

Early Actions Update

YRBWEP Workgroup Meeting
Dec. 12, 2012



Presented by:

Andrew Graham

HDR Engineering, Inc.

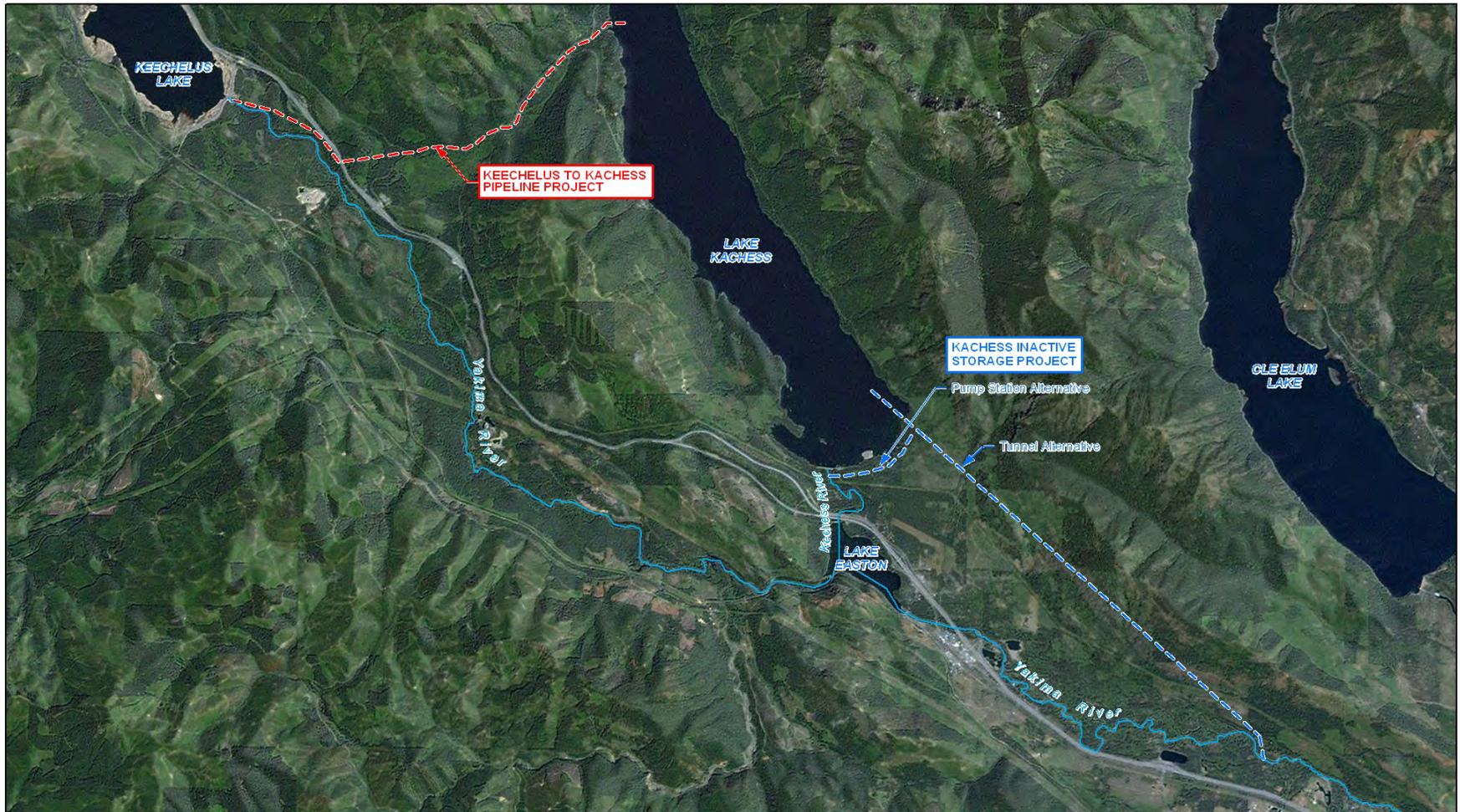


Projects With Funding for Early Actions (Spring 2012)

