

Technical Projects Update

YRBWEP Workgroup Meeting
October 22, 2014



Overview

- Ongoing projects
- Kachess Drought Relief Pumping Plant
- Keechelus-to-Kachess Conveyance
- Bull Trout Enhancement
- Cle Elum Dam Fish Passage Facilities
- Groundwater Storage
 - Basinwide Analysis
 - City of Yakima Aquifer Storage and Recovery
- Habitat Enhancement and Agricultural Conservation Projects
- Teanaway Community Forest

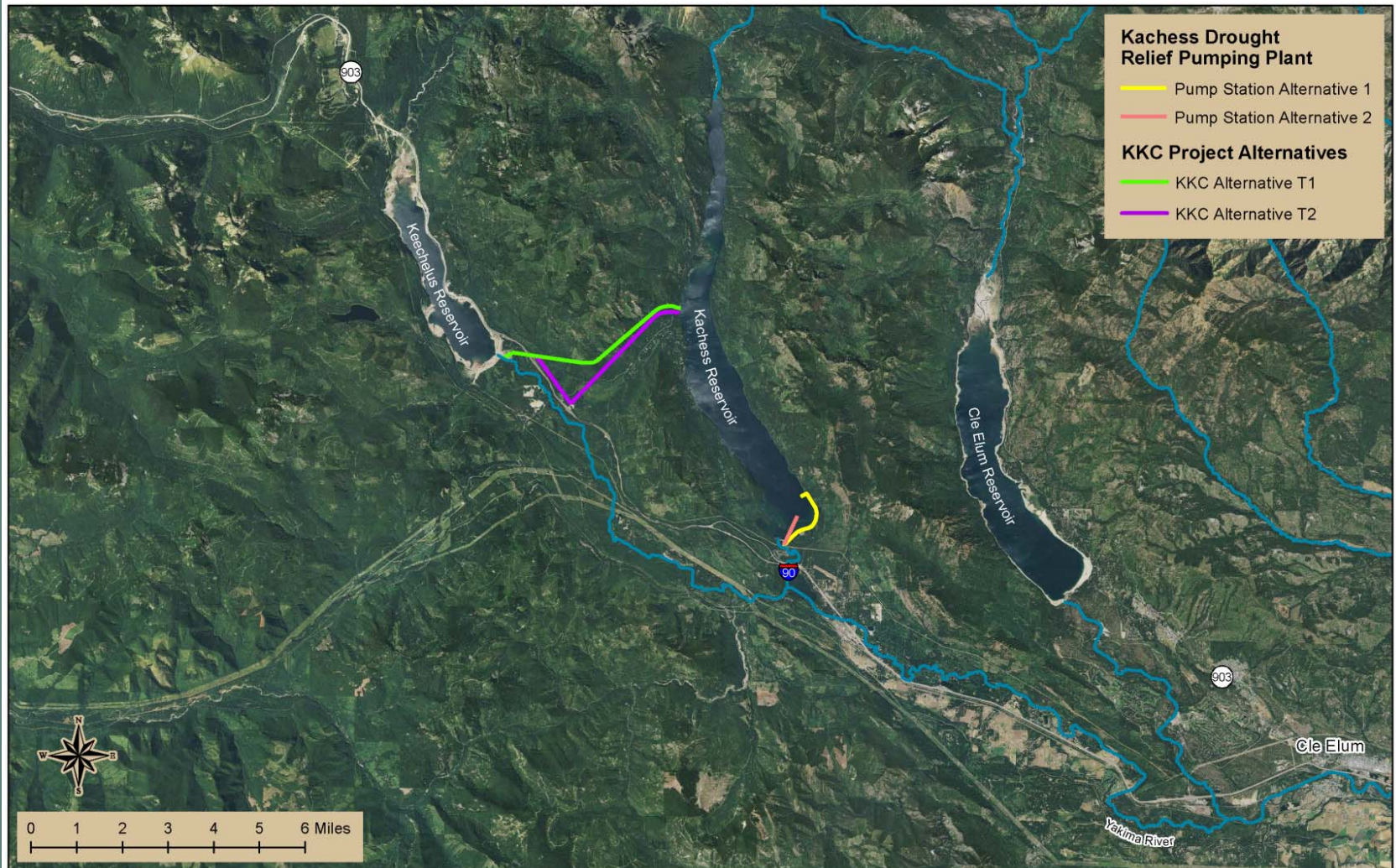


Ongoing Projects

- Kachess Drought Relief Pumping Plant
- Keechelus-to-Kachess Conveyance
- Bull Trout Enhancement
- Wymer Dam and Reservoir
- Bumping Dam and Reservoir Enlargement
- Cle Elum Pool Raise
- Cle Elum Dam Fish Passage Facilities
- Tieton Dam Fish Passage Facilities Study
- Clear Lake Fish Passage
- Groundwater Storage – Basinwide Analysis
- Groundwater Storage – City of Yakima Aquifer Storage and Recovery (ASR)
- Manastash Creek Conservation and Tributary Enhancement
- Habitat Enhancement and Agricultural Conservation Projects
- Teanaway Community Forest



Project Locations

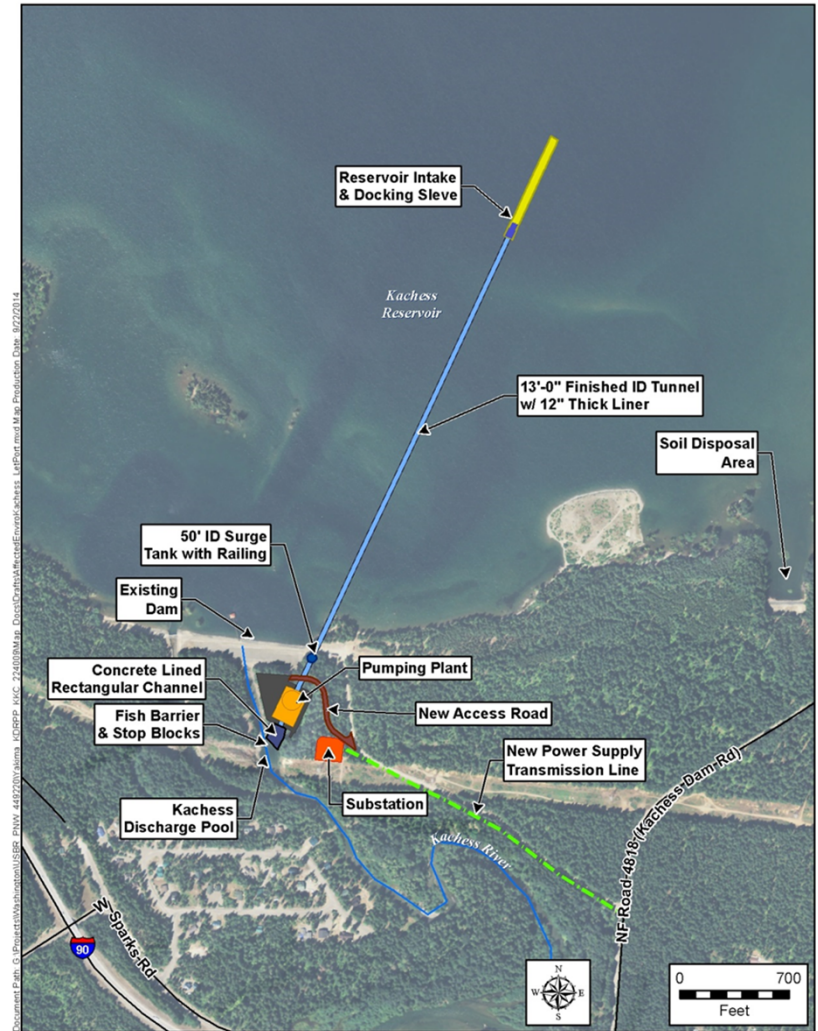
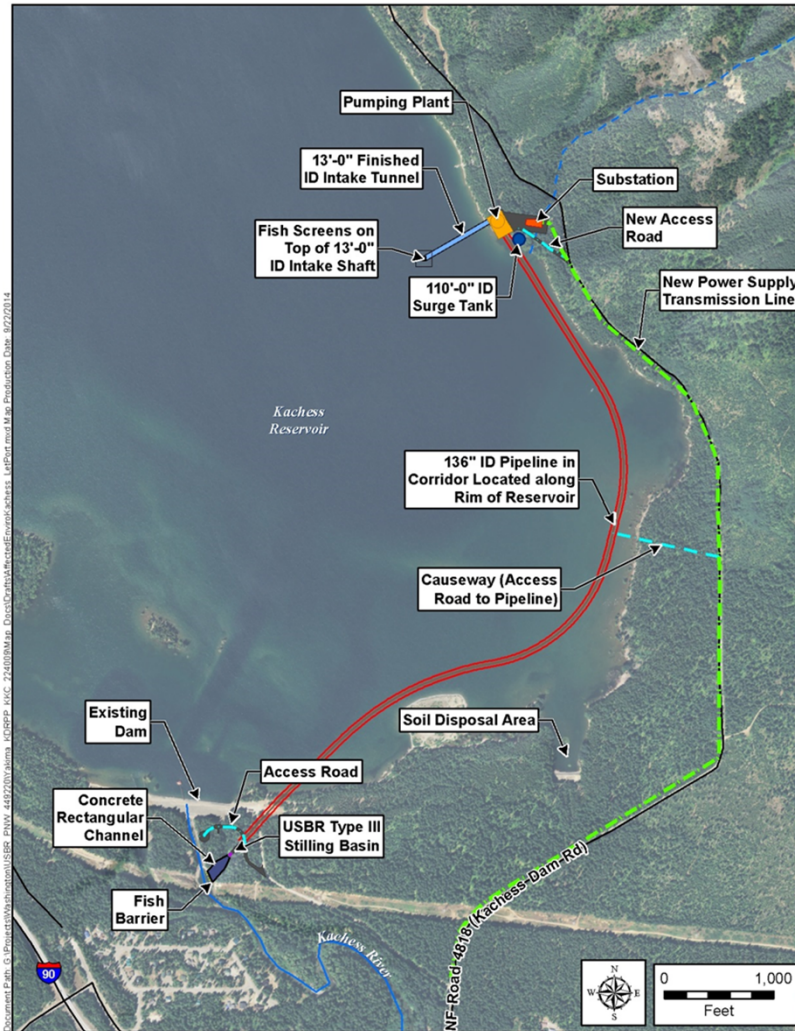


