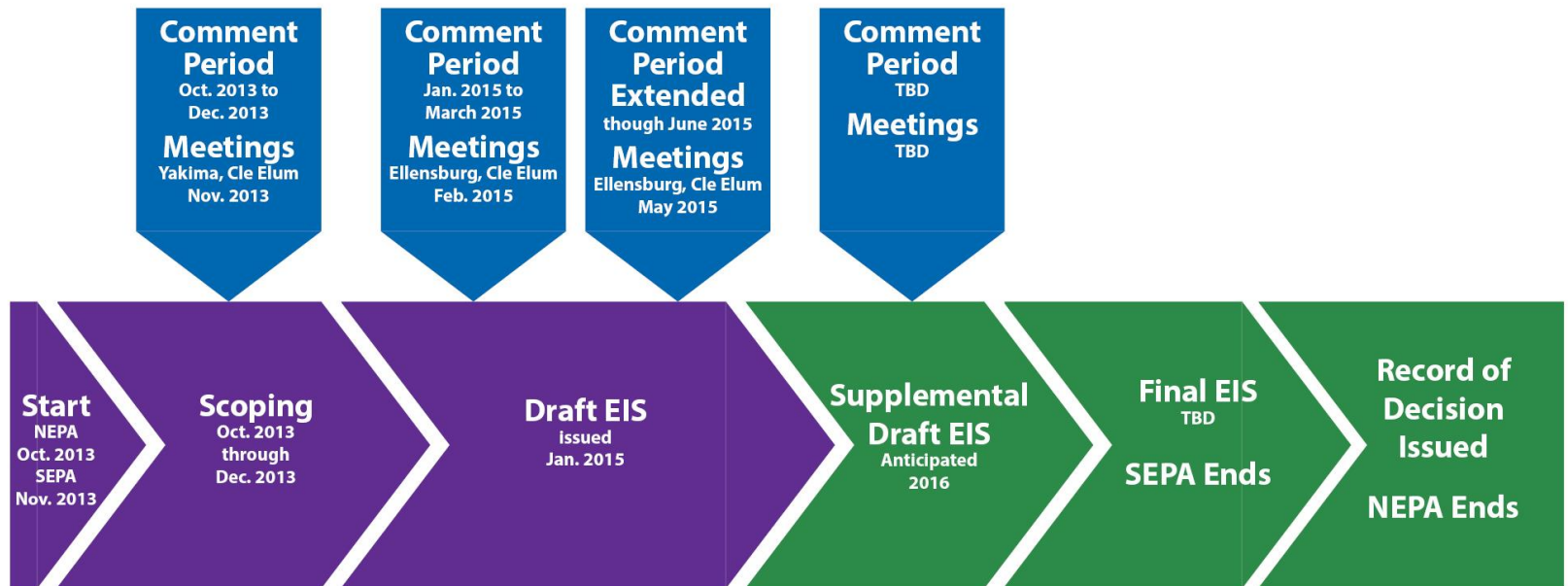
Bull Trout Enhancement

- **Reclamation and Ecology have coordinated with USFWS, USFS, Yakama Nation, WDFW, and NMFS to formulate Bull Trout Enhancement program.**
 - Gold Creek
 - Cold Creek
 - Nutrient
 - Assessments
- **BTE is part of all action alternatives in KKC/KDRPP EIS**
- **MOU with Reclamation, Ecology, YN, USFWS, WDFW, USFS – signed October 2015**
- **Kachess Reservoir Bull Trout Passage Appraisal Report**
- **Clear Creek Dam Passage Assessment**



Milestones

Kachess Drought Relief Pumping Plant and Keechelus Reservoir-to-Kachess Reservoir Conveyance Projects NEPA-SEPA Process



