

# Beatty Creek Dam Removal

Presented to  
RRNW 2007 Symposium



Presented by  
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A map of Washington and Oregon showing major cities, parks, and rivers. A yellow arrow points to the location of Beatty Creek near Olympia, WA. The map includes labels for Vancouver, Victoria, Seattle, Tacoma, Olympia, Portland, and various national parks and monuments like Olympic National Park, North Cascades National Park, Lake Chelan NRA, Mt. Rainier National Park, and Mt. St. Helens National Volcanic Monument. Major highways like 101, 5, 2, 7, 12, 20, 155, 90, 410, 521, 25, 503, 82, and 84 are also shown.

Tributary to McLane  
Creek and Eld Inlet near  
Olympia, WA

Coho, Steelhead,  
Cutthroat Trout, Chum  
Salmon (?)

A photograph showing several salmon swimming in a stream. The water is clear, and the fish are visible near the bottom of the frame.



### Problems

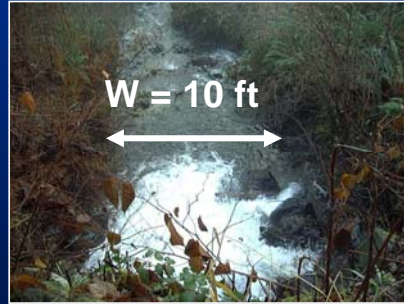
- Weir Drop
- Undersized culverts
- Outfall drop



## Channel Measurements

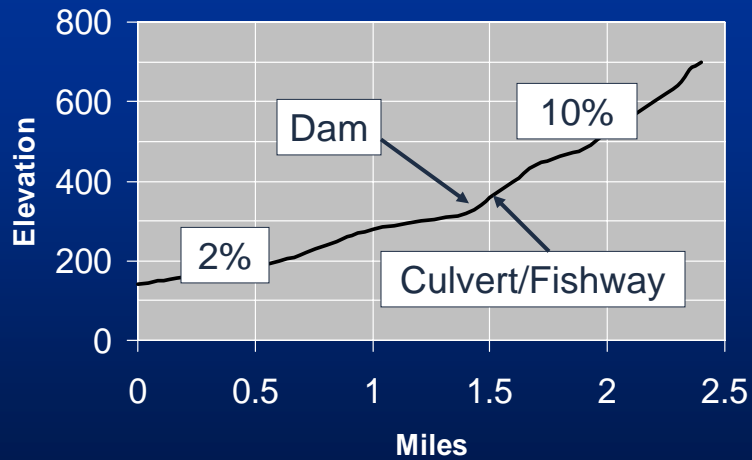
- Gradient: 2 to 3.5 %
- Hydraulic Drops: 9, 3, 5 ft
- Bankfull Width: 13 to 15 ft
- Bankfull Depth: 2 to 5 ft
- $d_{50}$  and  $d_{100}$ : 3 and 13 inches

