August 4, 2010

MEMORANDUM

TO: Full Council

FROM: Stacy Horton, Washington Council Staff

SUBJECT: Results of an Effectiveness Monitoring Project in Washington

Ken Dzinbal, Executive Coordinator for the Washington Forum on Monitoring Salmon Recovery and Watershed Health, and Jennifer O' Neal, Watershed Ecology Manager, and Fish Biologist for Tetra Tech will present the results of a large-scale effectiveness monitoring project conducted to evaluate the success of habitat actions. Monitoring categories included fish passage, in-stream habitat, riparian planting, livestock exclusion, constrained channel, channel connectivity, spawning gravel, diversion screening, and habitat preservation. Regional coordination across monitoring projects may provide efficiencies in the collection of some monitoring data.

Jennifer has provided slides of the presentation.

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Reach Scale Effectiveness Monitoring Program

Overview of Results from a Programmatic Approach

Presented to the Northwest Power and Conservation Council

August 18, 2010

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Cooperative Funding and Direction

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OWEB

WASHINGTON STATE
RECREATION AND CONSERVATION OFFICE

Forum on Monitoring Salmon Recovery and Watershed Health

Program Development – A brief timeline

- Prior to 2003 each project sponsor conducted their own monitoring
- A monitoring survey was conducted in 2003 to assess compatibility of collected data – none found
- Started statewide reach-scale monitoring program (2004)
- Developed coordinated effectiveness monitoring program with the Oregon Watershed Enhancement Board (2006)

Reach-Scale Effectiveness Monitoring Provides…

- Data to quantify project effectiveness at the project category scale
- Information to assist with funding decisions based on performance and cost effectiveness
- Evaluations that ensure accountability for expenditures
- Results that can be used to improve the design of future projects and monitoring programs

Benefits of Programmatic Approach

- Before After Control Impact (BACI) with spatial and temporal replication – increases statistical power
- Sample size of 90 projects – no need to monitor every project

- Significant Results in the first 5 years
- Consistent methods and metrics across the program
- Evaluates projects on a regional scale through time

Monitoring Categories

- Fish Passage
- In-Stream Structures
- Riparian Plantings
- Livestock Exclusions
- Constrained Channels
- Channel Connectivity
- Spawning Gravel
- Diversion Screening
- Habitat Protection

Fish Passage – Indicators Measured

Passage Design

Juvenile Coho Density

Juvenile Chinook Density

Steelhead Parr Density

Coho Spawners

Chinook Spawners

Steelhead Spawners

Redds

Example Regionally Adopted Metrics and Protocols NEW

High-Level Indicator	*Attribute*	*Protocol/Method*
In-Stream Habitat	Wetted-width	Peck
	Bank-full width	Peck or Heitke
	Gradient	Peck or Heitke
	% Pools	Peck or Heitke
	Residual Pool Depth	Peck or Heitke
	Pool Max Depth	Heitke
	Pool Tail Depth	Heitke
	LWD Freq	Peck or Heitke
	LWD Volume	Peck or Heitke
	% Fine Sediment[2]	TBD: Heitke
	D_{50}[2]	TBD: Peck or Heitke
	% Undercut	Heitke
	Bank Angle	Heitke

Livestock Exclusions – Indicators Measured

Exclosure Function

Bank Erosion

Riparian Vegetation Structure

Canopy Density

OWEB Projects

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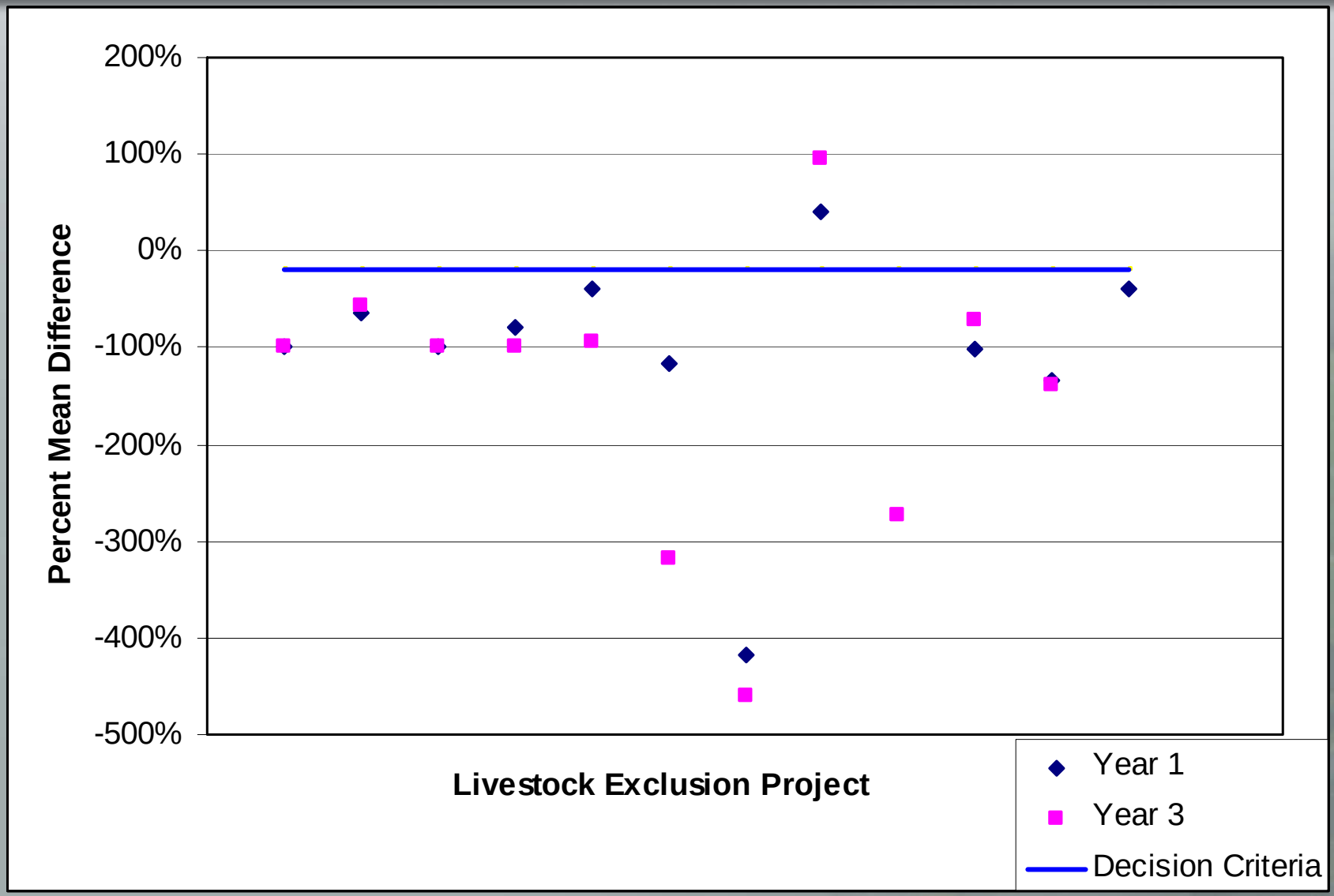
Bank Erosion Results – Year 1 and Year 3 Data