- K-to-K Conveyance
- Kachess Inactive Storage
- Ground Water Infiltration
- Kittitas Valley Delivery System
- Cle Elum Fish Passage
- Power Subordination
- Tributary Habitat Enhancement
- Wymer Reservoir
- Bumping Reservoir
- Watershed Land Acquisition



Area of K-to-K and Kachess Projects

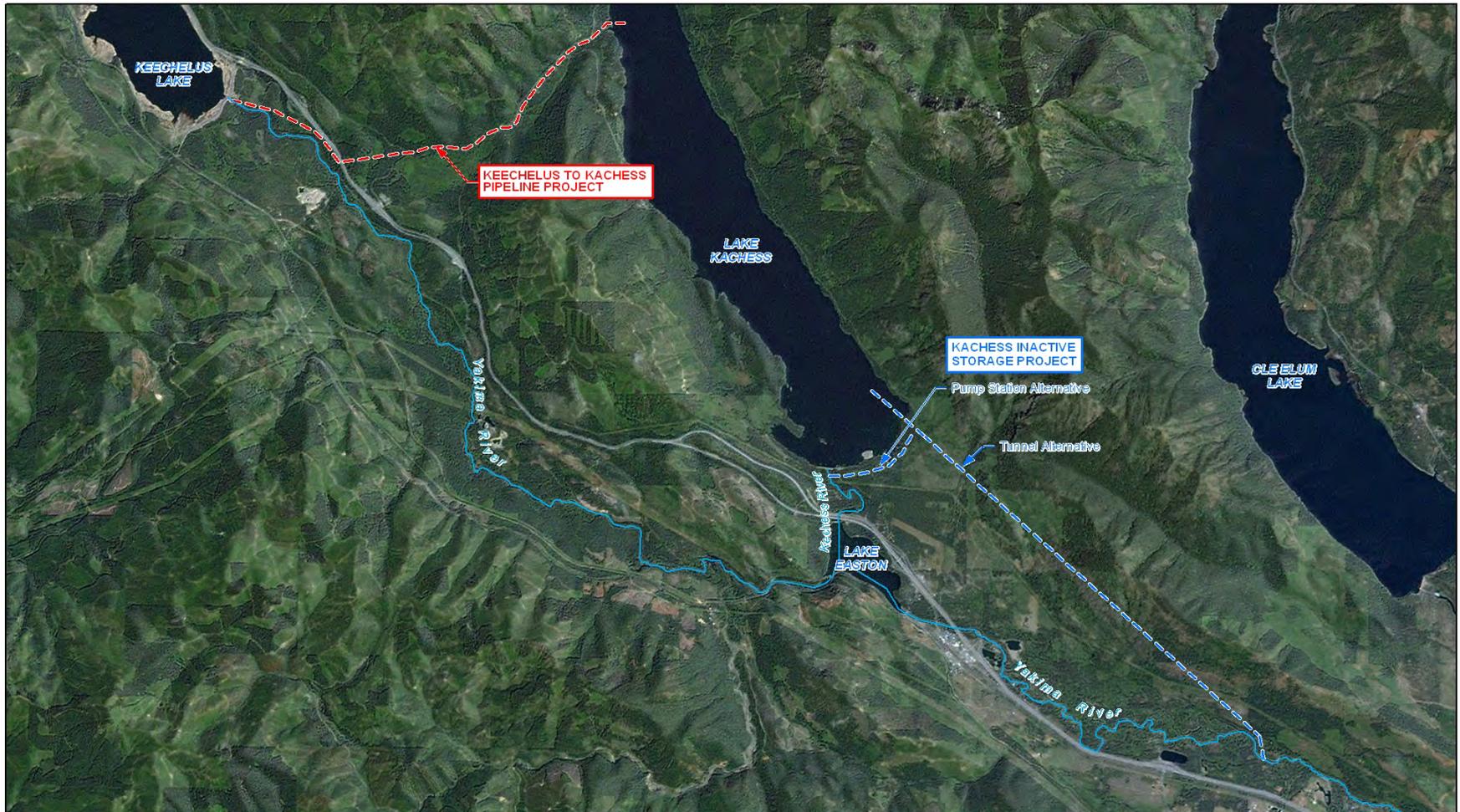


Keechelus to Kachess Pipeline Project &
Kachess Inactive Storage Project

K-to-K Conveyance Alternatives



Kachess Tunnel and Pump Station Alternatives