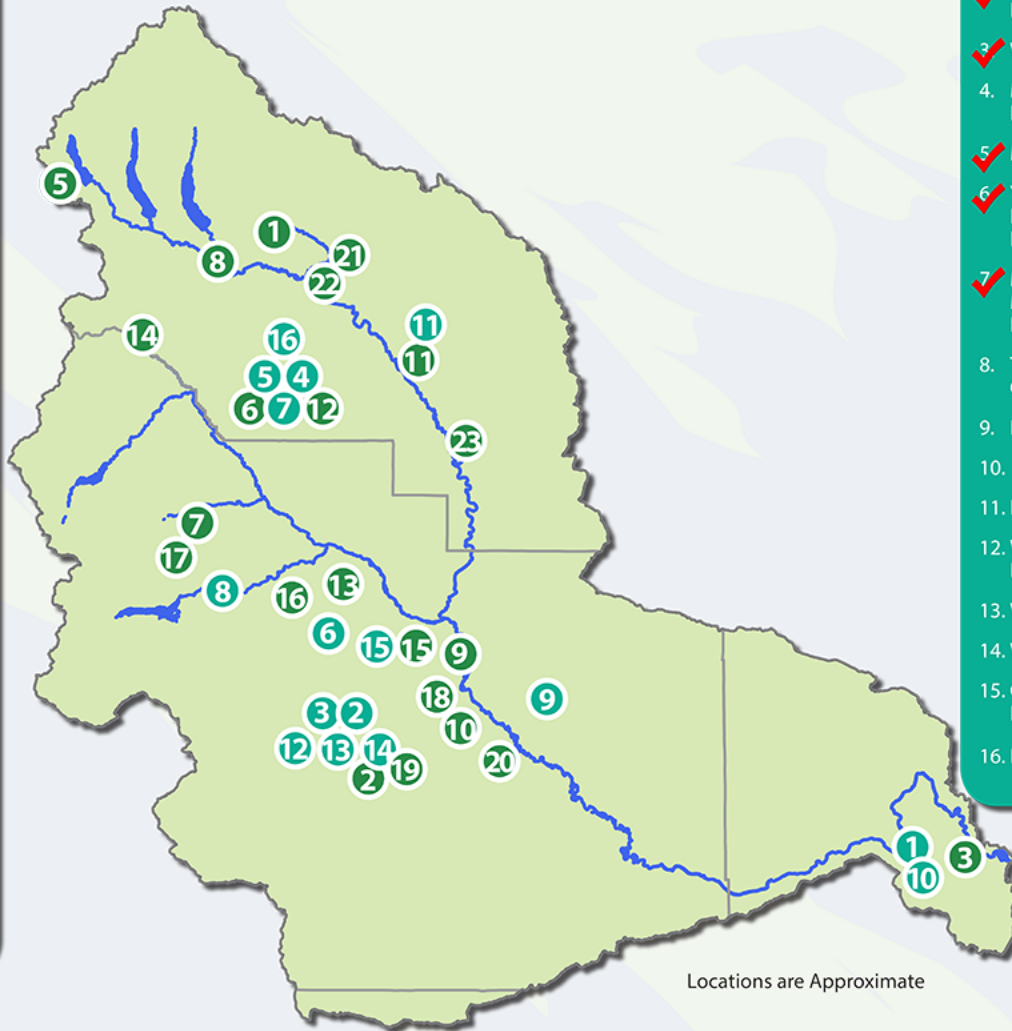
Time not to scale



Yakima Basin Integrated Water Resources Management Plan Habitat Enhancement/Enhanced Agricultural Conservation Projects 2013-2017

Habitat Enhancement (2013-2017)

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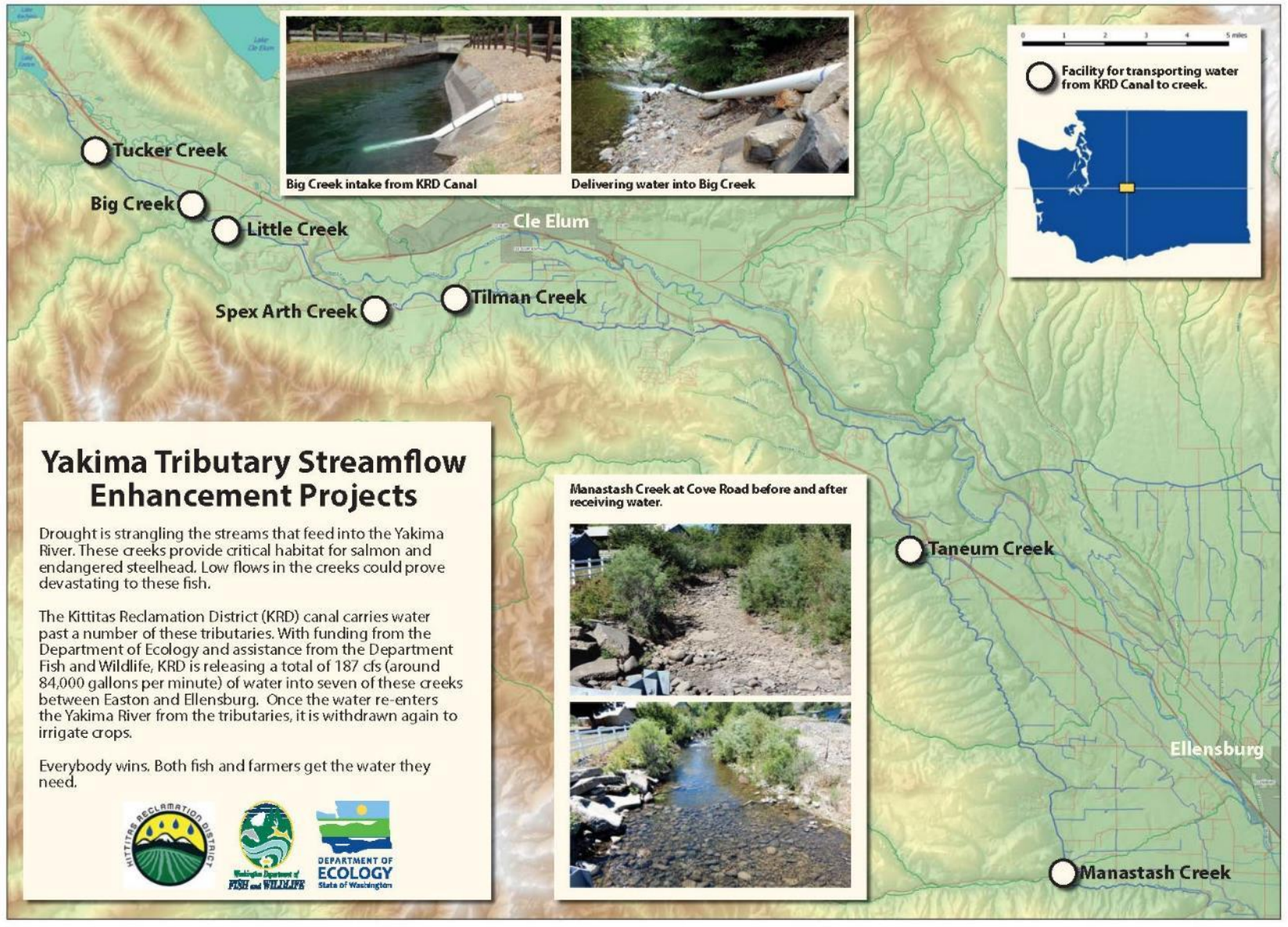