## Upstream Channel

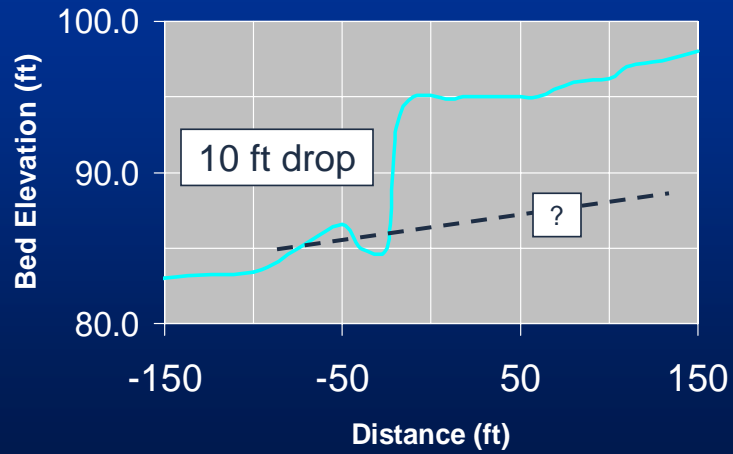


## Downstream Channel

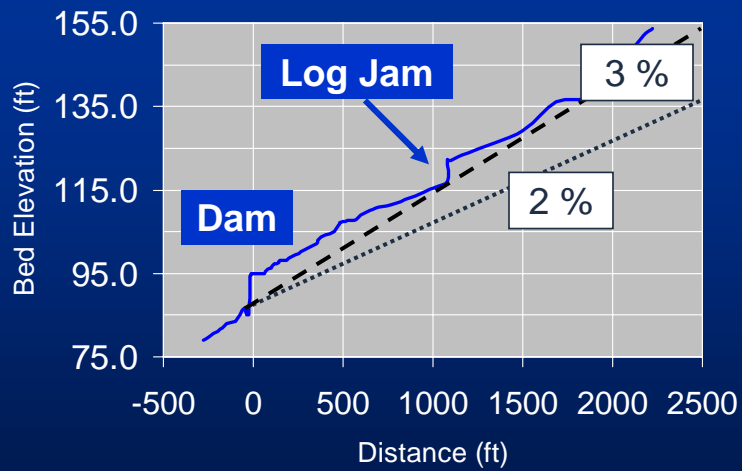
## Beatty Creek – Profile



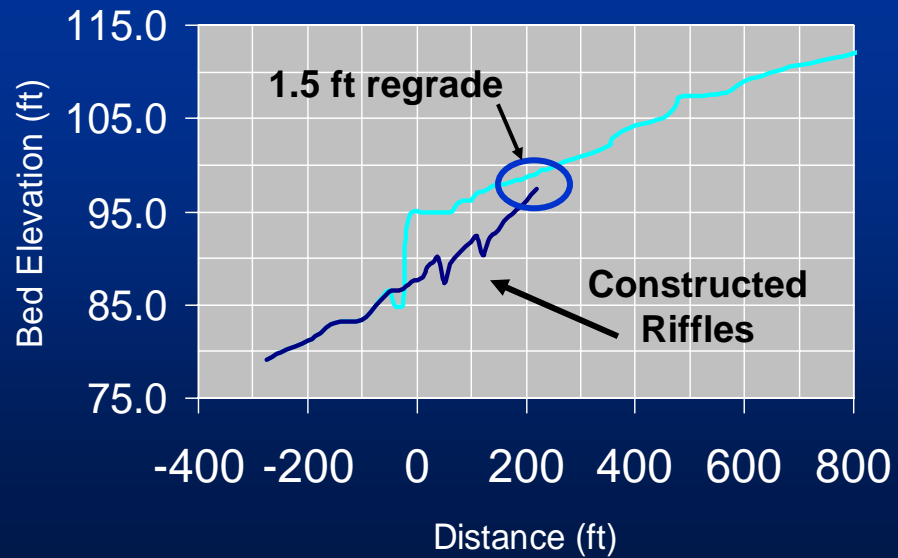
## Profile at Site



## Long Profile



## Design Profile



## Design Methods

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

# Design Features



# Typical Riffle Section



6 % slope

15 inch  
minus  
cobble/gravel  
mix



## Project Features



Constructed Log Jam

Log Toe Bank Protection

Willow Wall

High Flow Roughness



## Project Features



Temporary Access Road

65 ft long bridge

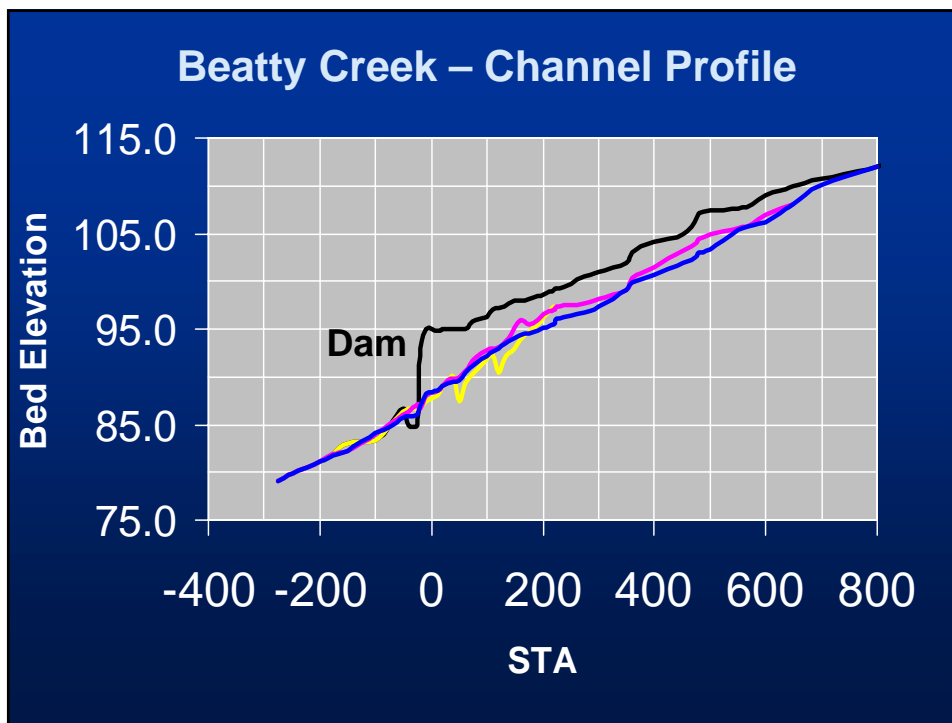
12 feet wide

Concrete Hollow Core



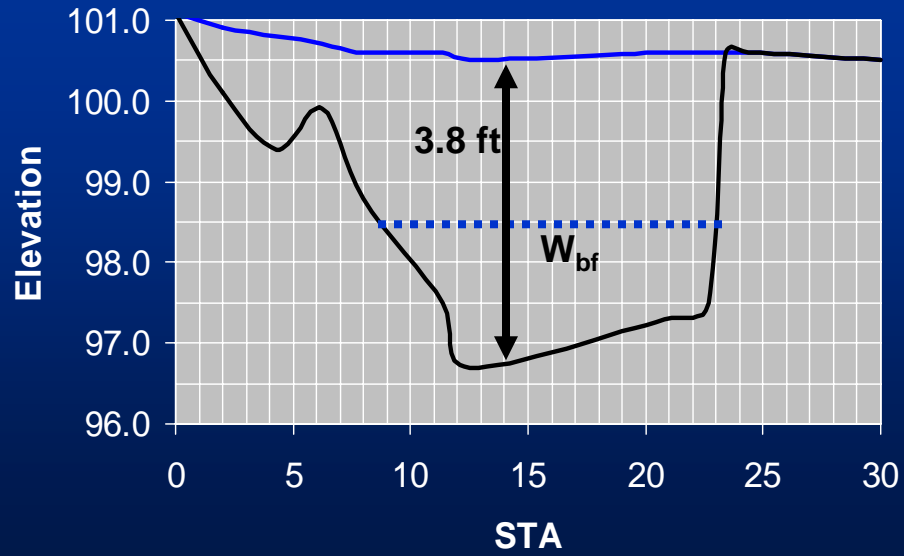