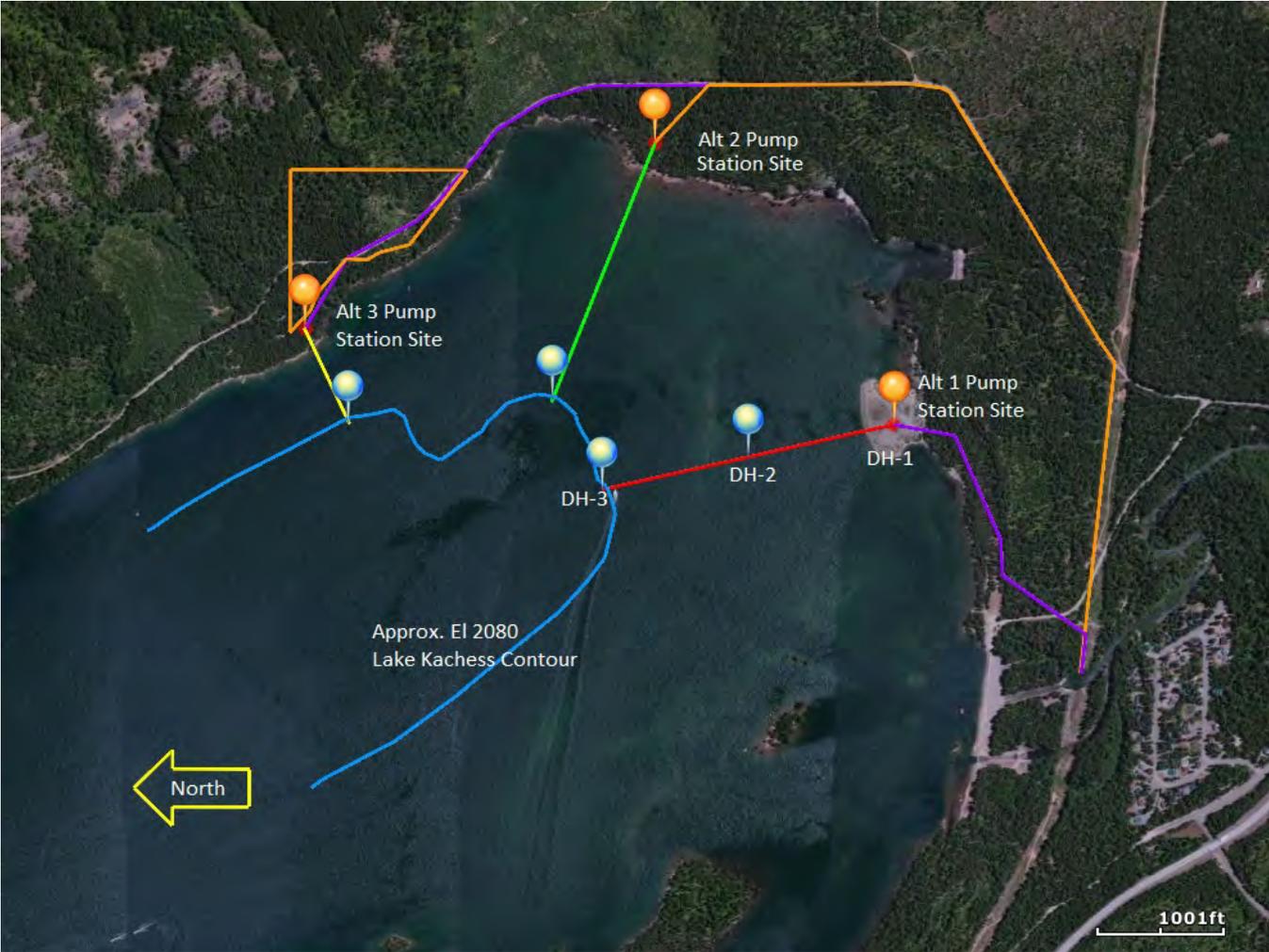


Keechelus to Kachess Pipeline Project & Kachess Inactive Storage Project

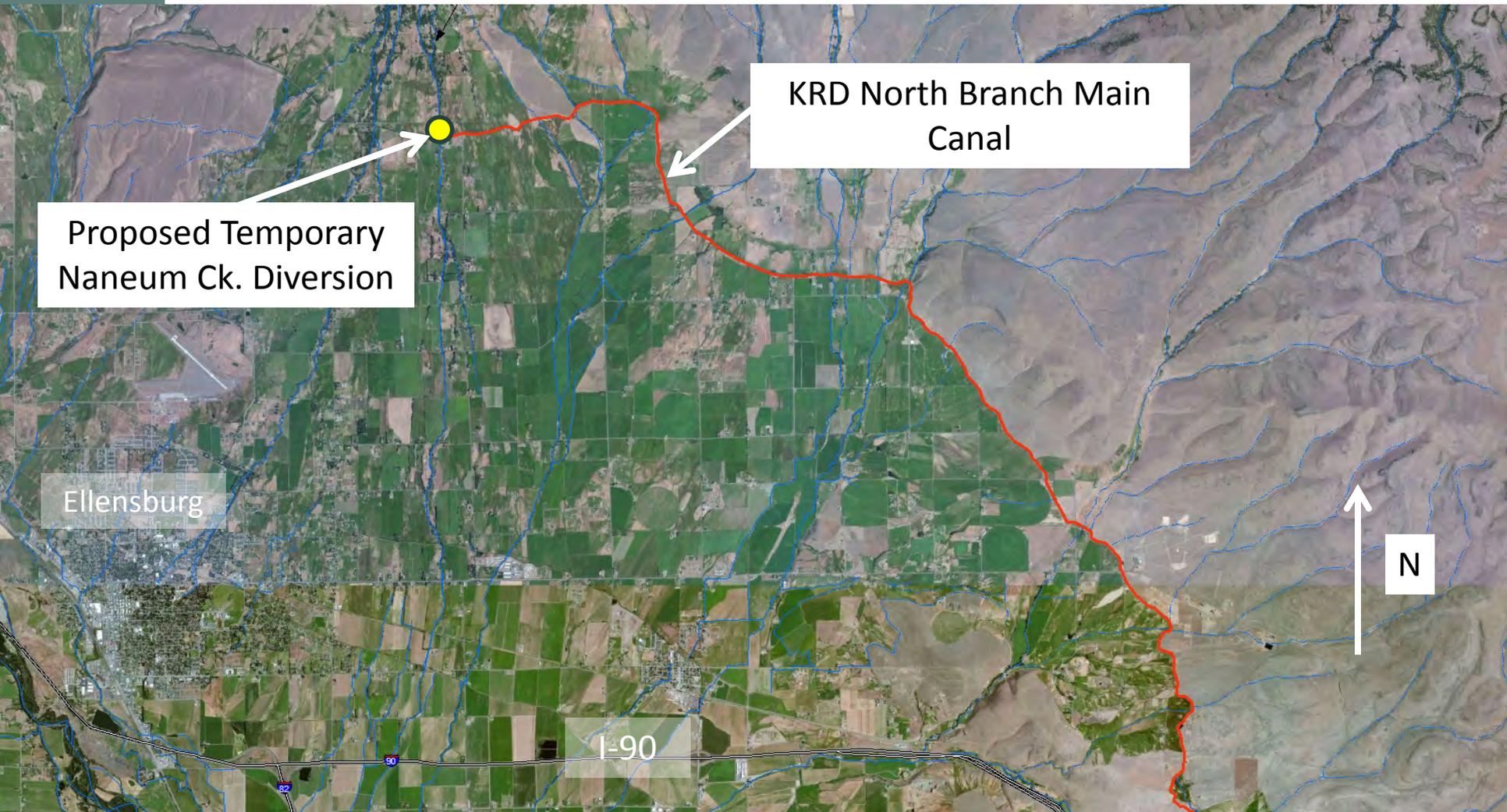
Kachess Inactive Storage Project: Pump Station Alternative