Kachess Drought Relief Pumping Plant

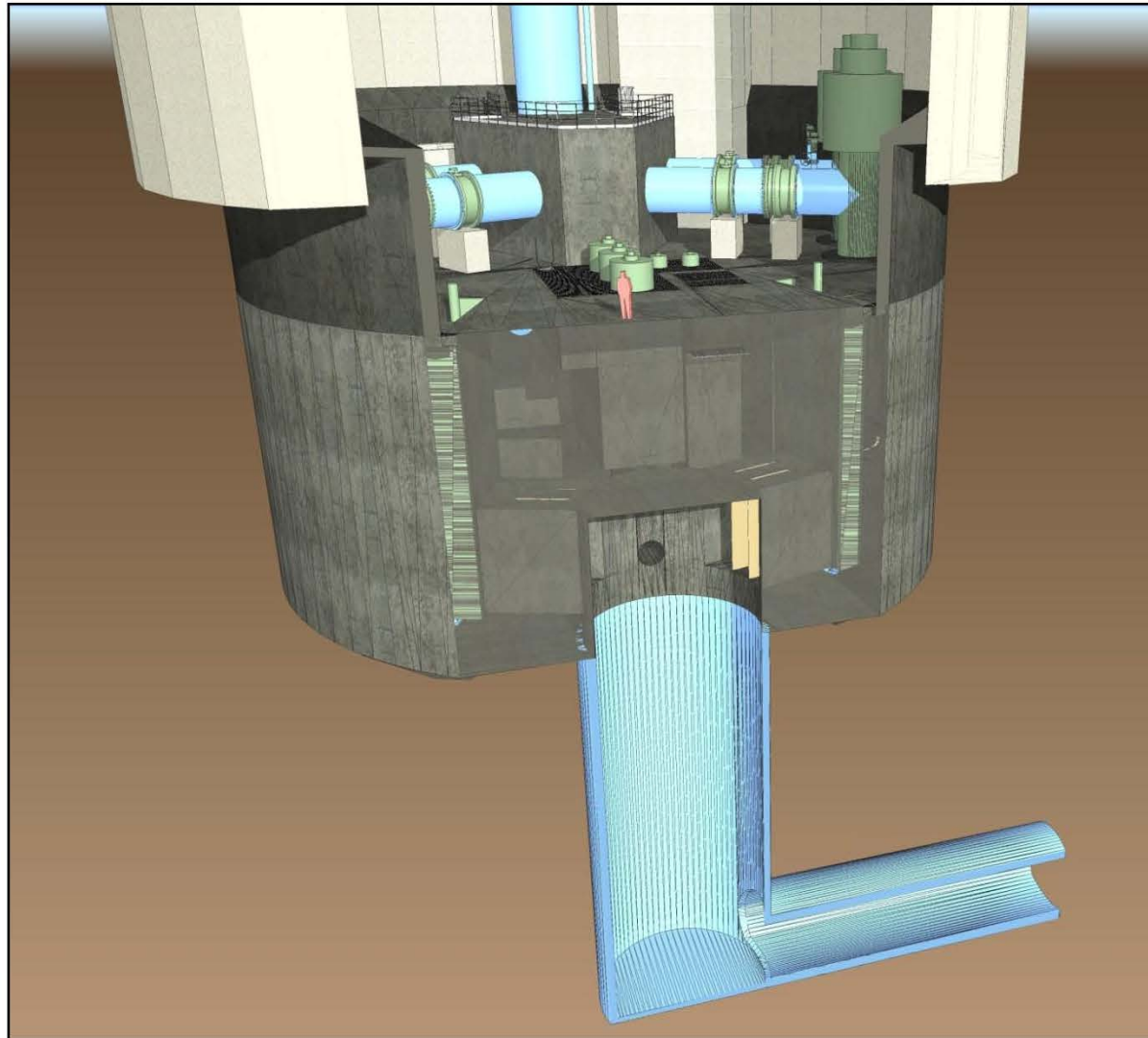


Kachess Drought Relief Pumping Plant

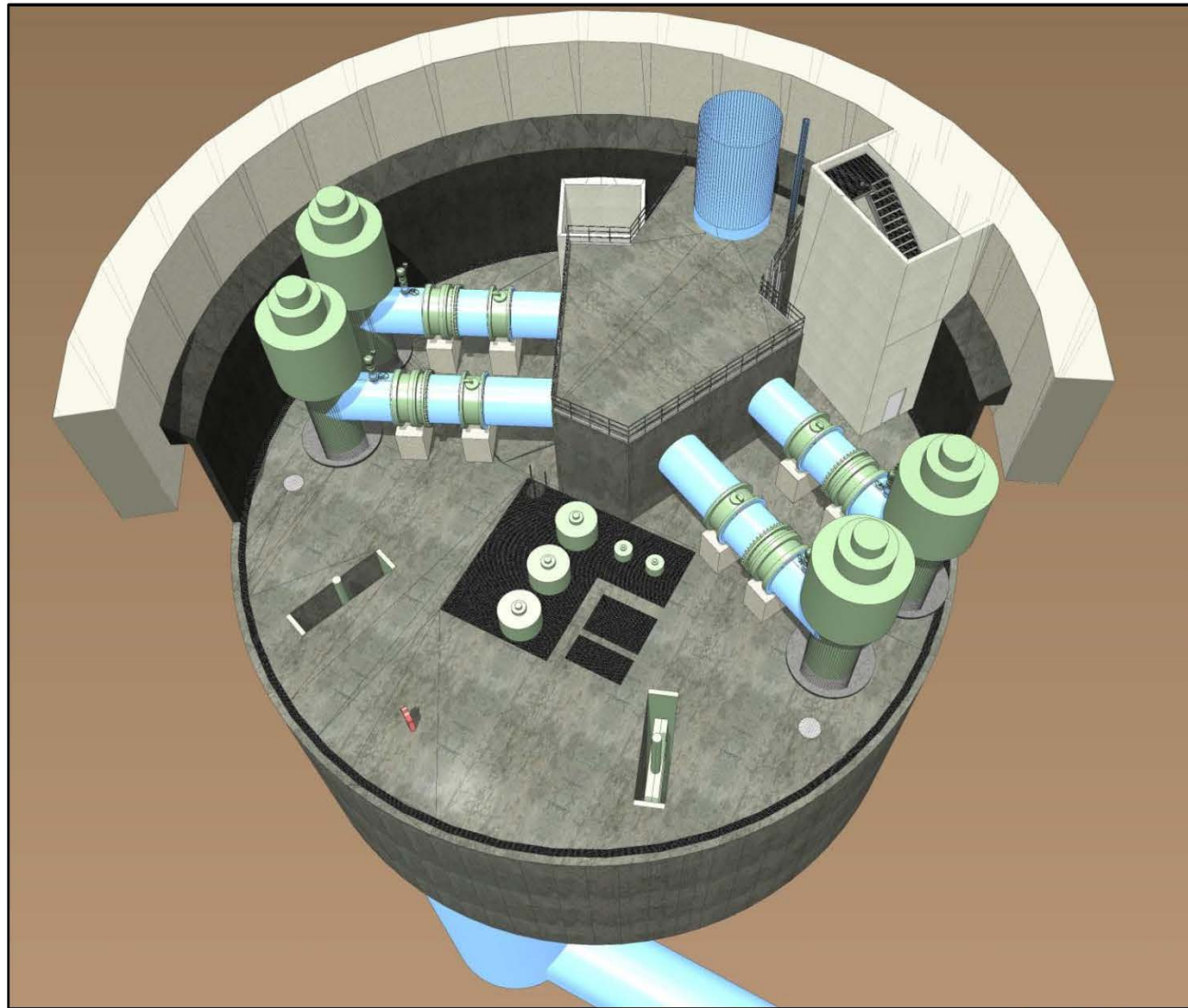
Alt. 1 - East Shore Pumping Plant Alt. 2 - South Pumping Plant



