

CIP Monitoring & Maintenance Program Overview Presentation



Primary Program Components

- Program Management and Services
- Project Maintenance
- Project Monitoring
 - Regulatory-driven
 - Project Effectiveness = Focus of today's talk

Program Management and Services

- Budget and schedule management - ongoing
- Plan and methodology development
- Maintenance coordination
- Annual aerial oblique photography
- LIDAR coordination
- Presentation and reporting
- Equipment

Project Maintenance

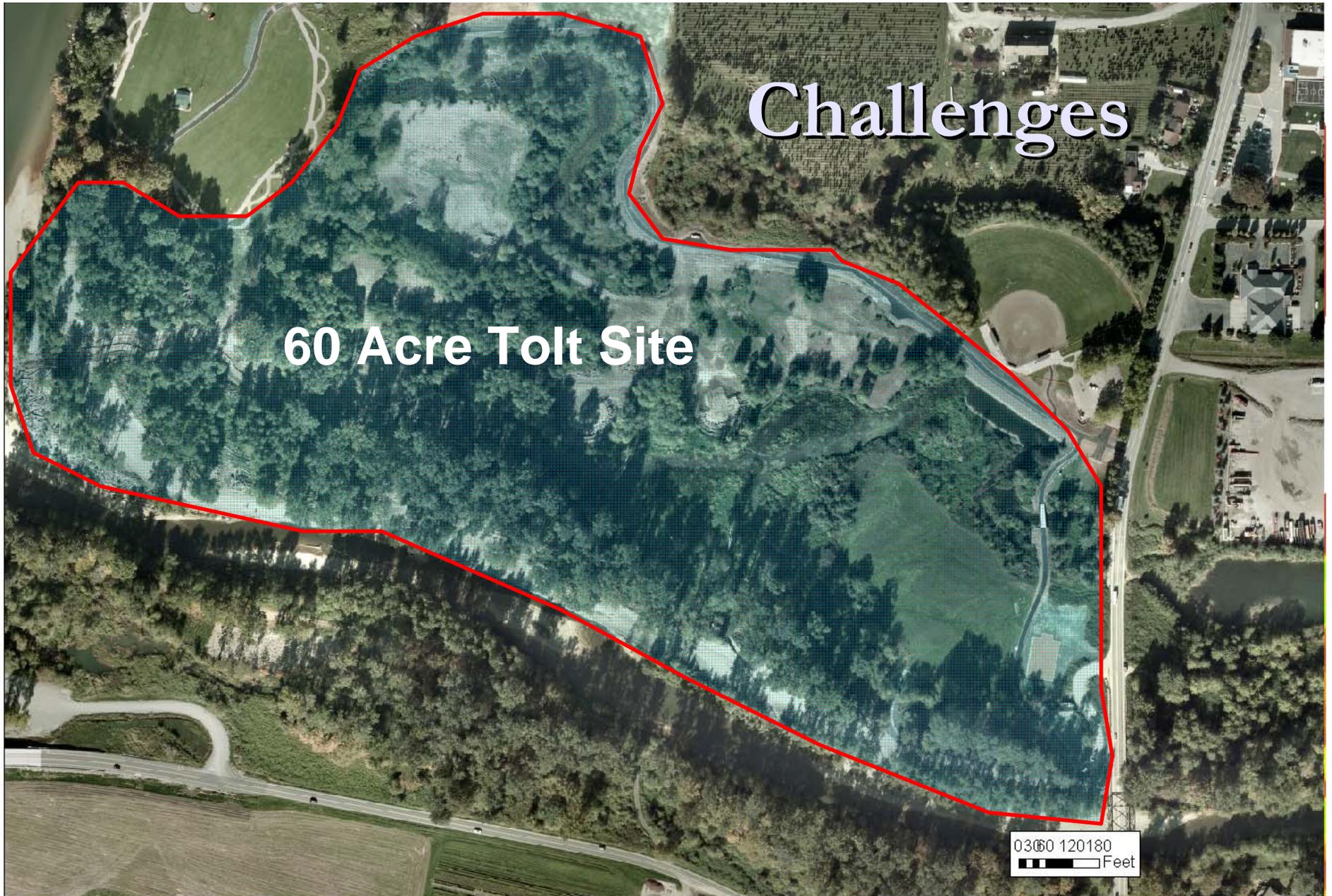
- Currently 10 – 15 sites per year
- Watering – first 1-2 growing seasons post-construction (Cody)
- Weeding – variable, but typically for 5 years (Laura/Cindy)
- Replanting – where necessary to meet objectives



Washington Conservation Corps



Northwest Center for the Disabled



- Sites are growing in size considerably (30-70 acres vs. 1-10)
- \$10,000-\$15,000 annual costs not uncommon.