Kachess Inactive Storage: Alternate Pump Station Sites and Borehole Locations



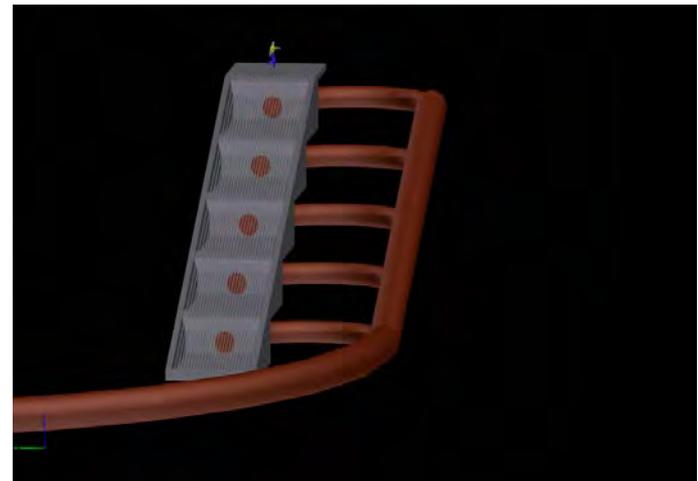
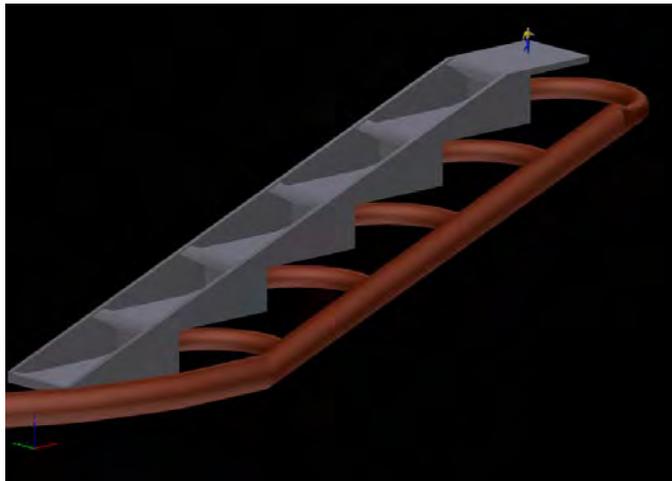
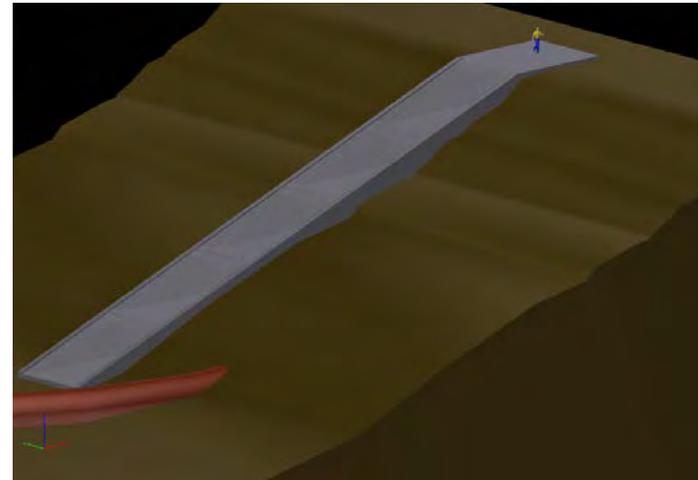
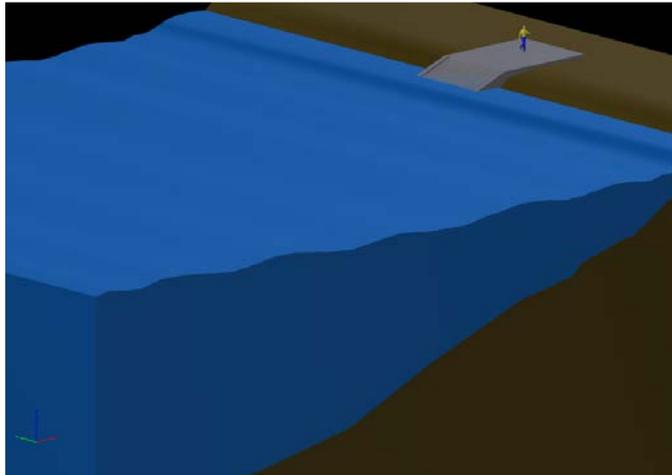
Ground Water Infiltration - KRD Pilot Area