## Results

- Construction August 2004
- Surveyed Profiles and Sections
  - September 2004 (As-Built)
  - May 2005
  - December 2006

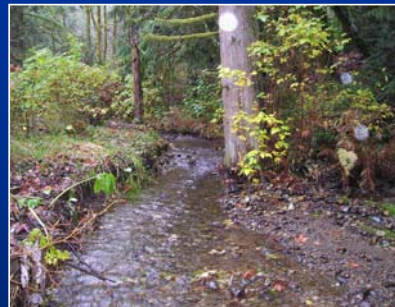




### Section STA 2+80



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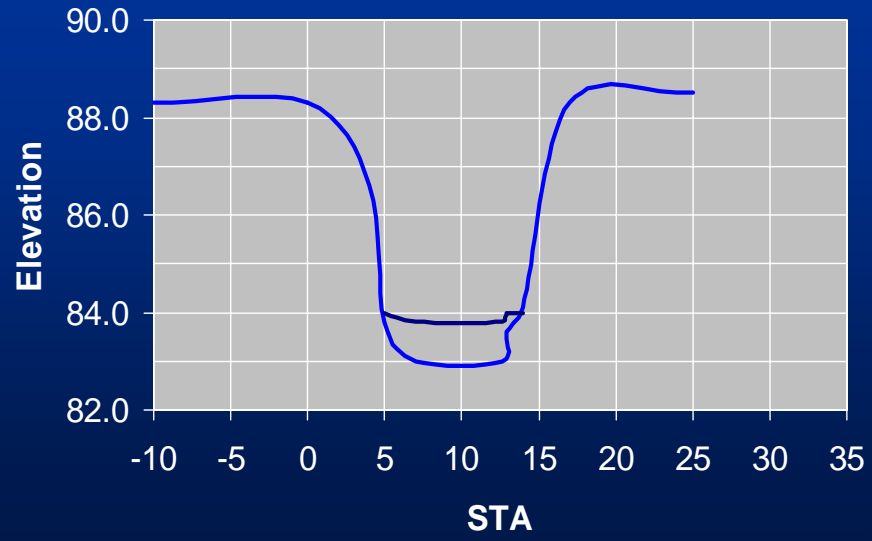


Regrade = 2 feet



Regrade = 4 feet

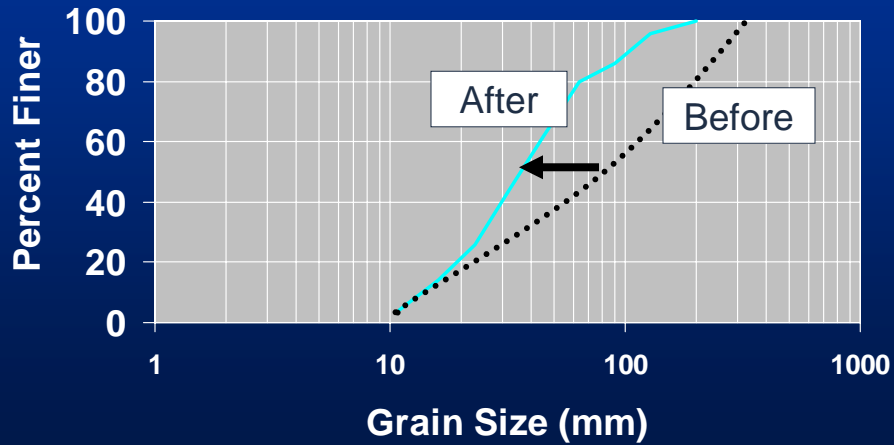
### Section STA - 1+20



### STA - 1+20



## Sediment Size - Downstream $d_{50}$ (80 mm to 35 mm)



## 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

## Acknowledgements

- Mike Kuttle Jr. - TCD
- Tom Burns, Biologist, WDFW
- Howard Brenner, WDFW (Bridge Design)
- Brian Abbott (SRFB)
- Claire Powers



# THE END



Protection  
Island