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Yakima Tributary Streamflow Enhancement Projects

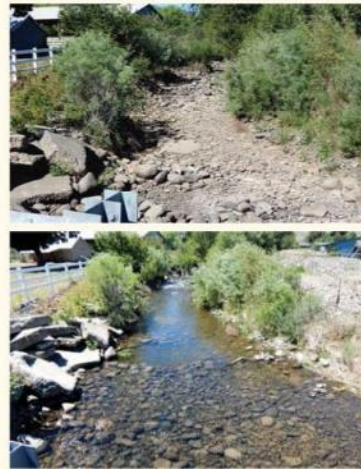
Drought is strangling the streams that feed into the Yakima River. These creeks provide critical habitat for salmon and endangered steelhead. Low flows in the creeks could prove devastating to these fish.

The Kittitas Reclamation District (KRD) canal carries water past a number of these tributaries. With funding from the Department of Ecology and assistance from the Department Fish and Wildlife, KRD is releasing a total of 187 cfs (around 84,000 gallons per minute) of water into seven of these creeks between Easton and Ellensburg. Once the water re-enters the Yakima River from the tributaries, it is withdrawn again to irrigate crops.

Everybody wins. Both fish and farmers get the water they need.

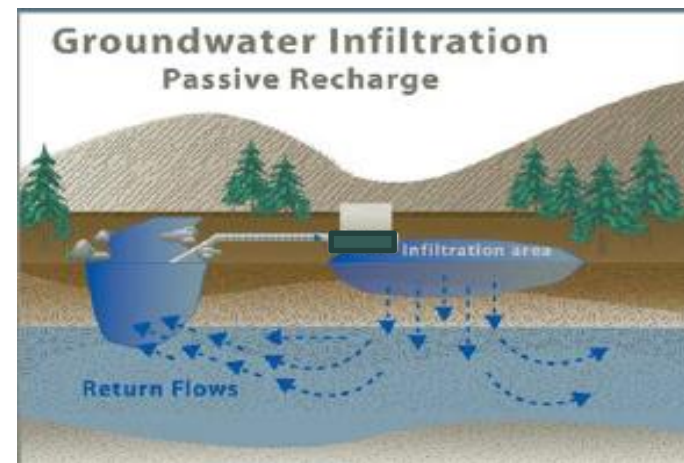
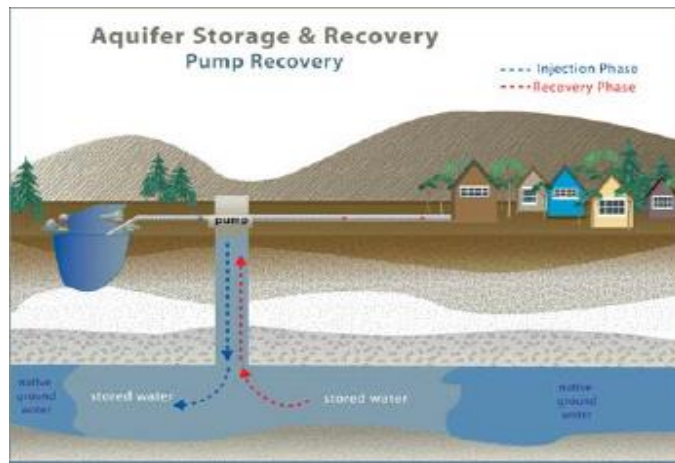


Manastash Creek at Cove Road before and after receiving water.