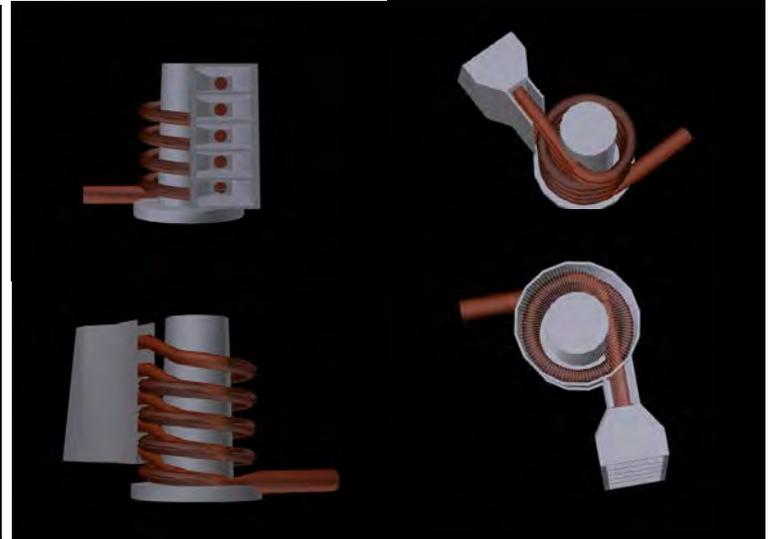
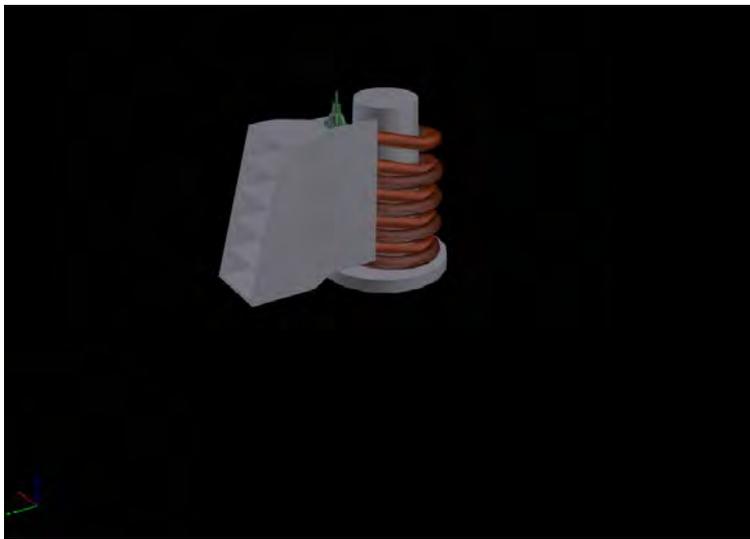
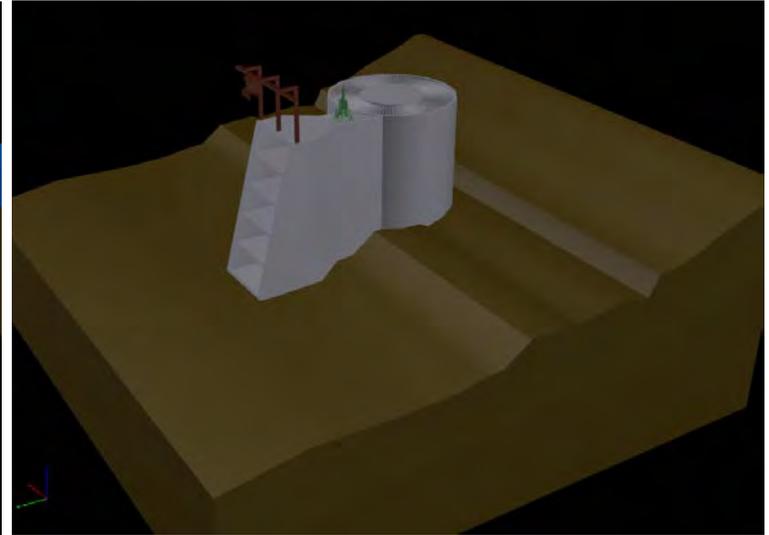