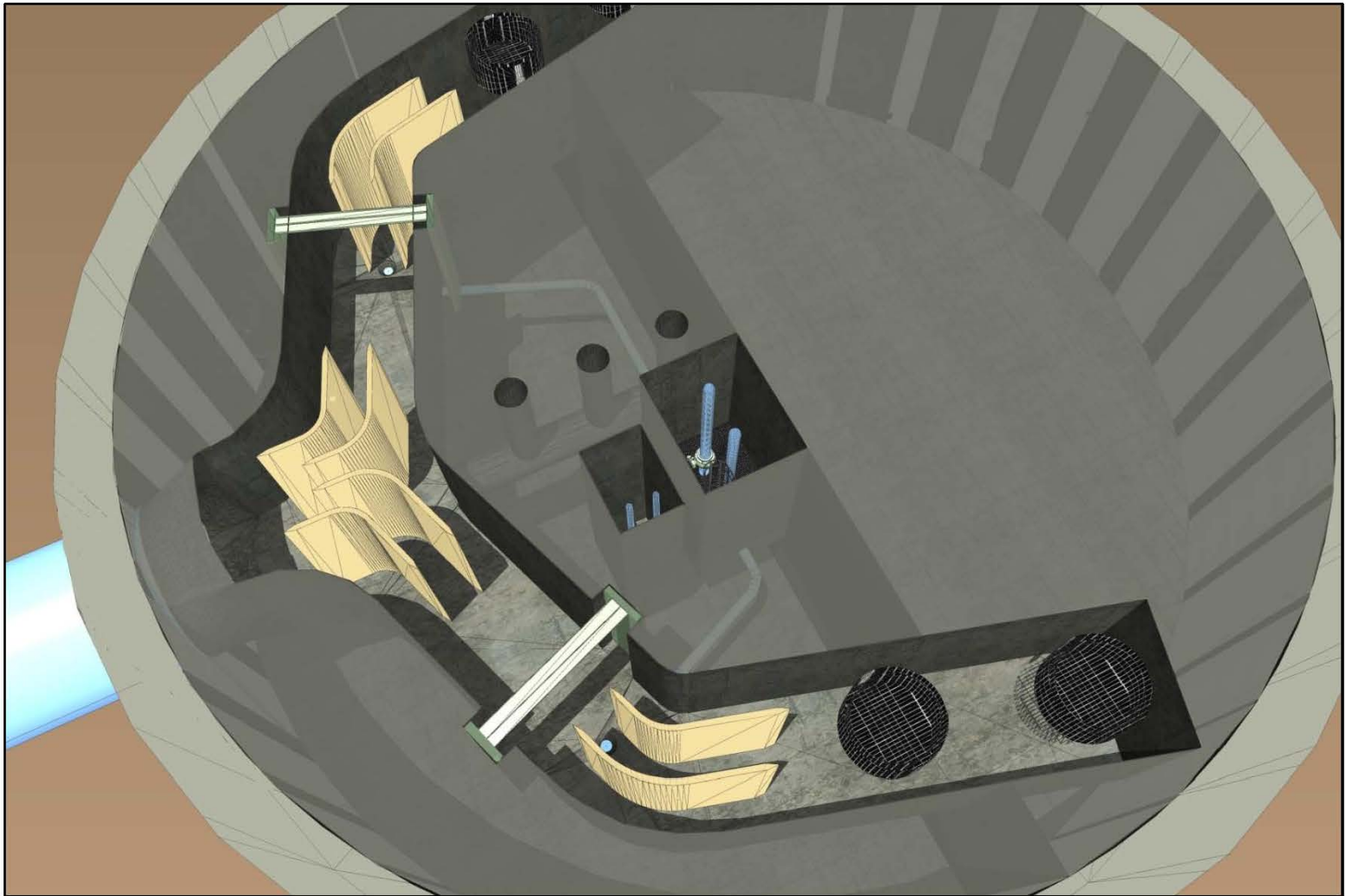
Alternative 1 – Intake



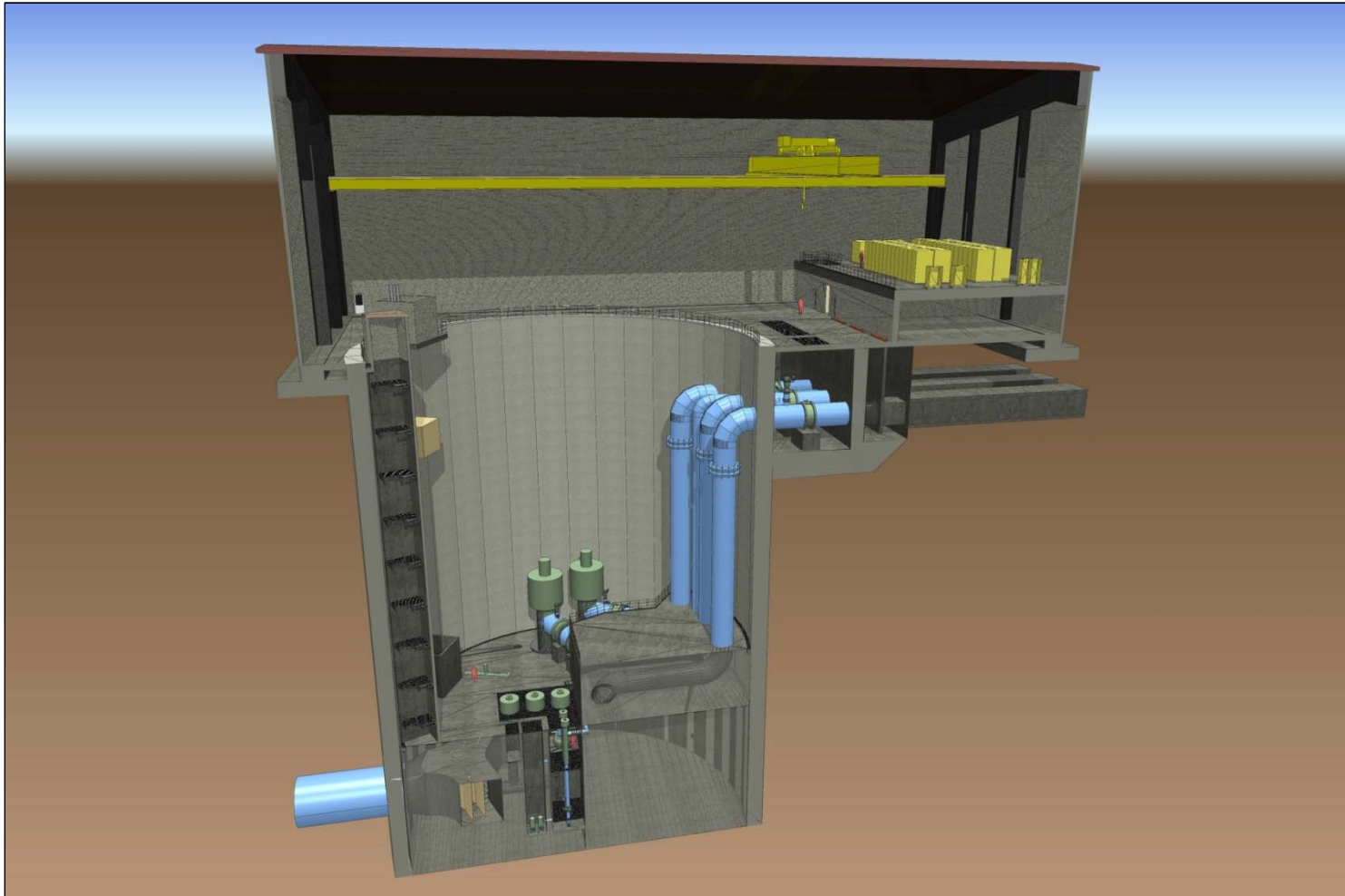
Alternative 1 – Pump Floor



Alternative 2 – Flow Spilt



Alternative 2 – Cross-Section of Pumping Plant



Kachess Drought Relief Pumping Plant Status

- **Design and Cost Estimates:**
 - Feasibility-level design nearly complete
 - Reclamation Internal Peer Review held in September/October
 - Two alternatives remain; both are feasible
- **Environmental Review:**
 - Draft Environmental Impact Statement (KDRPP and KKC) being prepared
- **Geotechnical Investigations:**
 - Additional geotechnical investigation in progress

