

Public Meeting #1

Bear Creek Watershed-Scale Stormwater Plan

Existing Conditions Assessment Modeling, and Strategies and Implementation

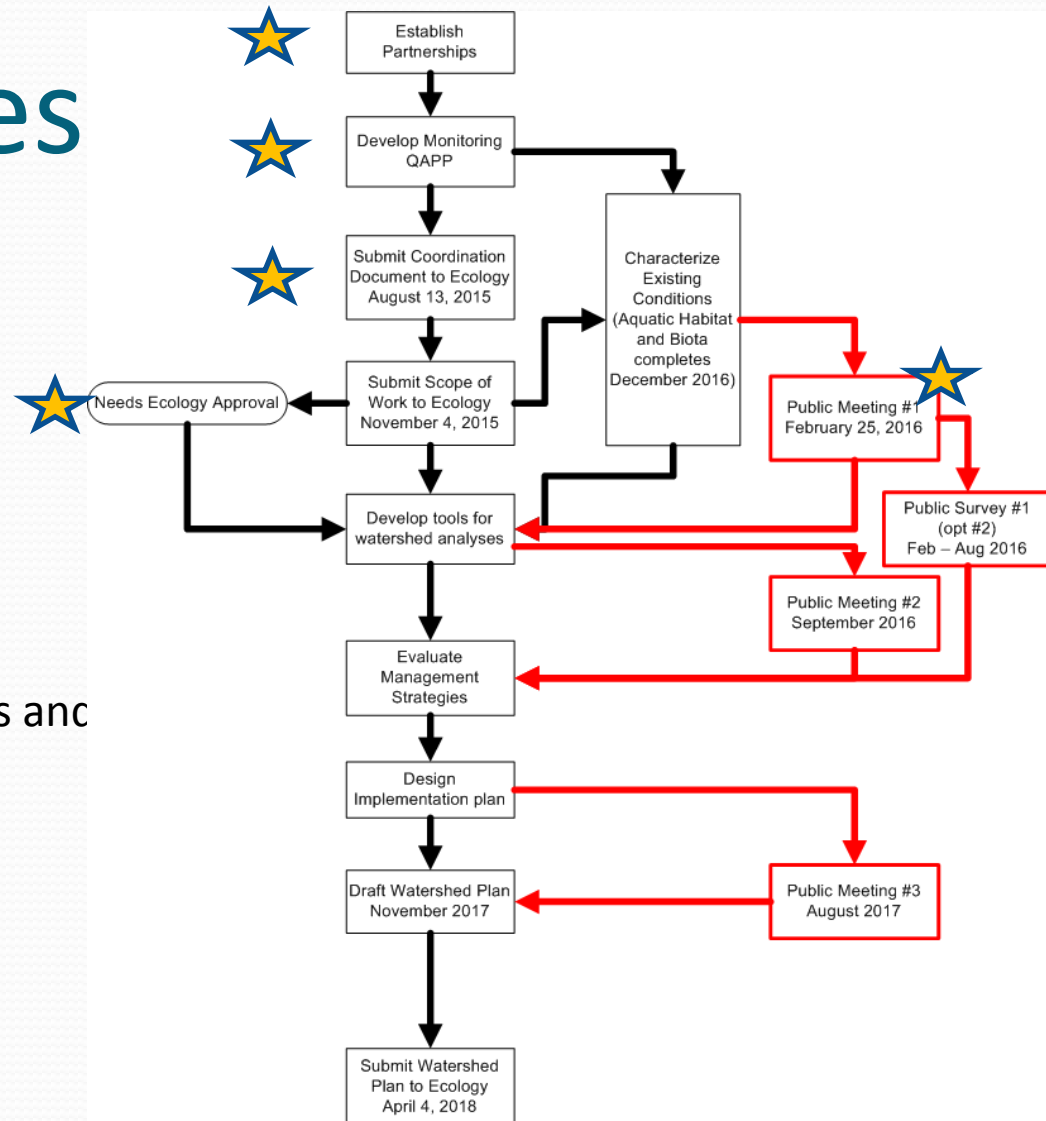
Jeff Burkey, Eric Ferguson, Josh Kubo, Jen Vanderhoof, Olivia Wright
King County