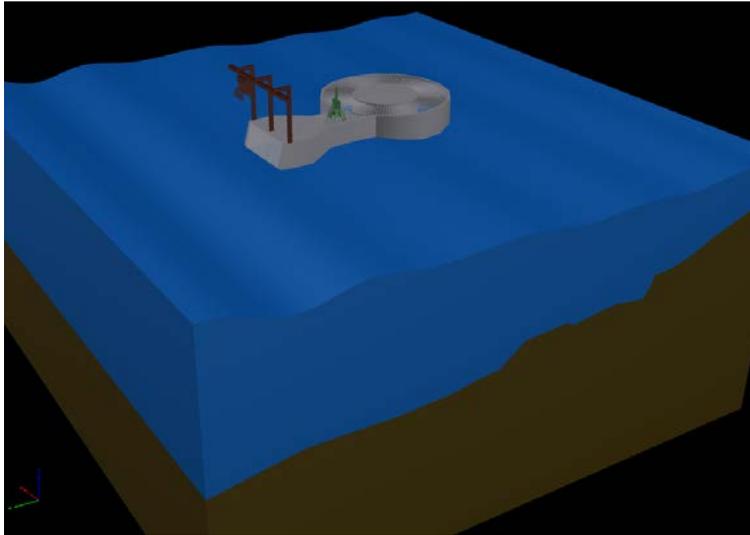
Kittitas Valley Delivery System for Ground Water Infiltration and Stream Flow Improvement