Project Monitoring

- Regulatory-driven monitoring – **LESS**
 - Army Corps
 - DDES
 - WDFW
 - DOE
 - Services
- Minimized wherever possible - mitigation only or contained within effectiveness mtr plans

Project Effectiveness Monitoring

A shift in focus



Mainstem Rivers and Floodplains



Managing Uncertainty

- Fluvial response
- Ecological response
- Risk to private property or public infrastructure

Plan Development Process

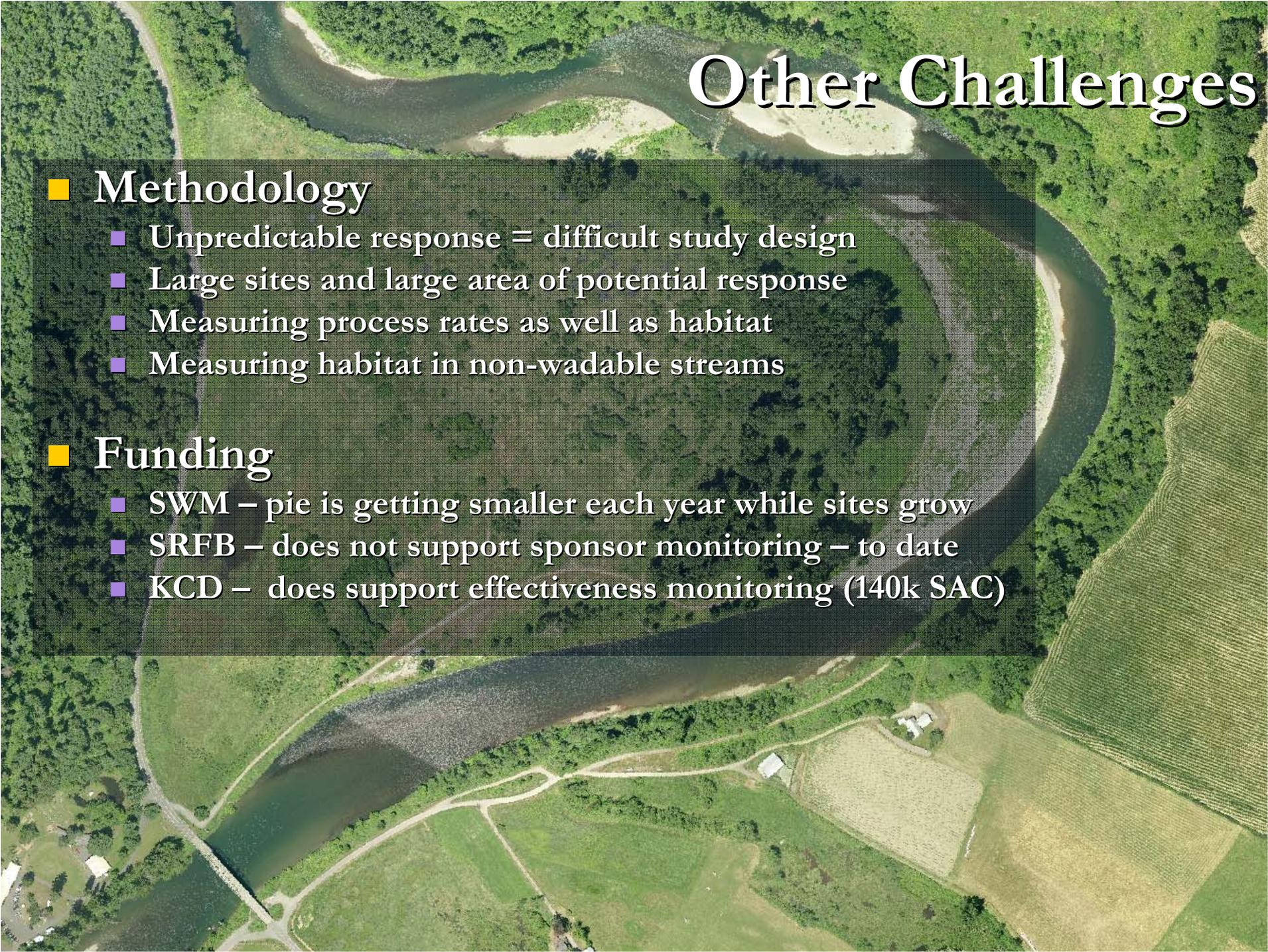
- Identify project objectives
- Generate hypotheses from objectives
- Develop study design and methodology
- Collect, analyze and present results
- Did the project perform as expected?
 - Fluvial/ecological/**risk elements**
- Did we need to take more/less aggressive actions at this site to achieve all objectives.
- What should we do different at the next similar site?

