Lessons Learned from the
Kelley Creek Dam Removal Project

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RRNW Design Symposium

Merri Martz, Tetra Tech, Inc.
Greg Ciannella, Johnson Creek Watershed Council
Krey Price, Tetra Tech, Inc.
Presentation

- Project Summary
- Monitoring Data
- Lessons Learned
  - Landowner Issues
  - Non-Profit Needs and Capabilities
  - Construction
  - Channel and Vegetation Changes
Project Summary

- Kelley Creek is a coldwater tributary to Johnson Creek in Multnomah County, Oregon.

- Project purpose was to provide fish passage and reduce water quality effects of on-line pond.

- Dam was 6-foot concrete structure with culverted former road xing immediately downstream; was in very poor condition and completely blocked fish passage.

- Dam impounded a ¼ acre pond that had filled with fine sediments; landowner has valid water right for irrigation.

- Landowner property includes over 1000 feet along Kelley Creek.
Project Location

- Kelley Creek Drainage Area at Johnson Creek: 4.6 square miles
- Johnson Creek Drainage Area at Willamette River: 52 square miles
- Kelley Creek Drainage Area at Project Site: 1.1 square miles
Design Summary

- Design to restore natural channel that gains ten feet elevation over 500 feet of channel – maximum channel length possible in ravine
- Landowner wanted an off-line pond for aesthetic and irrigation purposes
- Limited risk in small stream except at off-line pond
- To gain elevation used boulder/cobble riffles instead of step weirs/drop structures
- Expected and wanted channel changes over time due to natural scour and deposition
Project Constructed in Summer 2007; Before Photos
Construction (continued)
Monitoring

- Nine permanent photo points established
- X-Section surveys in 2008 and 2009
- Vegetation cover and survival to be documented; initial planting in January 2008, follow-up planting in January 2009
- Project experienced two approximately 10-year flood events; one in December 2007 and again in January 2009
Cross-Sections

Kelley Creek Cross Section 1

Channel Depth

Channel Width

2008 Survey

2009 Survey
Kelley Creek Cross Section 3

Cross-Sections (continued)
Cross-Sections (continued)

Kelley Creek Cross Section 4

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2008 Survey

2009 Survey
Lessons Learned, So Far

- Landowner Issues
  - Difficult to translate design drawings to landowner
  - Led to requested changes during construction which led to higher risk
  - When compromise could be worked out, landowner provided assistance and materials during construction – sometimes differing from what was initially expected and budgeted
Lessons Learned (continued)

- Non-profit Needs and Capabilities
  - Initial plan included construction by landowner to save money – could not be accomplished
  - Donated materials were not provided
  - Technical assistance and bioengineering not provided
  - Contractor provided good deal – but,
  - Limited budget required accelerated construction, which limited interim inspection opportunities
Lessons Learned (continued)

- Construction
  - Changes were requested and completed without interim inspections
  - Quick time-frame provided limited opportunities for oversight
  - Critical issues were corrected
  - There will be on-going changes per landowner’s management
Lessons Learned (continued)

- Channel and Vegetation
  - Minor channel changes – movement of gravels, scouring at wood and corners as expected; will continue
  - Excellent survival of willow plantings; reed canary grass an on-going issue
  - High flows have caused minor incision downstream of project without dam in place; further monitoring required
Conclusions

- Project has achieved goals of providing fish passage
- Monitoring will be conducted for temperature and vegetation in the future
- Continuing need for management for several years
- Will monitor highest risk location (berm between pond and channel) until vegetation becomes more established
Thank you.

Questions?