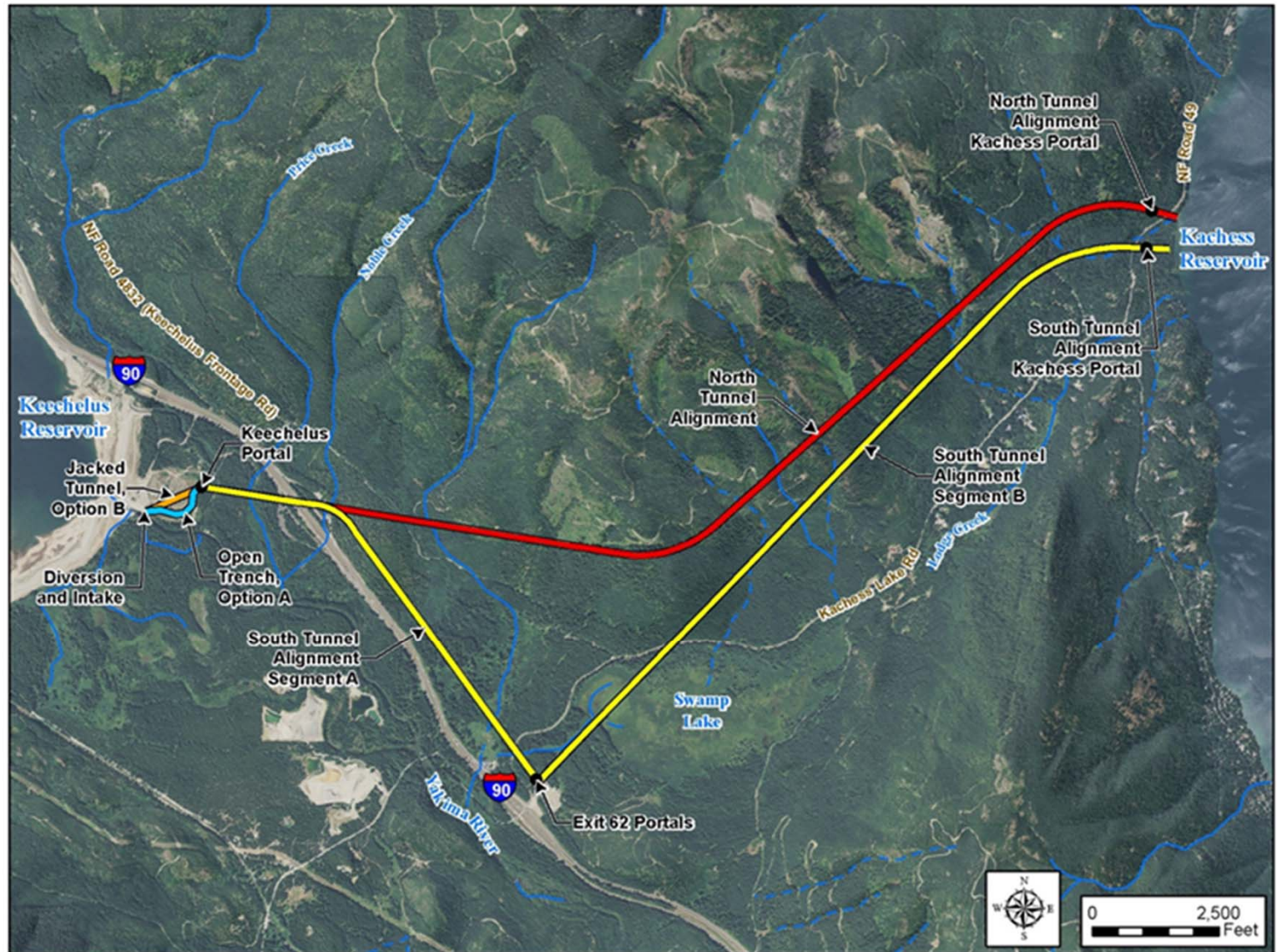


Keechelus-to-Kachess Conveyance



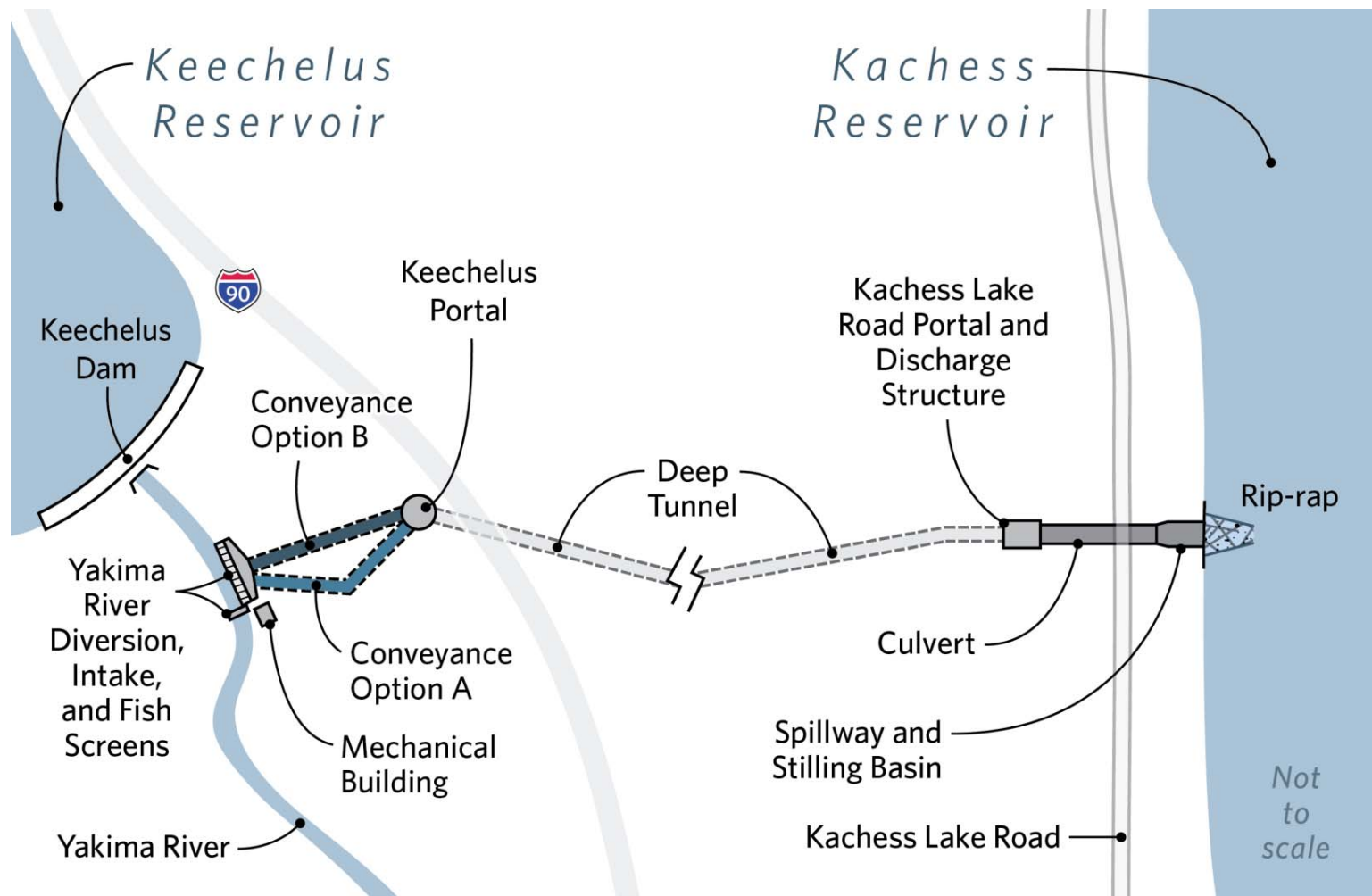
Keechelus-to-Kachess Conveyance

North Tunnel and South Tunnel Alternatives



KKC Intake and Discharge Works

(not to scale)



KKC Status

- **Design and Cost Estimates:**
 - Feasibility-level design nearly complete
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Bull Trout Enhancement