Challenging Schedule

Need funding for baseline data collection **BEFORE** construction

An example timeline for plan development and funding





Other Challenges

■ Methodology

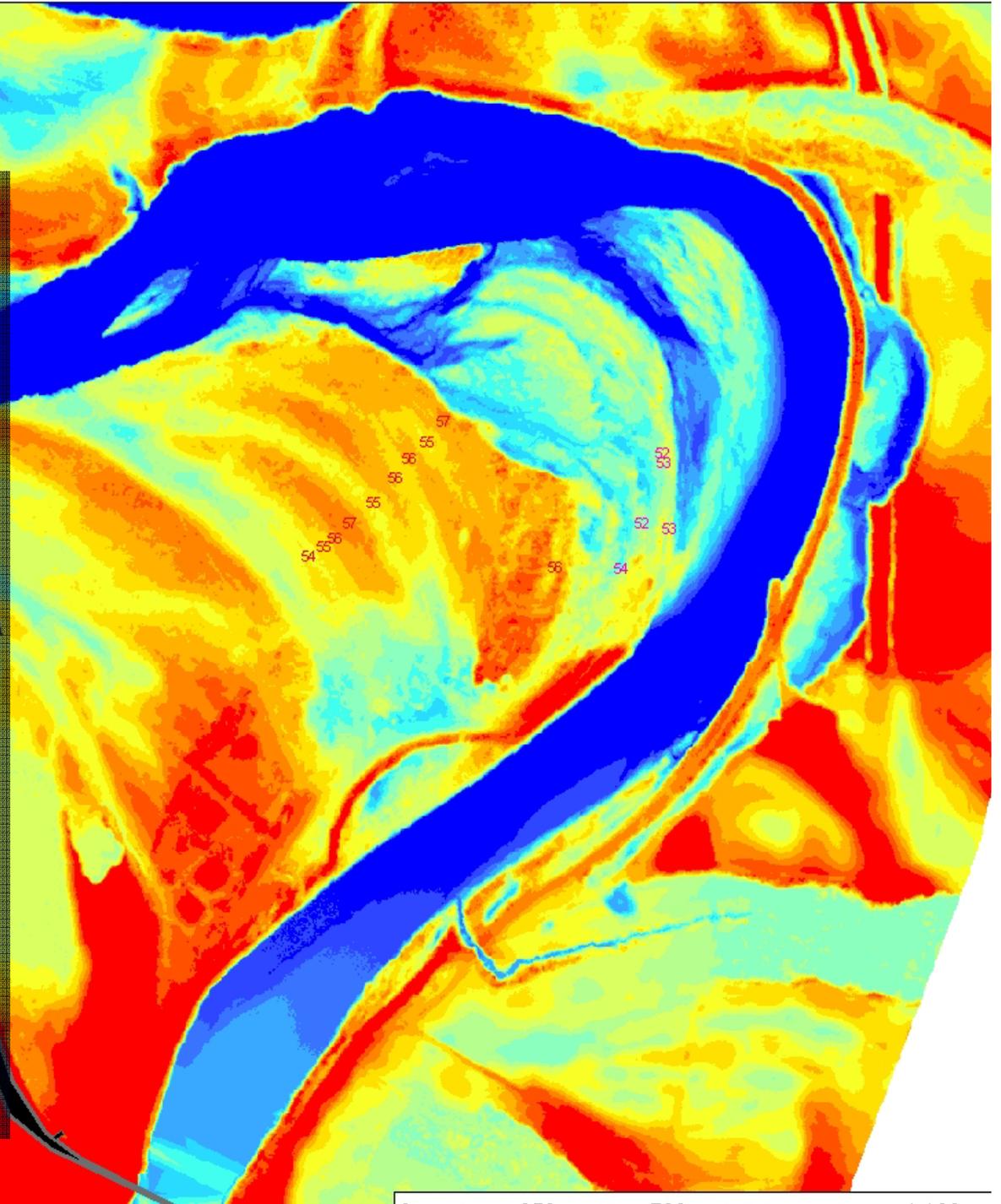
- Unpredictable response = difficult study design
- Large sites and large area of potential response
- Measuring process rates as well as habitat
- Measuring habitat in non-wadable streams

■ Funding

- SWM – pie is getting smaller each year while sites grow
- SRFB – does not support sponsor monitoring – to date
- KCD – does support effectiveness monitoring (140k SAC)

Solutions

- Extensive thought into mtr plan
- Forethought re: schedule
- Remote Sensing
- Collaboration with NWFSC – new methods
- Grants – KCD



Typical Strategy/Approach

- Physical response
 - Scour/deposition/erosion
 - Wood recruitment
 - Vegetation
- Resulting changes in floodplain connectivity and aquatic habitat
- Time series aerial photo analysis – process rates
- Fish – the tough one. Typically presence/absence only due to difficulty and cost