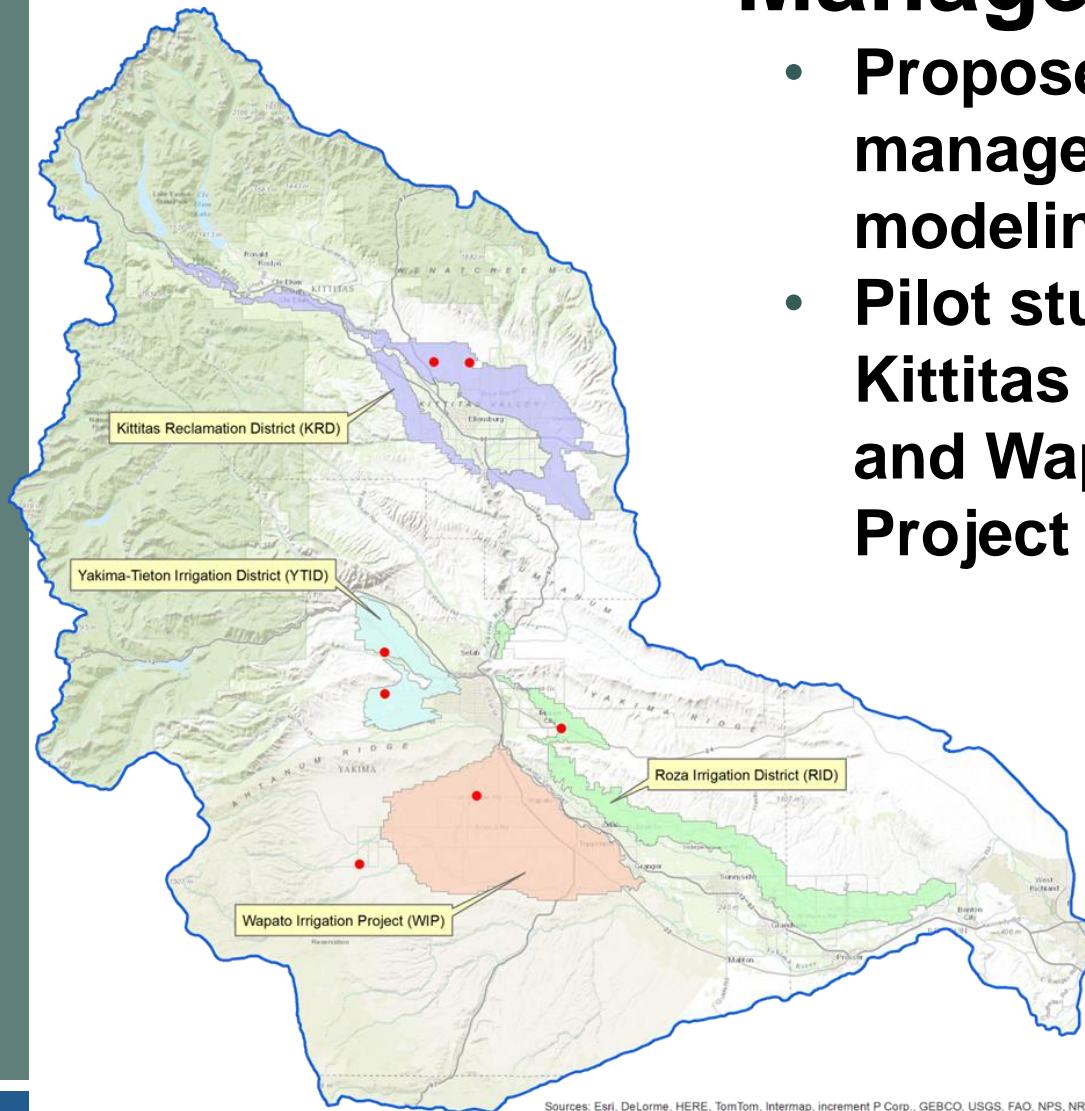
Groundwater Storage

- Use surface water during periods of high runoff
- Recharge aquifers for later withdrawal



Groundwater Managed Recharge

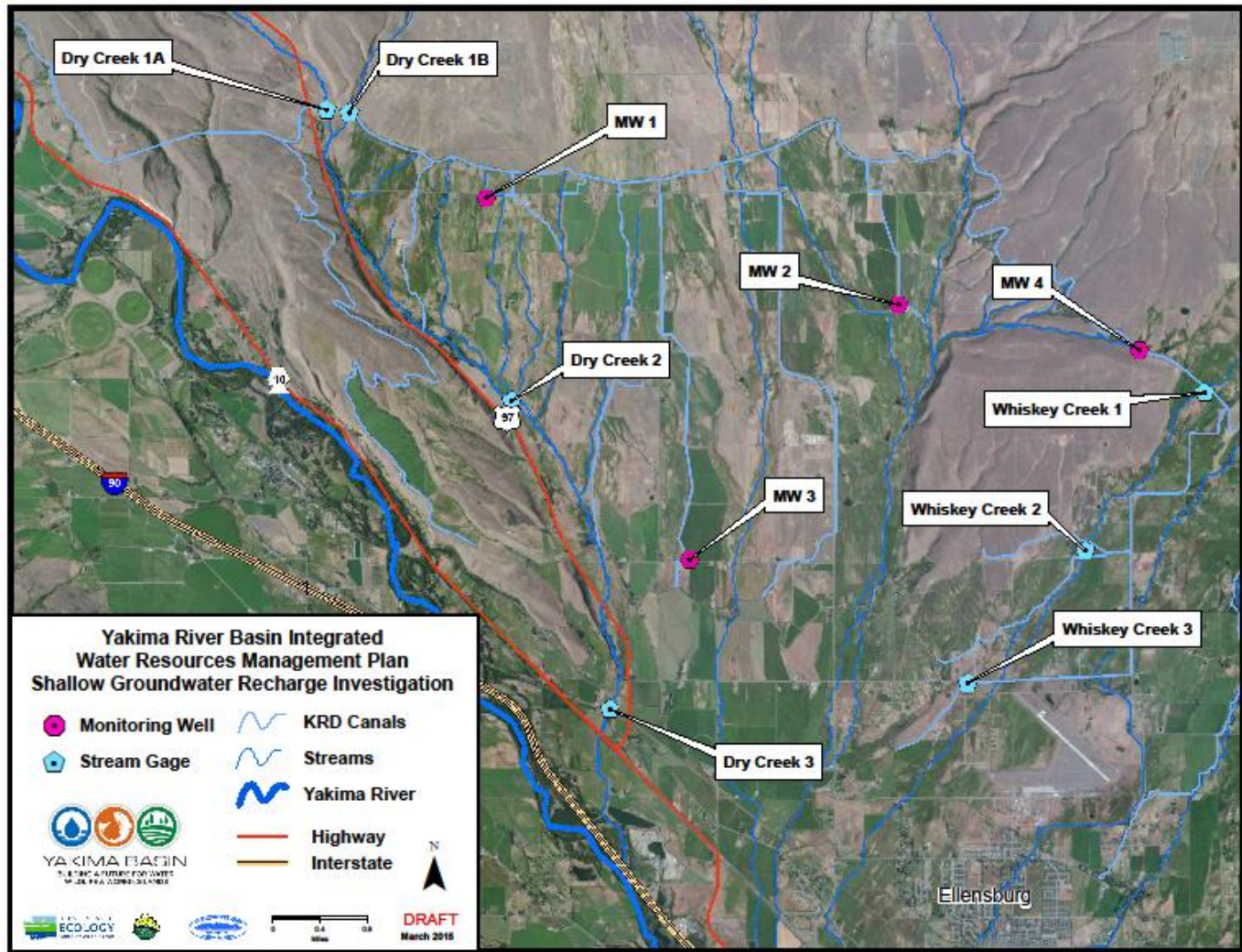
- Proposed Areas for managed recharge modeling
- Pilot studies ongoing at Kittitas Reclamation District and Wapato Irrigation Project