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
- Assessments



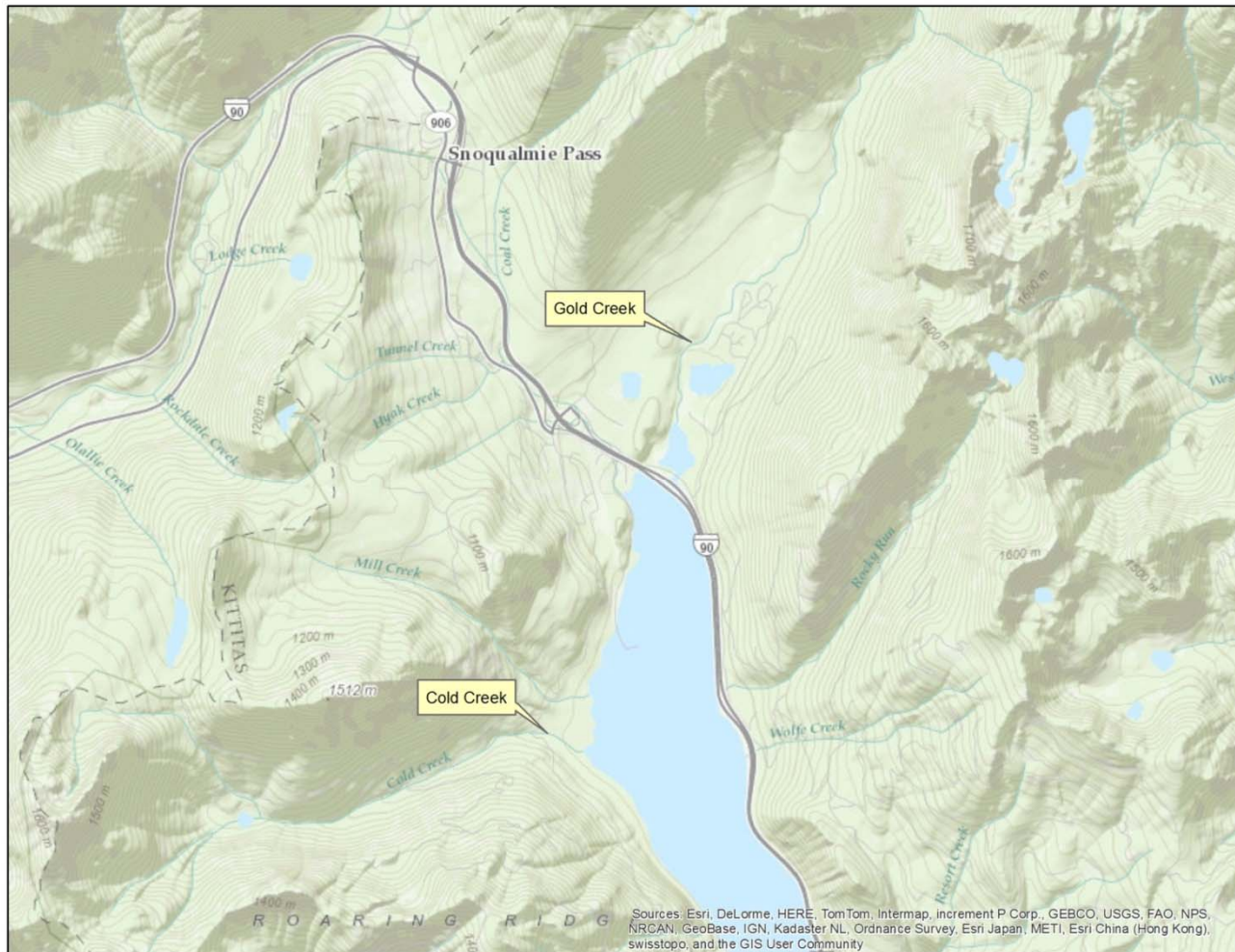
Kachess Reservoir



- Kachess River
- Mineral Creek
- Box Canyon Creek



Keechelus Reservoir

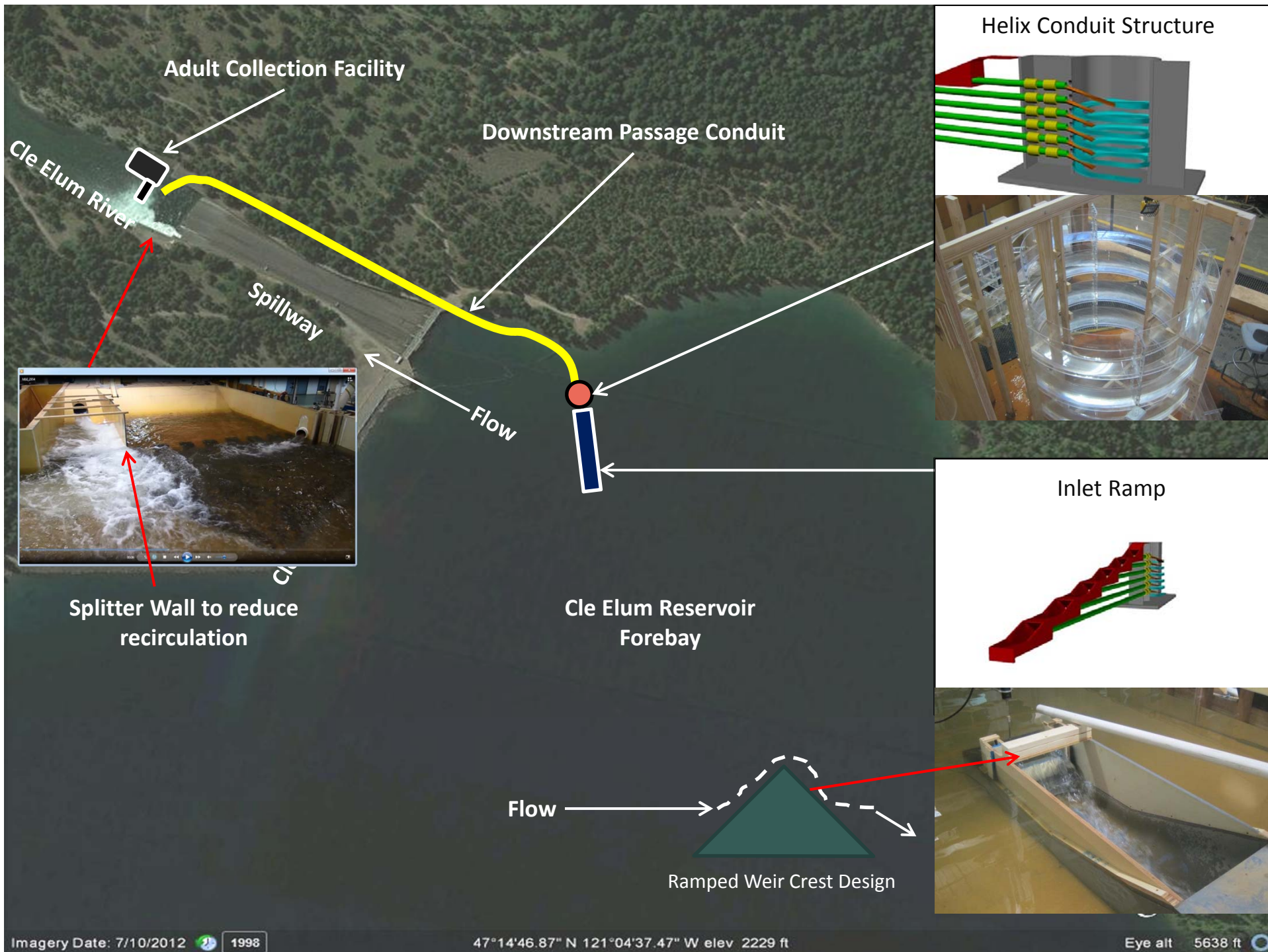


- **Gold Creek**
- **Cold Creek**
- **Other Small Tributaries**



Cle Elum Dam Fish Passage Facilities





Cle Elum Dam Fish Passage - Road System

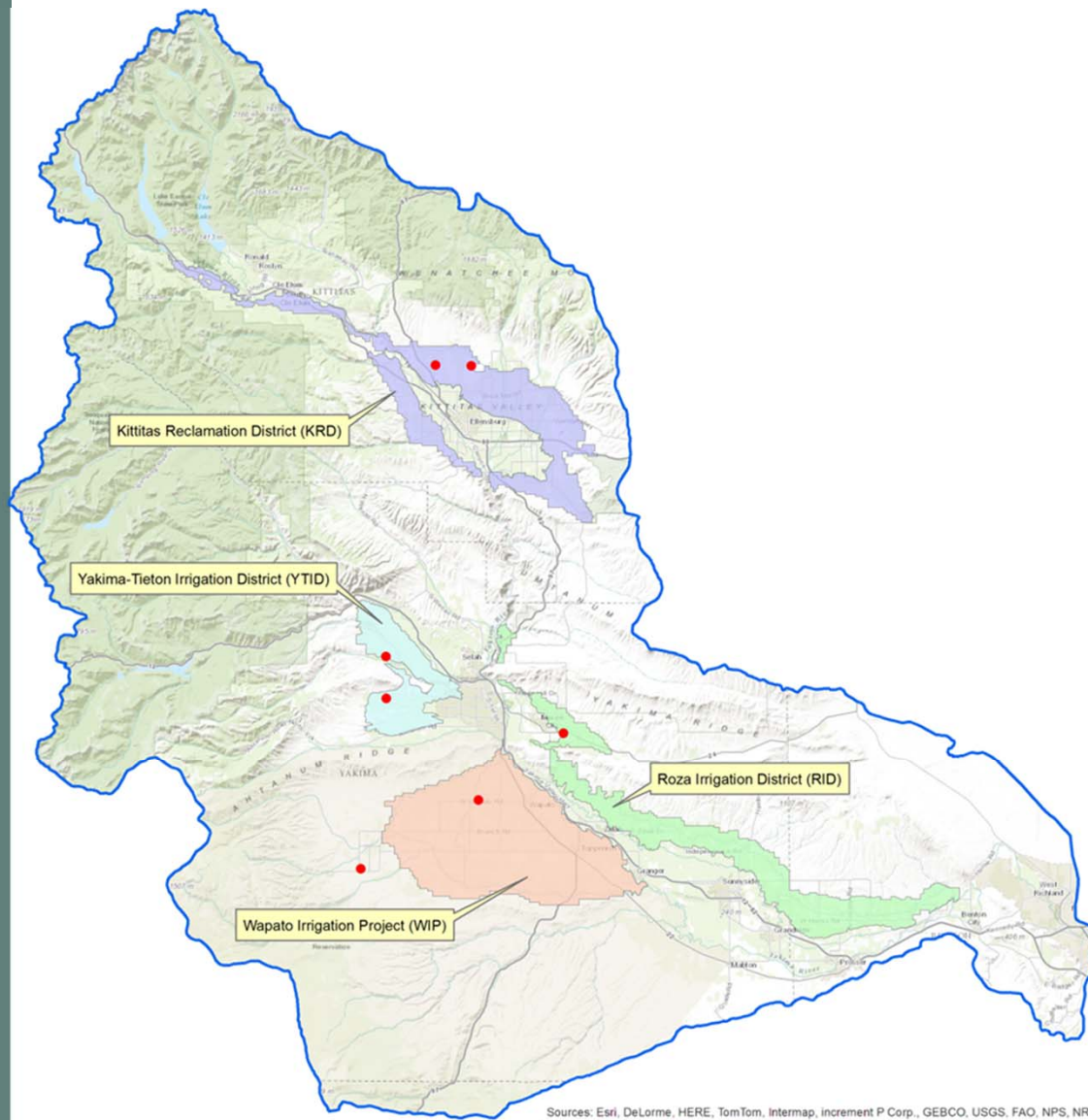
Yakima River Basin Water Resource Management Plan