Active Effectiveness Monitoring Projects

Large Scale – Big River

- Carlin Levee Removal – 2006
- Snoqualmie@Carnation 2009
 - Tolt Levee Removal -2009
 - Chinook B. Levee R.-2009
 - Gillead levee removal -2008
- Lions Club Floodplain Enhancement – 2006
- Rainbow Bend Levee Removal – plan development

Smaller– stream/wetland

- May Creek Canyon LWD - 2003
- Taylor Creek Stream Relocation and Wetland Enhancement - 2006
- Newaukum Creek Floodplain Enhancement -2008/9
- Boise Creek Floodplain Enhancement – 2009/10
- Big Springs Creek – plan development

Figure 2: 2003 Water Depths, Habitat Units, Wood Position and Thalweg Profile of Reach T-1 (recorded September, 2003 shortly after project construction)

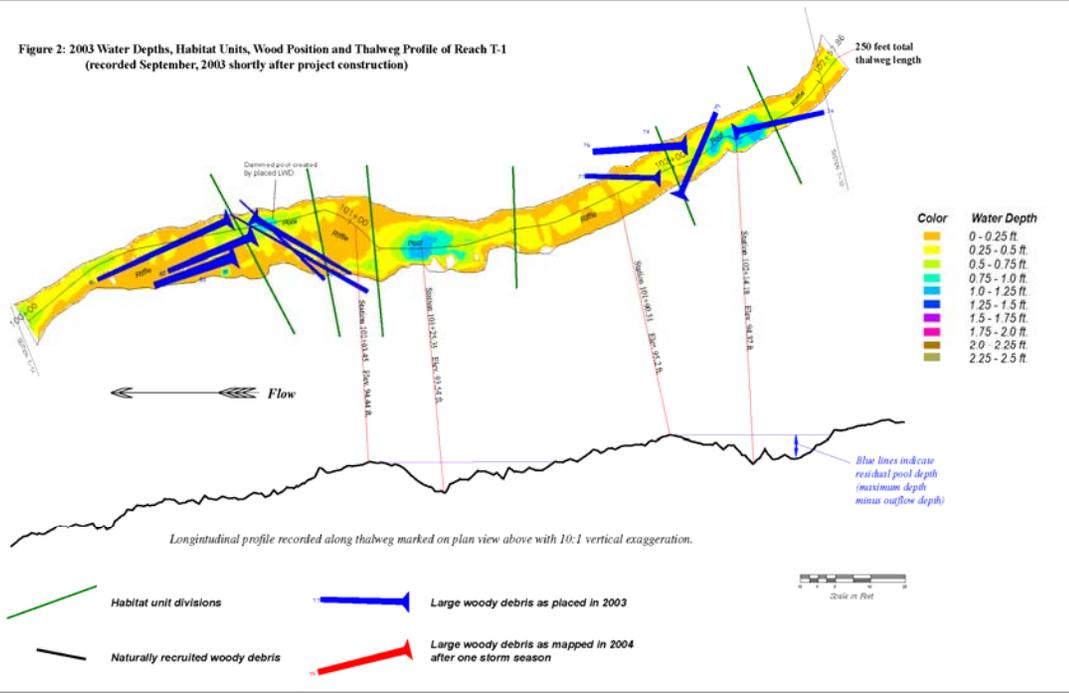
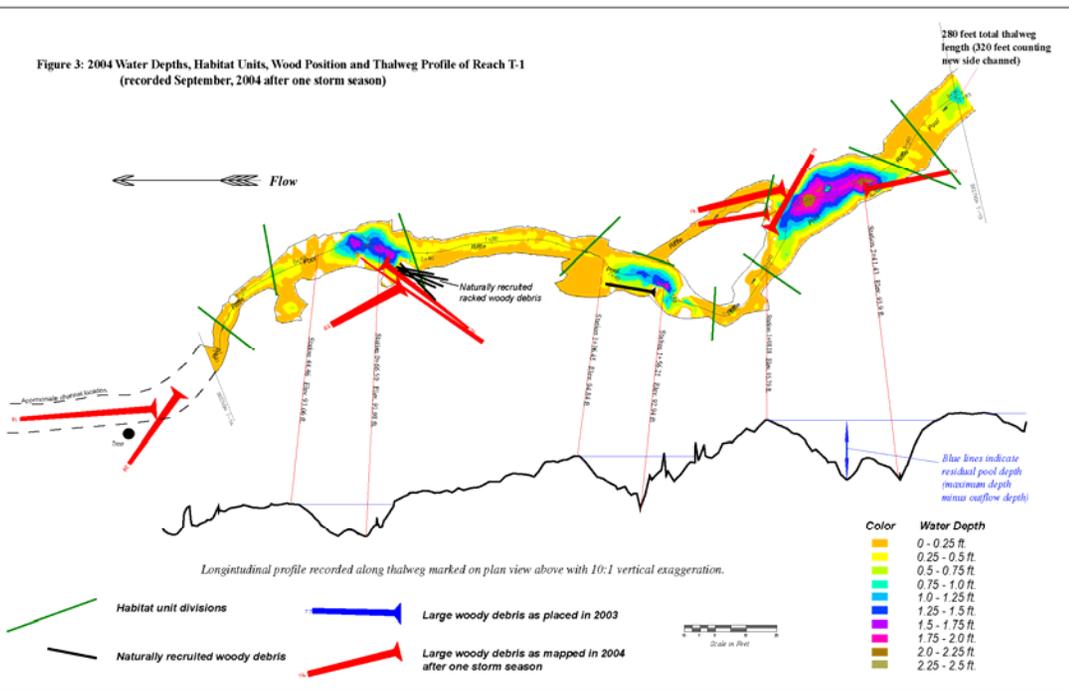