Sources: Esri, DeLorme, HERE, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kaduna, N. Ordnance, Esri Japan, METI, Esri China (Hong Kong), swisstopo, and the GIS User Community



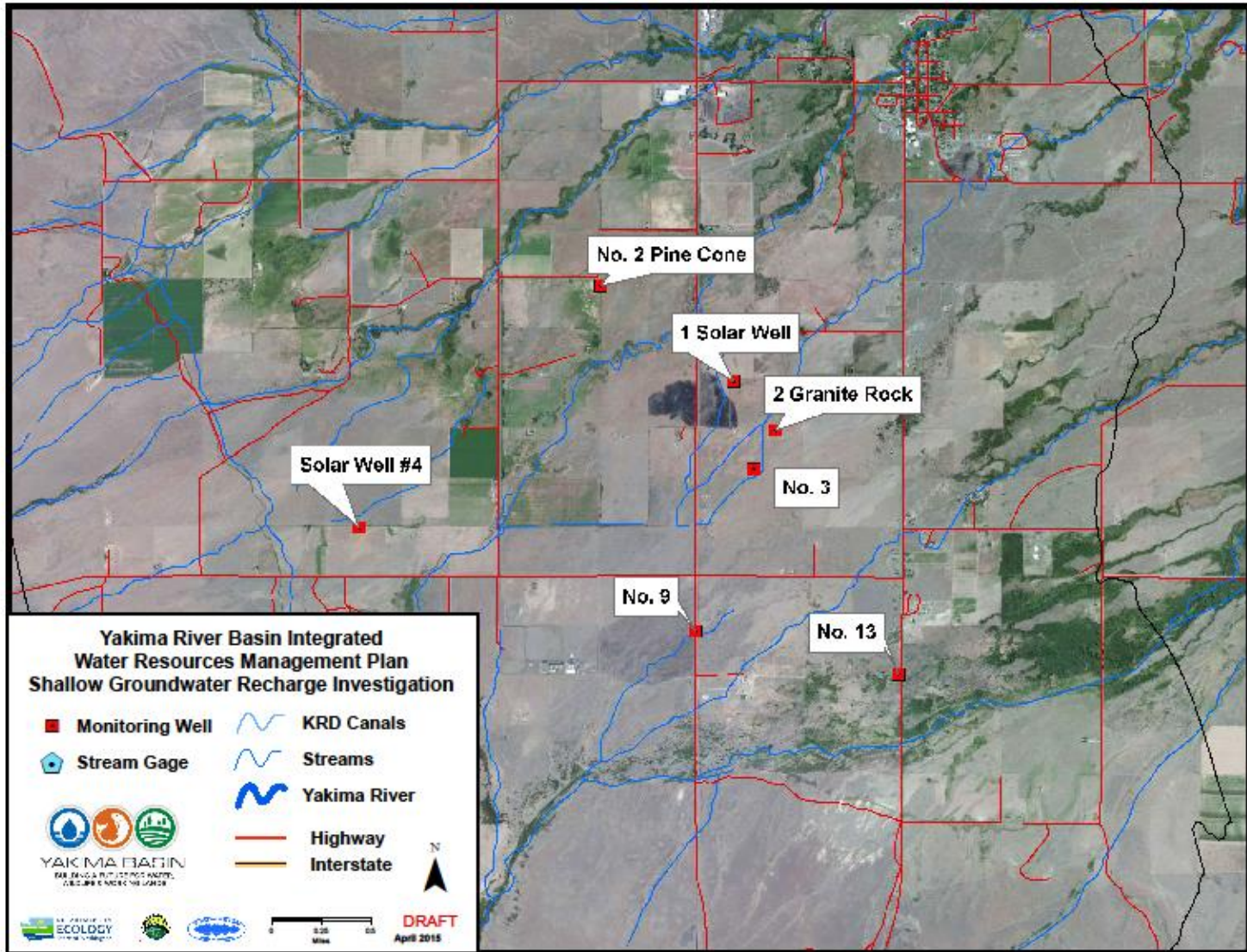
Groundwater Managed Recharge



KRD – Monitoring Locations



Groundwater Managed Recharge



WIP – Monitoring Locations



Groundwater Managed Recharge

Potential Next Steps

- **Continue monitoring and data collection field work at KRD and WIP**
- **Drill additional wells at WIP**
- **Pilot projects**
 - **KRD**
 - **WIP**
- **Review data collection, perform analysis, and reevaluate modeling results**



Market Reallocation

- **Kittitas County and Yakima County have recently completed work to provide for water banking / mitigation for new, rural homes with permit-exempt wells.**
- **Washington State Department of Ecology working now to advance solutions for a range of transfers (In consultation with the Water Use Subcommittee).**