Groundwater Storage Basinwide Analysis



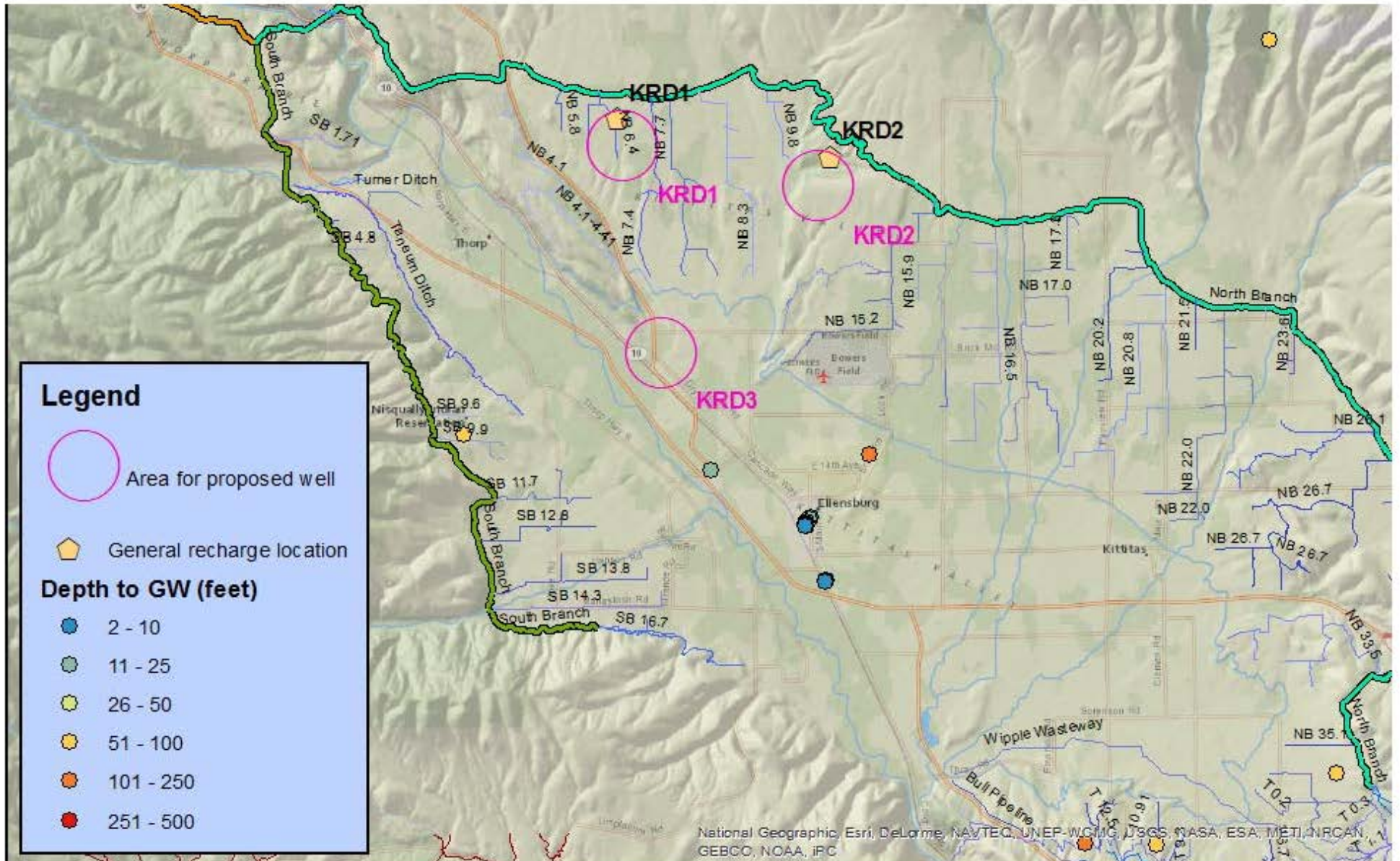
managed



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



KRD proposed observation wells



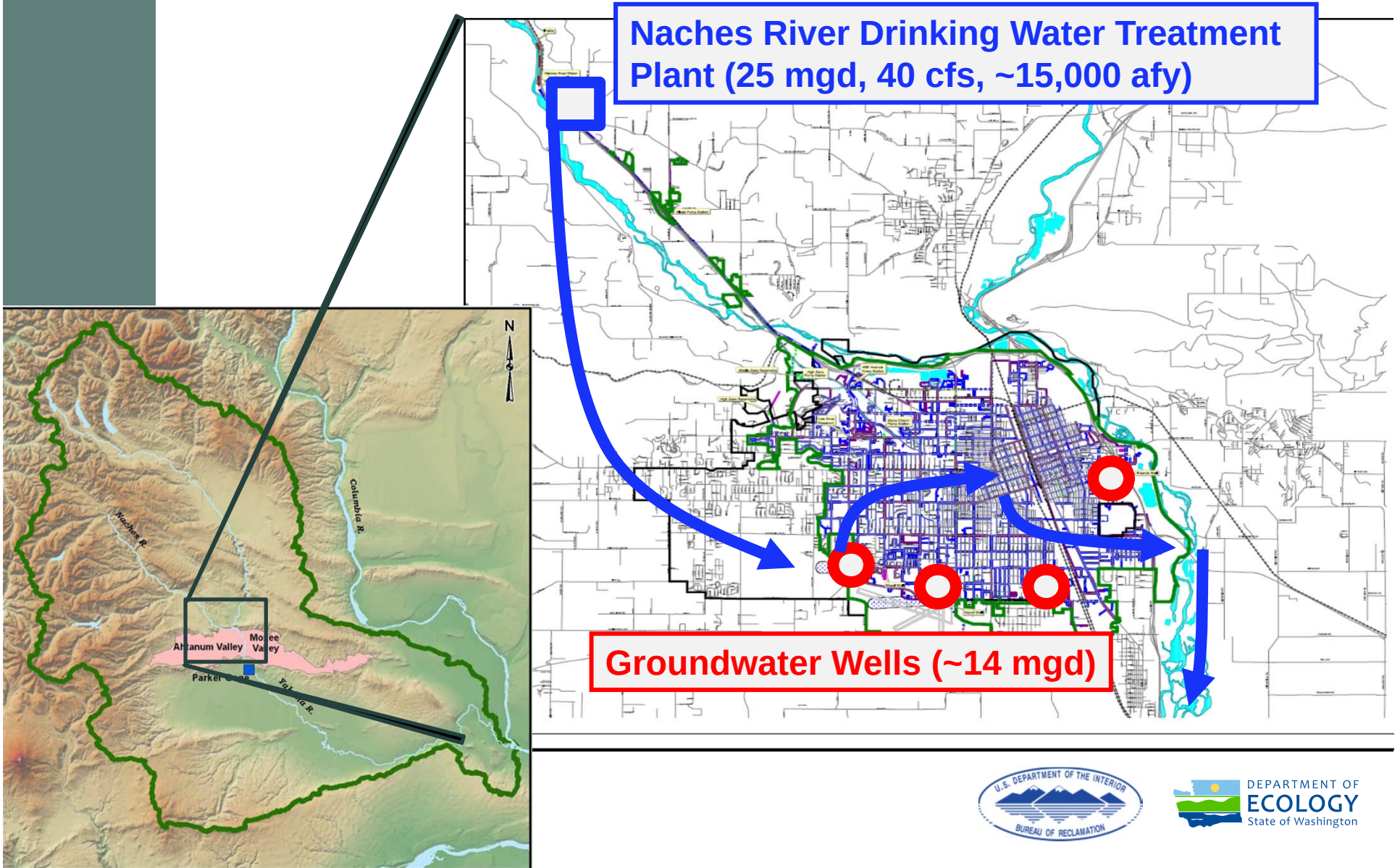
Groundwater Storage – City of Yakima Aquifer Storage & Recovery (ASR)



City of Yakima ASR

Naches River Drinking Water Treatment Plant (25 mgd, 40 cfs, ~15,000 afy)

Groundwater Wells (~14 mgd)