Figure 3: 2004 Water Depths, Habitat Units, Wood Position and Thalweg Profile of Reach T-1 (recorded September, 2004 after one storm season)



May Creek Canyon

Monitoring response to unanchored wood placed in 2003

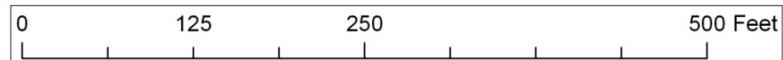
Carlin Floodplain Connectivity

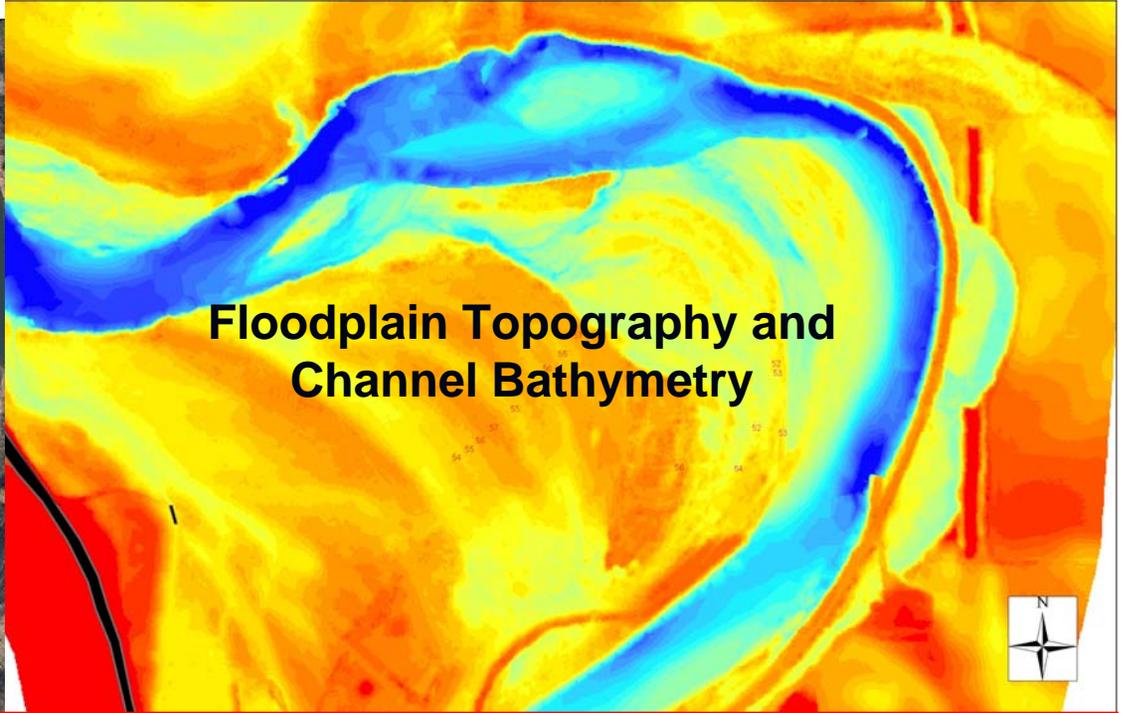
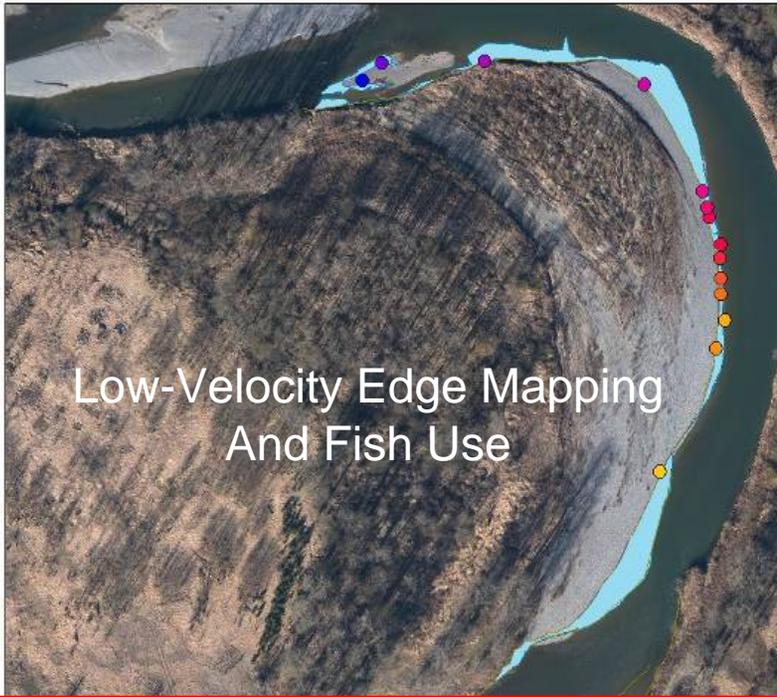