Department of Natural Resources and Parks

February 25, 2016

Major Milestones

- Form Partnerships (Completed)
- Storm Monitoring (Completed)
- Mapping (September 2016)
- Model Development (September 2016)
- Existing Conditions Assessment (December 2016)
- Stormwater Management Strategies and (March 2017)
- Final Watershed Plan (April 2018)



Monitoring Objectives

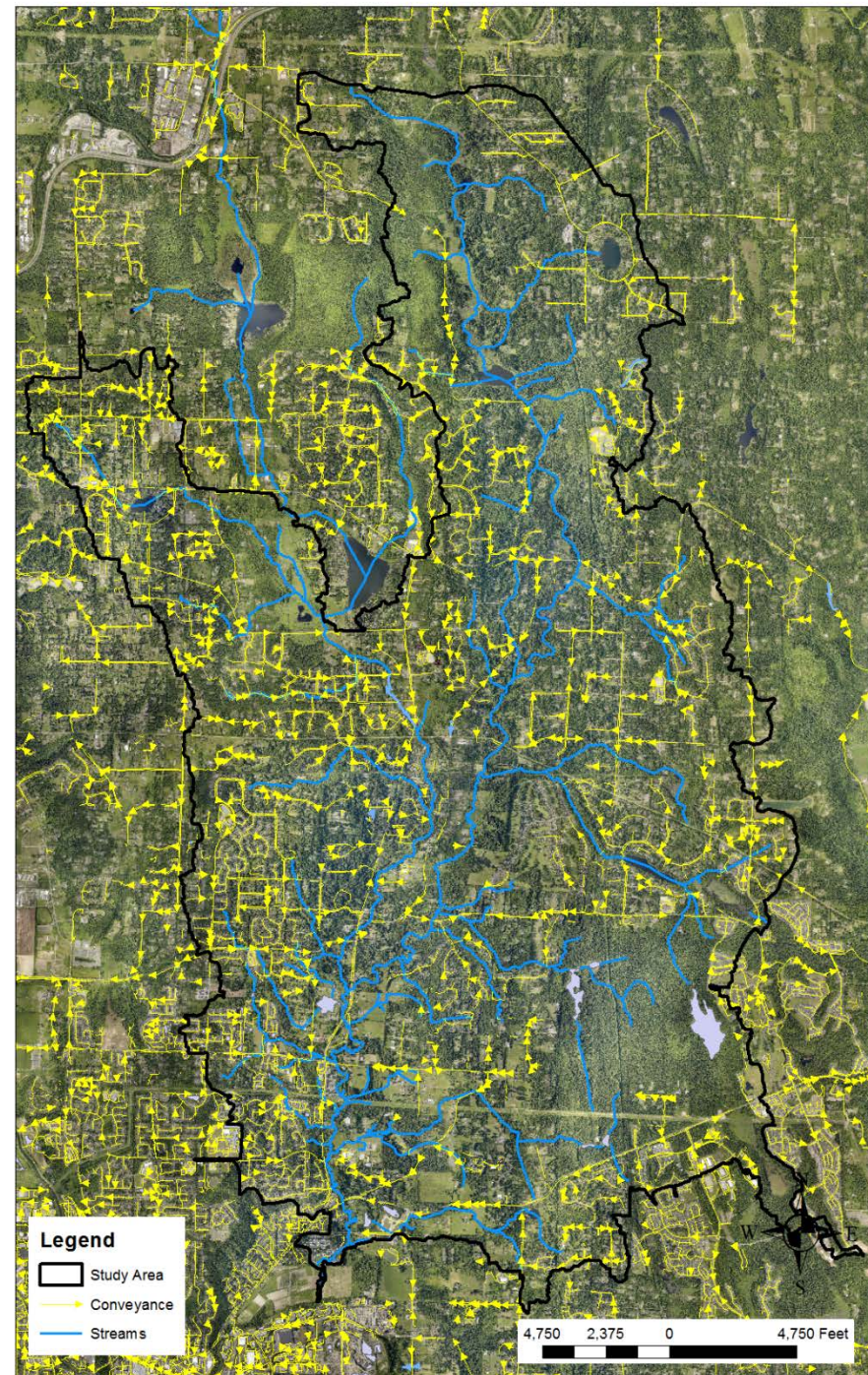
- Characterize existing conditions for the study area including base and storm flow situations.
- Compare existing conditions to historical values where feasible.
- Support development and calibration of a watershed model