Cle Elum Fish Passage Ramp-Along-Bank Concept



Helix & Inlet Concept



Roza Reach Smolt Survival Study

➤ A three year study (2012 – 2014)

➤ Year 1 summary

✓ 1 early season, low flow release (<600 cfs) & 2 late season, high flow releases (>3000 cfs)

✓ Reach survival rates: early-low flow = 61%; late-high flows = 96% & 98%

✓ Question: What factors influencing survival: flow, temperature, migratory disposition?



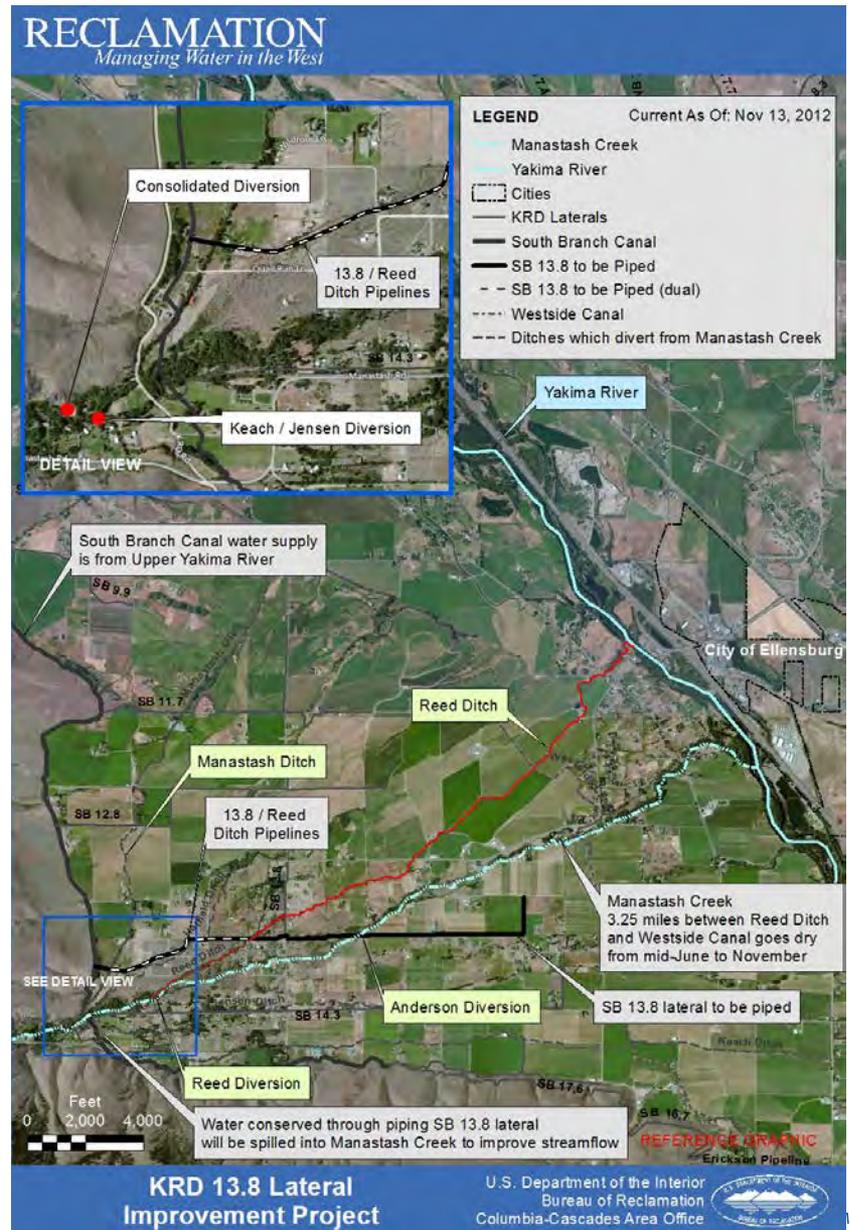
Roza Reach Smolt Survival Study

➤ Study direction for Years 2 and 3

- ✓ Focus test releases in the 1000 to 2500 cfs range
- ✓ Focus test releases between mid-March to mid-April
- ✓ "...collect data that minimizes the effect of confounding explanatory variables, so that flow effects on emigration survival can be quantified independent of these other influential factors."
- ✓ Intend to monitor avian predation.
- ✓ Intend to evaluate dam route passage survival.



Habitat Restoration – Manastash Creek Project



Other Early Action Activities

- Wymer Reservoir
 - Geotechnical exploration;
 - Value engineering and temperature modeling
 - Consideration of alternate pump station site
- Bumping Reservoir –Geotechnical exploration
- K-to-K Conveyance Alternatives and Environmental Analysis
- Teanaway Property and Eaton Ranch – land appraisals