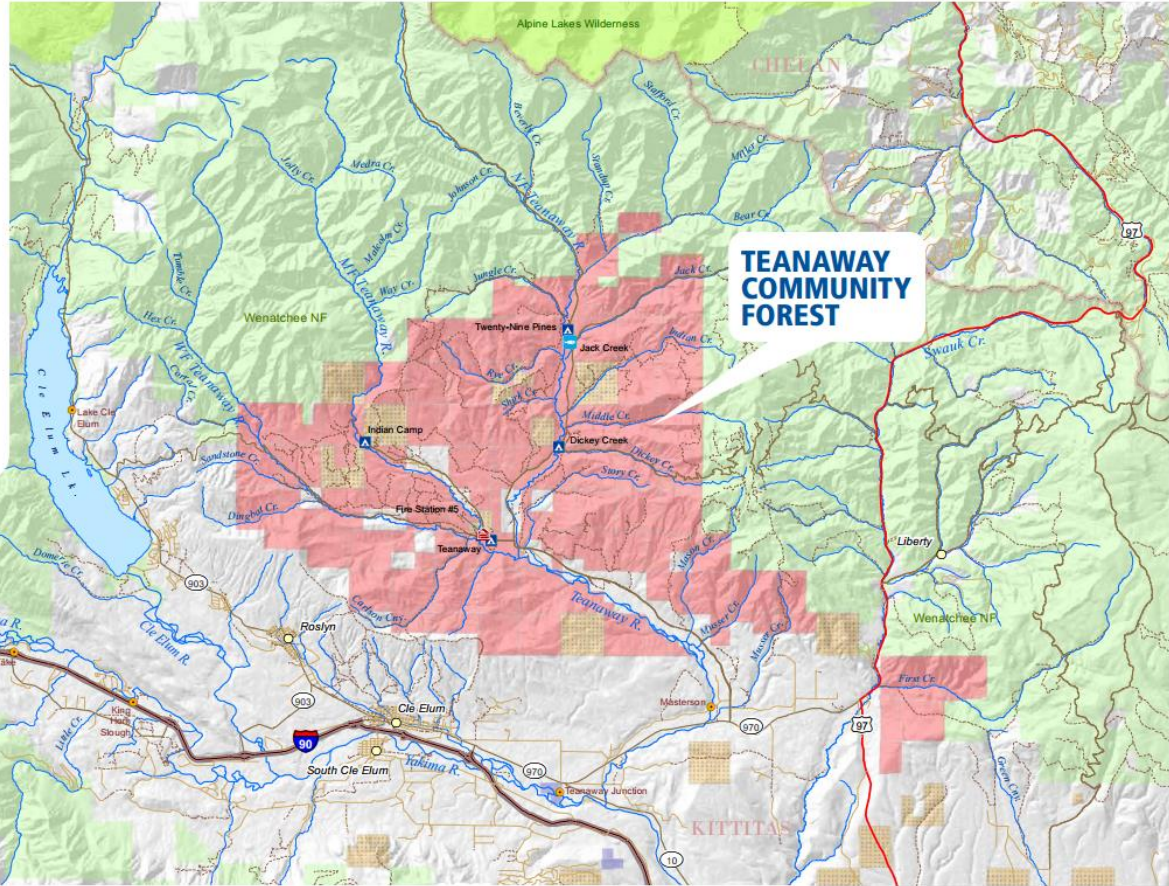


TEANAWAY COMMUNITY FOREST

The Teanaway Community Forest is a 50,272-acre forest situated at the headwaters of the Yakima Basin watershed. The forest will be managed through a partnership between the Washington state departments of Natural Resources (DNR) and Fish & Wildlife, with input from the local community and interested stakeholders.

DNR designed the community forest model, which was approved by state lawmakers in 2011. The model is a tool to involve local citizens in protecting working forests that support healthy communities through grazing, forestry, recreation, and conservation.

The Teanaway property was identified as part of the Yakima Basin Integrated Plan as an area of importance to safeguard the Yakima Basin water supply and associated habitat, and to support the economy by preserving working lands and enhancing recreation opportunities. The Basin Plan was developed by a coalition of public and private organizations committed to increasing the quantity and quality of water in the Yakima River Basin.



FACILITIES

- Building
- Campground
- Acclimation Pond
- WDFW Water Access Sites

ROADS

- Interstate
- Major Highway
- Road
- Local Road
- Unimproved Road

HYDROGRAPHY

- Rivers
- Streams

LAND MANAGEMENT

- Teanaway Community Forest
- Washington Dept. of Natural Resources
- USFS Wilderness Areas
- US Forest Service
- Washington State Parks
- Washington Dept. of Fish & Wildlife



LEARN MORE

<http://bit.ly/teanaway>

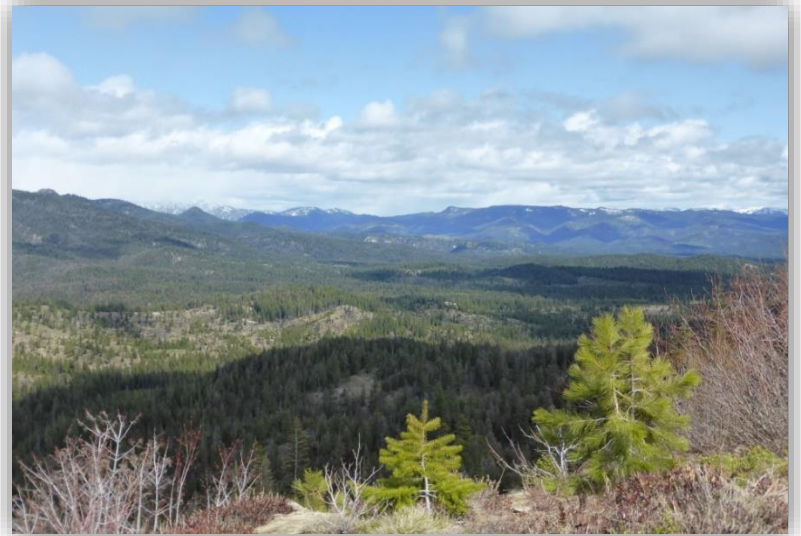


WASHINGTON STATE DEPARTMENT OF
Natural Resources



Teanaway Community Forest

- 50,241 acres protected
- Joint management by WDFW and DNR
- Critical to salmon recovery, headwaters protection, habitat connectivity, and recreation