Existing Conditions Assessment

- This assessment includes: hydrologic, biologic, water quality, and the aquatic community.
- Types of data:
 - stream flows and rainfall
 - benthic macro-invertebrates (a.k.a. “*Bugs*”)
 - dissolved copper and zinc concentrations
 - water temperature
 - fecal coliforms
 - the presence and distribution of juvenile salmonid uses

Stormwater Conveyances

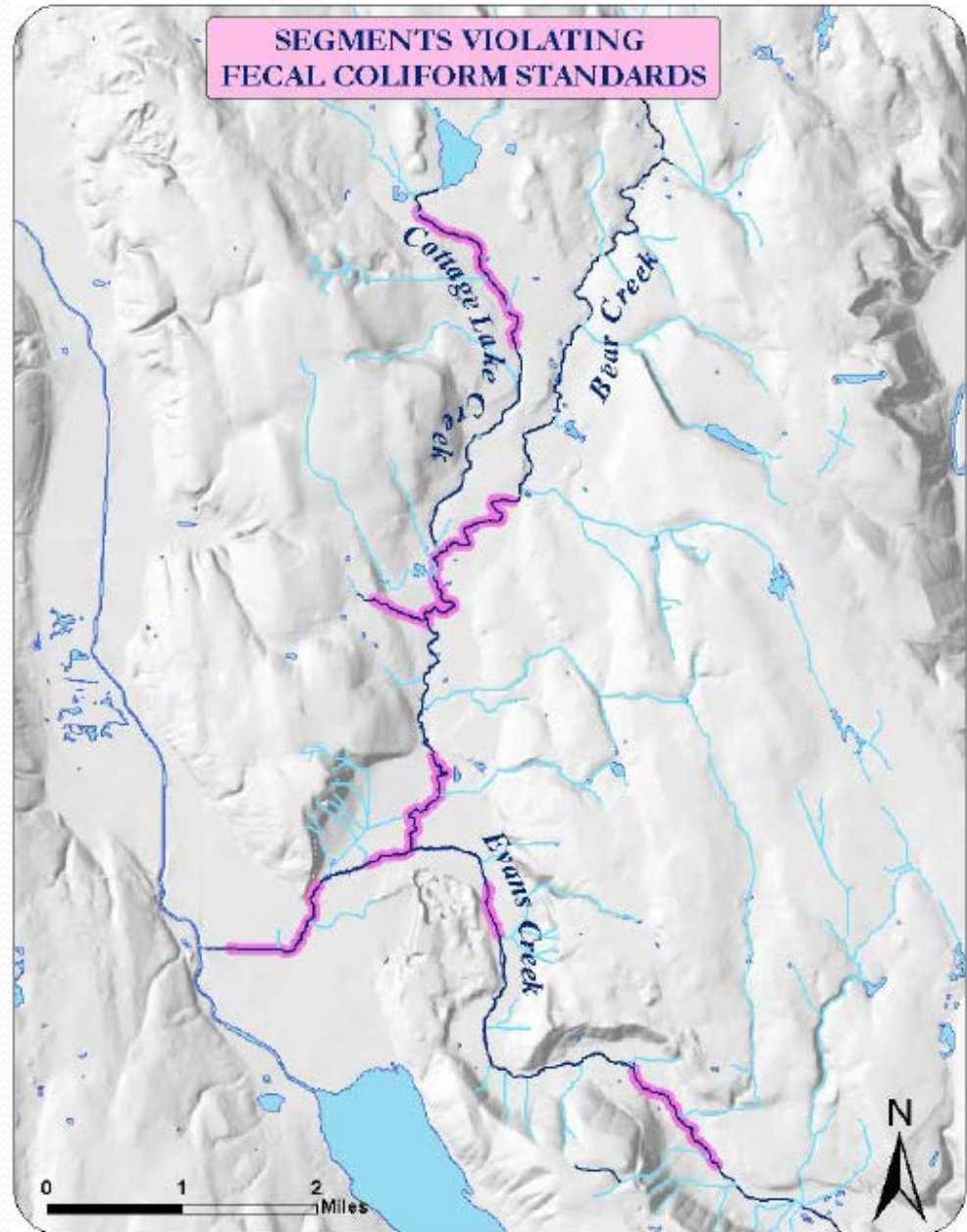
- 240* miles of pipe/swales/ditches
- 40 inches of Rainfall per year