Channels: 2/20/07 @ 1060cfs

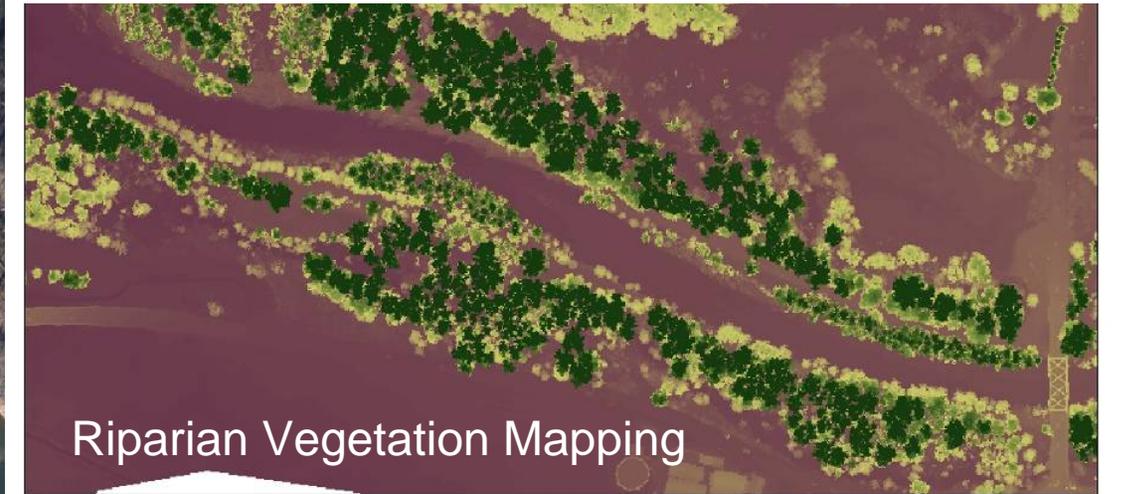
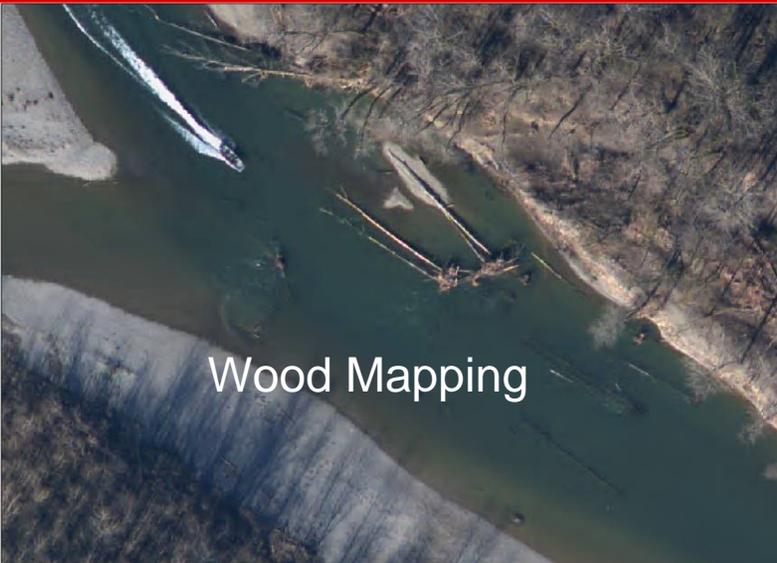
Source

-  Overbank
-  Tributary
-  Hyporheic
-  Backwater
-  Combined
-  Mainstem @ Low Flow

