Beatty Creek Dam Removal

Presented to
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Tributary to McLane Creek and Eld Inlet near Olympia, WA

Coho, Steelhead, Cutthroat Trout, Chum Salmon (?)
Problems
• Weir Drop
• Undersized culverts
• Outfall drop

Channel Measurements
• Gradient: 2 to 3.5 %
• Hydraulic Drops: 9, 3, 5 ft
• Bankfull Width: 13 to 15 ft
• Bankfull Depth: 2 to 5 ft
• $d_{50}$ and $d_{100}$: 3 and 13 inches
Upstream Channel

W = 100 ft

Downstream Channel

W = 10 ft

Beatty Creek – Profile

Elevation

Miles

0 0.5 1 1.5 2 2.5

0 200 400 600 800

Dam 10%

2% Culvert/Fishway
Profile at Site

Long Profile

10 ft drop

Dam

Log Jam

2 %

3 %
Design Methods

- Reference Reach
- Engineered
  - WinXSPRO
  - Resistance (Thorne and Zevenbergen, $d_{84}$)
  - Flows from Regional Regression
Design Features

Typical Riffle Section

15 inch minus cobble/gravel mix

6 % slope
Project Features

- Constructed Log Jam
- Log Toe Bank Protection
- Willow Wall
- High Flow Roughness

Project Features

- Temporary Access Road
- 65 ft long bridge
  - 12 feet wide
  - Concrete Hollow Core
Results

• Construction August 2004

• Surveyed Profiles and Sections
  – September 2004 (As-Built)
  – May 2005
  – December 2006

Beatty Creek – Channel Profile
Section STA 2+80

Regrade = 2 feet

Regrade = 4 feet
Sediment Size - Downstream
\(d_{50} (80 \text{ mm to } 35 \text{ mm})\)

- Before
- After

Sediment

- 475 Yards Regrade over 600 feet of channel
- 1220 yards excavated out of dam forebay over 200 feet
- Imported 270 cubic yards to construct channel
Conclusions

• 1.5 feet regrade design - 3.8 measured
• Channel erosion increases as channel depth increases
• Potential for large trees to fall in future
• Pool/Riffle design passed sediment through design reach
• Channel downstream has aggraded but needs large wood to stability

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THE END

Protection Island