Completed:

- Technical Advisory Committee to guide management plan formed in March 2014
- Management plan by DNR, WDFW and 20-member advisory committee completed June 2015
- Baseline study on current ecological conditions published



Teanaway Community Forest (cont.)

Implementation:

- **Indian Creek aquatic habitat restoration by Yakama Nation**
- **Developing grazing management prescriptions to enable habitat restoration**
- **Improving roads to remove fish barriers and reduce sediment delivery**
- **Designing forest thinning projects to improve forest health and reduce fire risk**
- **Seeking state funds to develop a Recreation Plan and implement additional habitat work**

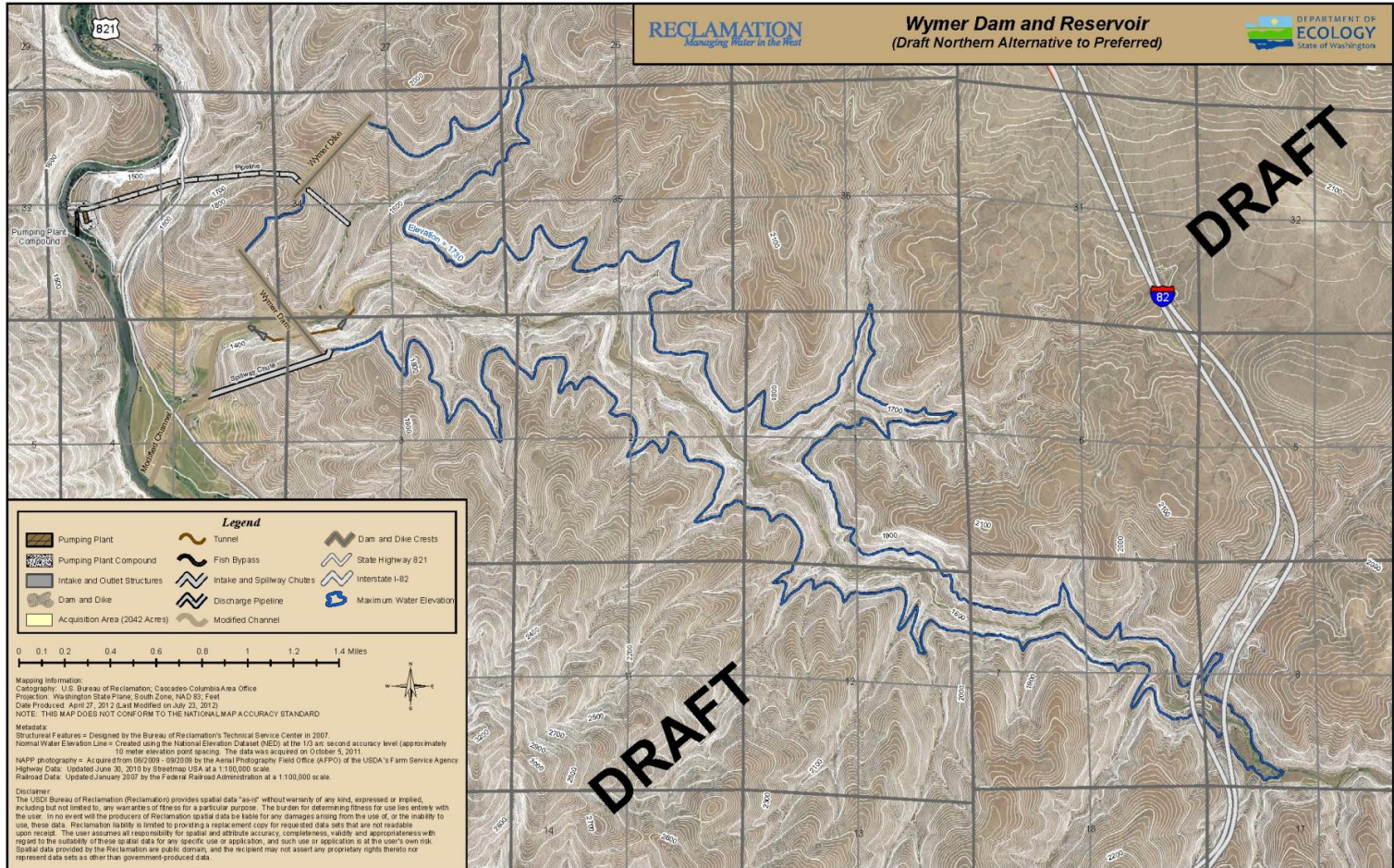


What about Wymer and Bumping?