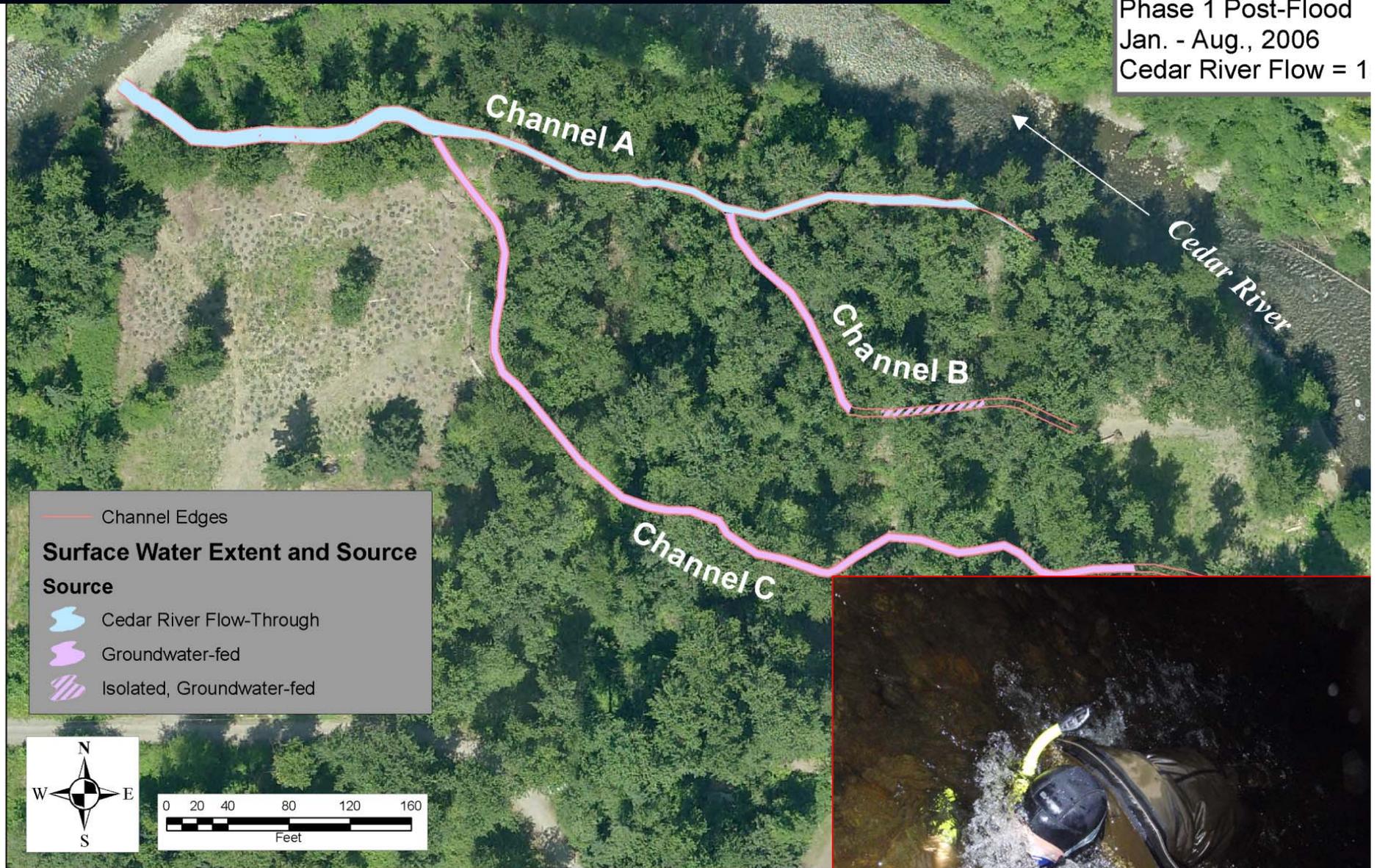




Snoqualmie at Carnation Monitoring

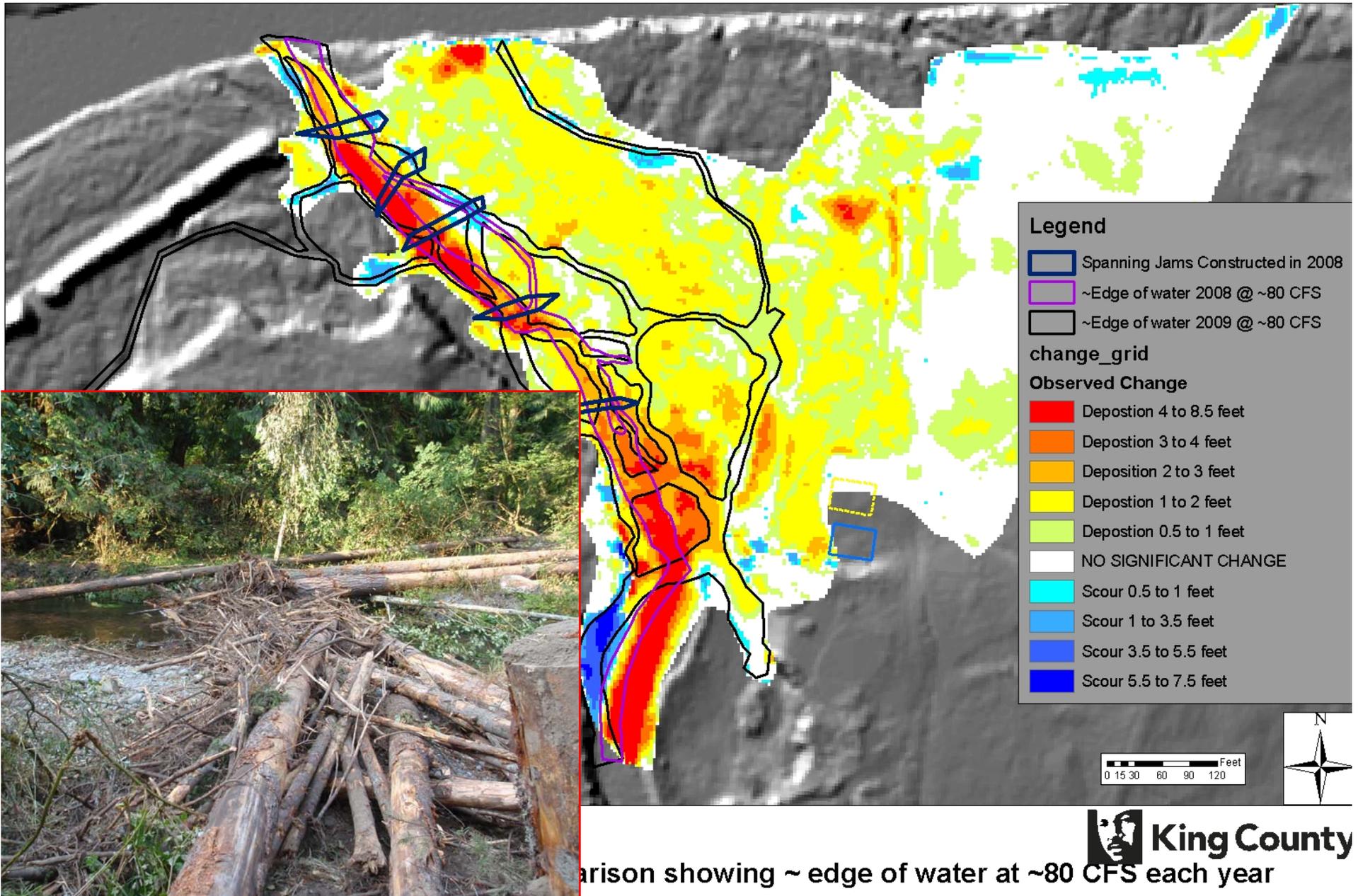


Lions Club Connectivity and Fish Use

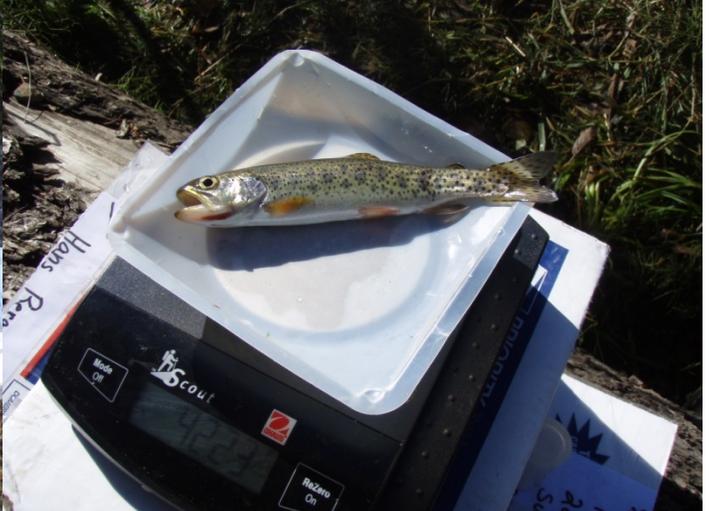


Lion's Club Floodplain Restoration Project Monitor
Figure

Newaukum Creek Fluvial Response



Taylor Creek Off-Channel Wetland Population Estimates



Future Challenges

- Can't do everything everywhere - streamlining
- Leveraging SWM funded monitoring with grant funds
 - e.g. SRFB match allowance
- How do our effectiveness monitoring efforts fit in with other monitoring efforts (e.g validation mtr – fish response)

A constant work in progress... Stay tuned!!

May 27th

**Restoration Project Implementation and
Monitoring Symposium**