History from 1998 to Present

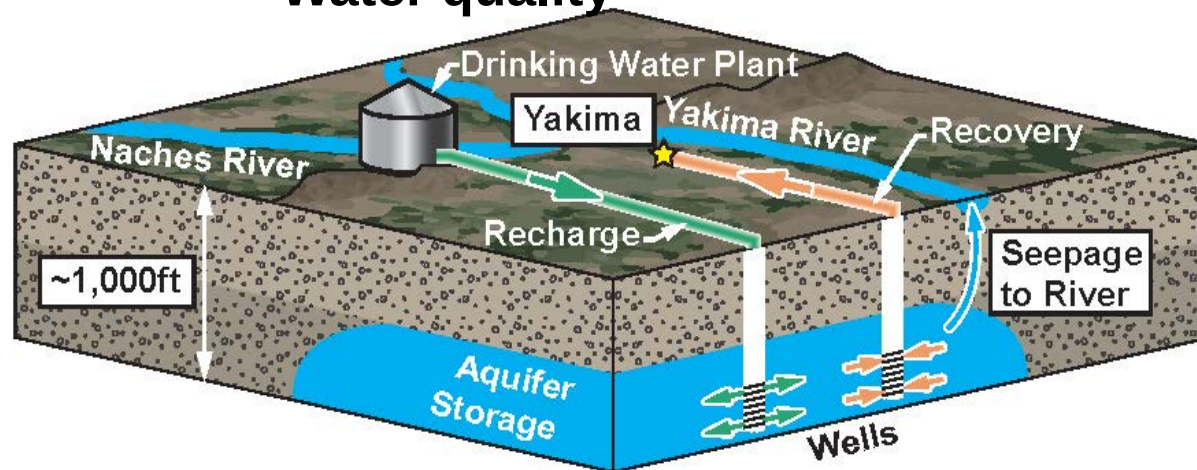
- **1998: City sees groundwater solutions:**
 - Water right permitting of emergency/backup/alternative supply
 - Protection against drought, climate change, watershed forest fire
- **2000: City tests Kissel Well – all is good**
- **2002: Reservoir application to Ecology**
Watershed planning (TCWRA) – modeling
- **2007-09: Reclamation/Ecology – modeling defines recoverable quantity**
- **2014: YBIP Gardner Well Test, permitting support**
 - AKART, SEPA... now ready to implement



2014 Activities

- Programmatic framework – YBIP & TWSA
- Additional testing in 2014 to include Gardner Well:
 - Gardner Well works (Kissel already shown to work)
 - Water quality issues remain the same (drinking water chlorination)
- Outstanding issues:
 - Recoverable quantity

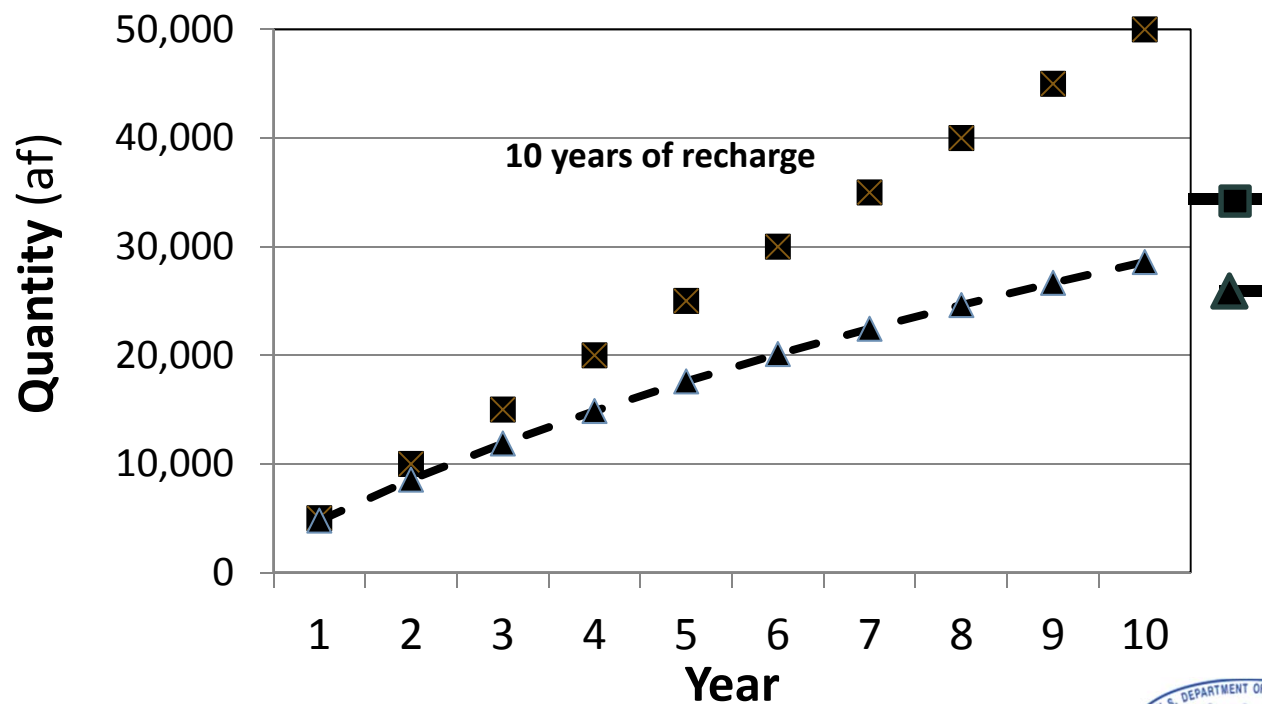
Water quality



Recoverable Quantity

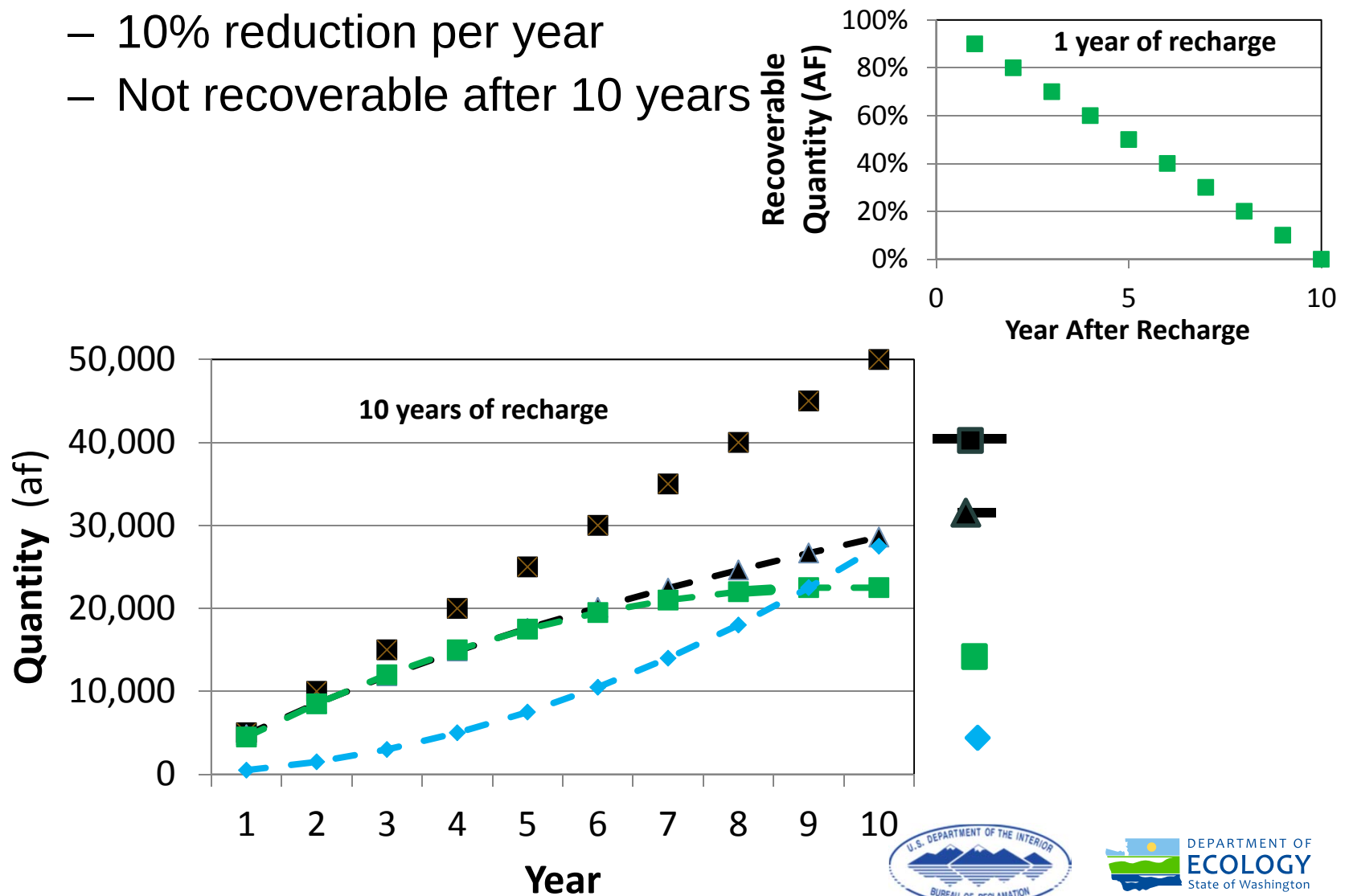
- How much recharged water can be recovered?
 - Affects project feasibility
 - Criteria should be based on water balance