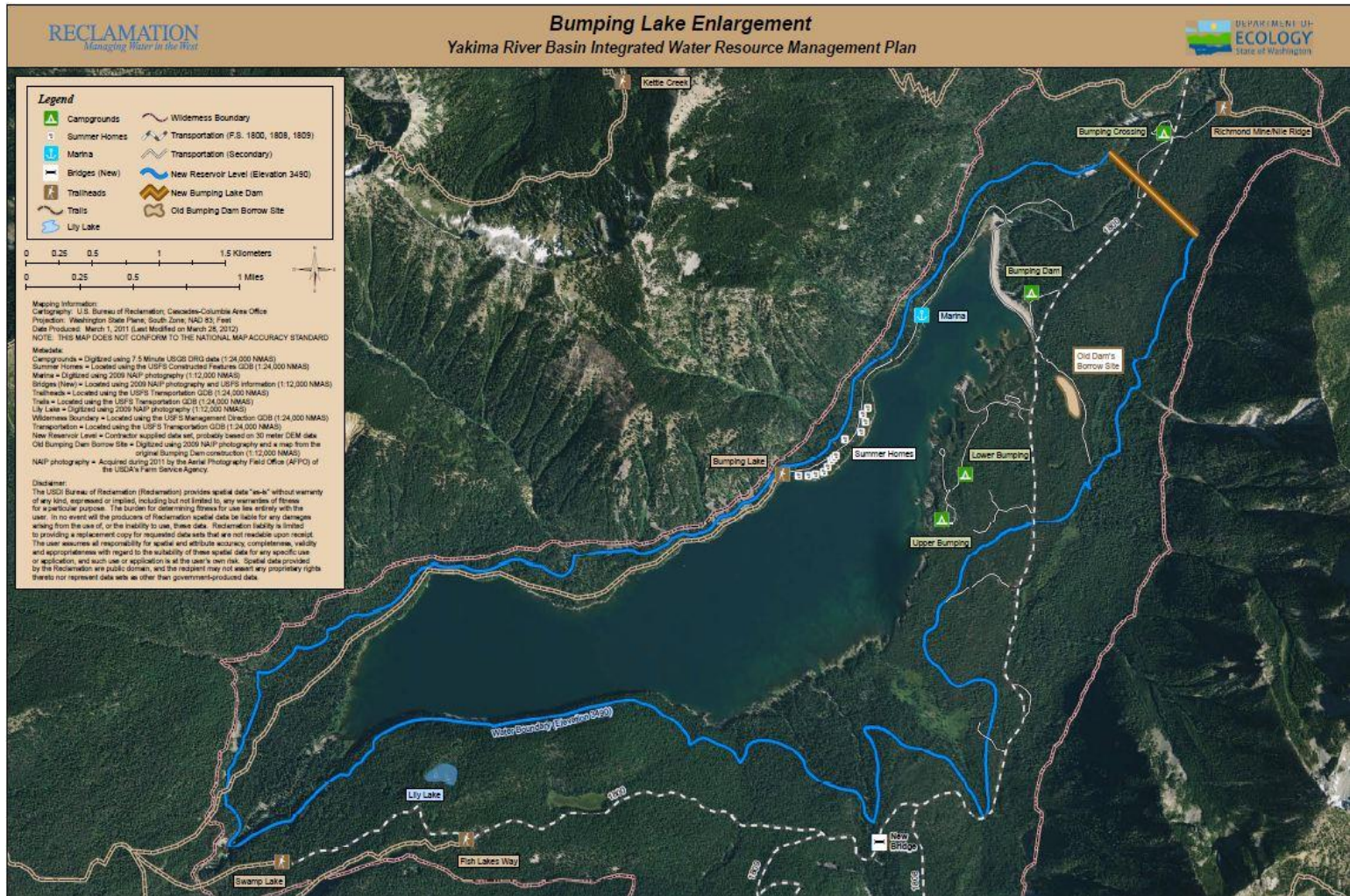
- Not included in the Initial Development Phase
- Ongoing Analysis:
 - Key Consideration Analysis - Engineering
 - Geologic Investigations
 - Seismic Evaluation
 - State and Federal Endangered Species Surveys
- Next steps
 - Decision which project to advance first
 - Feasibility Study
 - Environmental Compliance
 - Authorization/Appropriations



Wymer Dam & Reservoir



Bumping Dam & Reservoir Enlargement



Draft Federal Legislation

- **S. 1694 – To amend Public Law 103-434 to authorize Phase III of the Yakima River Basin Water Enhancement Project**
- **Introduced by Senator Cantwell – June 25, 2015**
- **Press Conference held in Yakima – July 1, 2015**
- **Senate Energy and Natural Resource Committee Hearing – July 7, 2015**
- **Voted out of Committee Nov 18, 2015**
- **Passed Senate April 20, 2016**
- **Companion House Bill introduced March 2016**



Funding – 2015 - 2017

- **Washington State Budget (2013-2015 \$131M)**
 - **\$30M for Integrated Plan**
 - **\$9.5M – Water Supply Projects (CEPR and others)**
 - **\$9.5M – Fisheries Projects (CEFP and others)**
 - **\$5M – Water Conservation Projects**
 - **\$5M – Habitat Projects**
 - **\$1M – Groundwater Storage and Market Reallocation**
- **Reclamation Appropriated Funding**
 - **FY 15 - \$4.3M Cle Elum Fish Passage (\$14.5 M YRBWEP)**
 - **FY 16**
 - **\$9.5M Cle Elum Fish Passage and Water Supply Reliability**
 - **\$12.6M YRBWEP Phase 2**
 - **FY 17 - \$15.8M YRBWEP**



Questions?

For further information on the web:

<http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/>

<http://www.ecy.wa.gov/programs/wr/cwp/YBIP.html>