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Consistent Methods and Metrics

- Add to statistical power by allowing for data analysis across a large number of projects and contracts
- Necessary in order to detect statistical significance in a shorter time frame
- Allow for assessment of project categories which removes the need to monitor every project and reduces monitoring costs.

Significant Results from Monitoring

Significant Changes Detected to Date

- Fish Passage Projects - Juvenile Coho Density Increased (+438% by Year 5)
- Instream Structures – Mean Vertical Pool Profile Area Increased (Increased 108m^2 by Year 5)
- Livestock Exclusion Projects – Bank Erosion Decreased (-138% by Year 5)
- Floodplain Reconnection – Floodprone Width Increased (+845% in Year 3)
- Effective function established at Diversion Screens

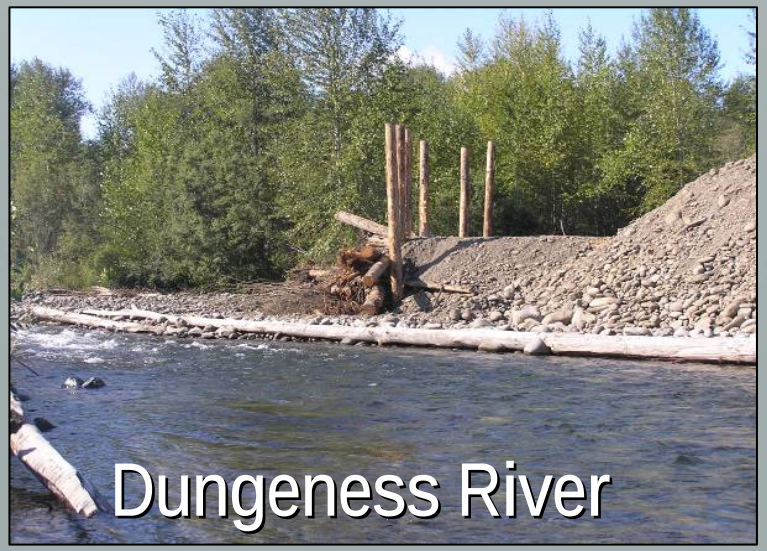
Benefits of Coordination

- Regional-scale evaluation of project category effectiveness
- Reduced costs for larger sample size
- Improved statistical power for evaluation of data
- Comparable and compatible data allows sharing across state and jurisdictional boundaries

Next Steps in Reach Scale Program

- **Fish Passage –** Significant increases in juvenile coho and strong positive trends for other species demonstrate effectiveness; **Monitoring complete**
- **In-stream Habitat –** Significantly increasing physical habitat; further investigation, stratification, and increased sample sizes are needed to clarify fish responses
- **Livestock Exclusion –** Significantly decreasing bank erosion, longer term monitoring for vegetation
- **Floodplain Enhancement –** Combine levee setbacks and off-channel habitat creation; increase sample size to test revised protocols widely
- **Diversion Screening** – Assessments demonstrate function; **Monitoring Complete**

Example In-stream Habitat Projects



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OWEB – Tenmile Lakes Basin Partnership

Impact reach prior to project (Year 0 - 2006)

Impact reach with fencing intact (Year 3 - 2009)

SRFB – Snow Creek Riparian Planting

BEFORE
(Year 0)

AFTER
(Year 3)

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Summary

- Coordination conserves limited monitoring funding and effort
- Data can be shared seamlessly across the region
- Data analysis is stronger with a larger sample size
- Single report for regional monitoring data with quantified results

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Questions?

TETRA TECH EC, INC.