MODELED RESULTS



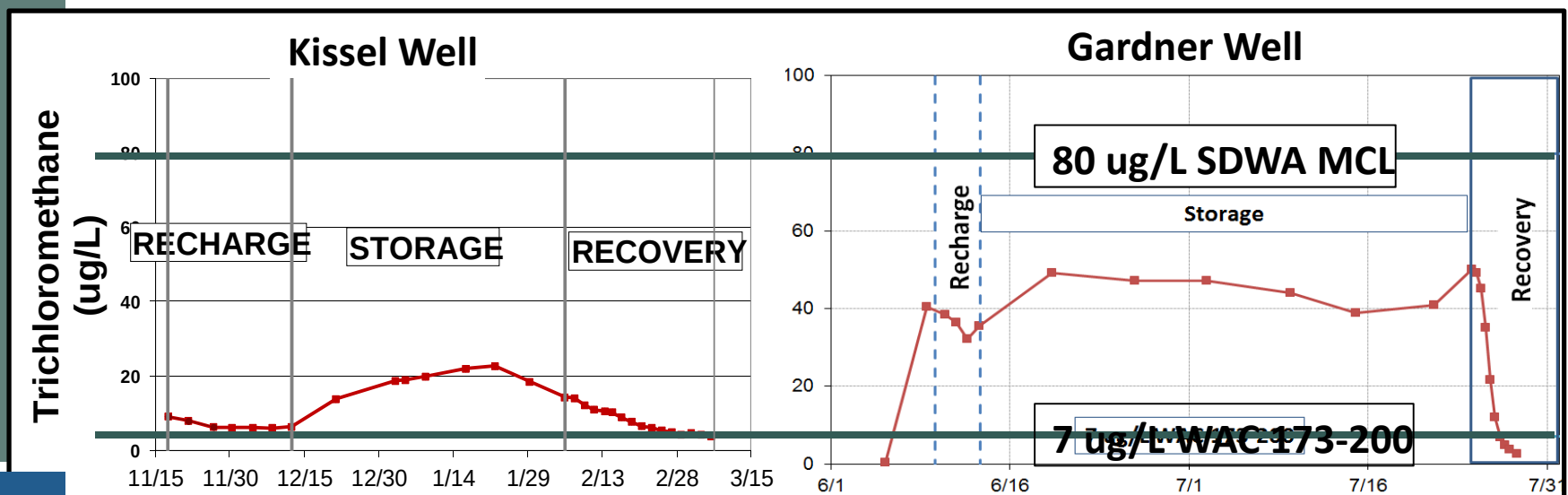
Recoverable Quantity

- Simple accounting suggested
 - 10% reduction per year
 - Not recoverable after 10 years



Water Quality

- **Recharge water is chlorinated for:**
 - Compliance with the Federal Safe Drinking Water Act (SDWA)
 - To control biofouling of recharge wells
- **SDWA (recharge water) allows 80 ppb trihalomethane (DBPs, THMs; including chloroform)**
- **WAC 173-200 allows 7 ppb chloroform**
- **AKART allows determination of Overriding Public Interest (OPI) with 5-year review**



City of Yakima ASR - Benefits

- **Protects/secures municipal supply**
- **Increases streamflow May-Oct above Parker**
 - **~7,500 AF: If City leaves water in the Naches River**
- **Could mitigate rural water supply**
 - **Groundwater seepage**



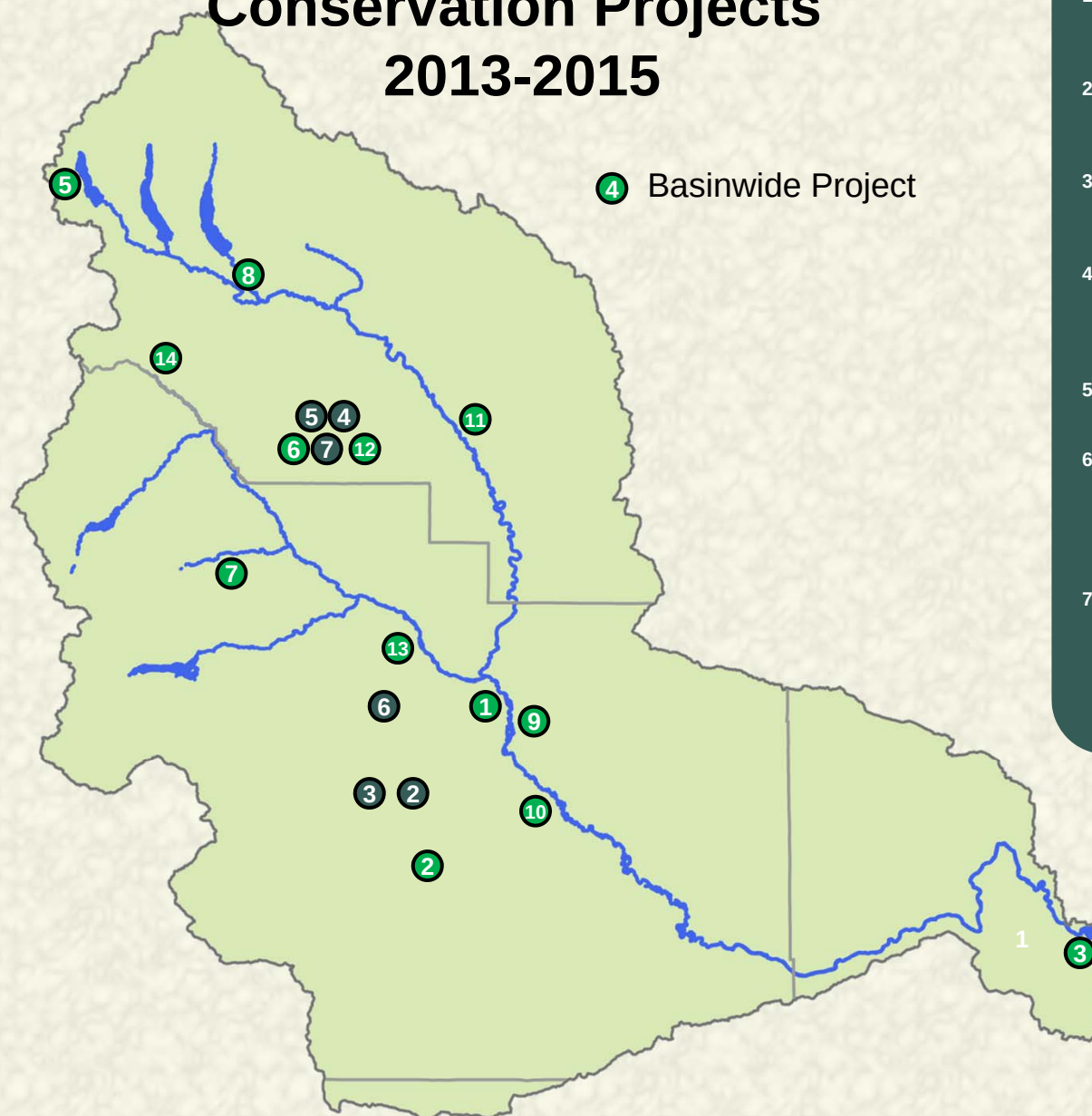
Habitat Enhancement and Agricultural Conservation Projects



Habitat Enhancement Projects

- 1 Gap-to-Gap Outfall Relocation
- 2 Toppenish Fan
- 3 Bateman Island Causeway Modification Conceptual Design
- 4 Bull Trout Task Force Habitat Improvements
- 5 Gold Creek Habitat Assessment and Conceptual Design
- 6 Reed Diversion 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 Plum Creek / Little Naches Land Acquisition

Yakima Integrated Plan Habitat Enhancement and Agricultural Conservation Projects 2013-2015



4 Basinwide Project

Agricultural Conservation Projects

- 1 Kennewick Irrigation District (KID) Division IV Lining
- 2 Wapato Irrigation Project (WIP) Piping Lateral 4-414C
- 3 Wapato Irrigation Project 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

Teanaway Community Forest



Teanaway Community Forest

- **Advisory Committee began meeting March 2014**
- **Charged with making recommendations to WDFW and WDNR on strategic plan for Teanaway Community Forest**



Carlson Creek Restoration

Before



After



Goal 1 – Watershed Protection, Sample Objective and Strategy

- **Manage forested landscapes to reduce peak flows and increase base flows.**
 - **Increase the water storage capacity of the forest.**
 - **Restore floodplain connectivity and the ability of surface water to interact with ground water by reconnecting streams to their floodplains.**
 - **Utilize methods such as large woody debris to capture bed load and raise the stream height, beavers to encourage the impoundment and spreading of surface water, or other approaches as appropriate.**
 - **Focus attention on stream reaches that provide the most benefit to federal or state listed fish species, that have the most production potential, and that help achieve other objectives.**



Advisory Committee Process

Spring 2014	Advisory Committee scoping; Initial field trip to understand issues and opportunities
Summer 2014	Brainstorm desired future conditions for Goals 1, 2, 3, and 4; Public open house #1; Field trip to understand recreation issues and opportunities
Fall 2014	Review objectives and strategies for Goals 1, 2, 3, and 4;
	Brainstorm ideas for Goal 5; Public open house #2
Winter 2014-2015	Review objectives and strategies for all Goals; Identify and resolve cross-cutting issues; Public open house #3
Spring 2015	Finalize draft management plan; Final public review via SEPA process
Summer 2015	Release Plan

Current