Previous Study

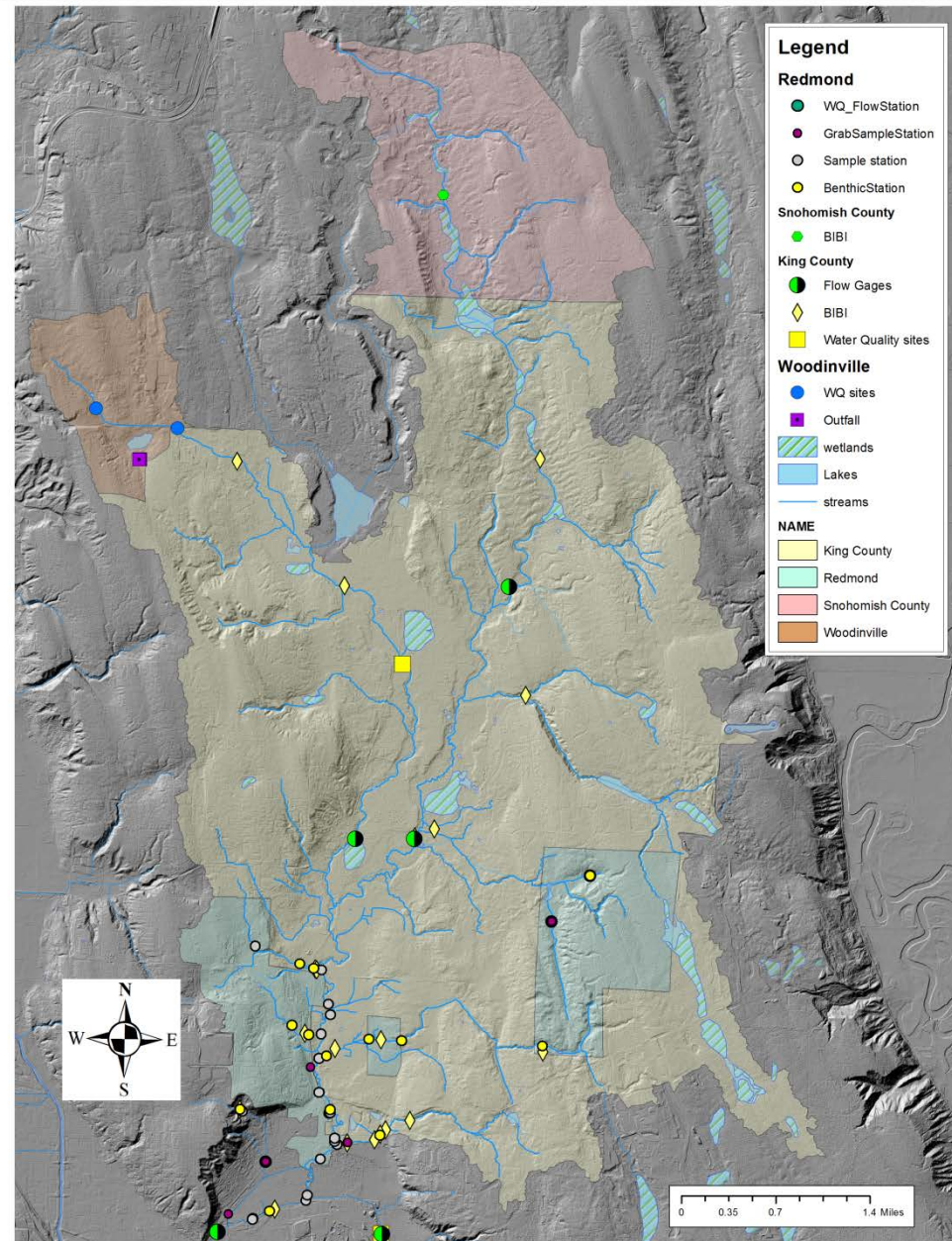
- Entire Bear Creek watershed
 - Fecal Coliform
 - Temperature
 - Dissolved Oxygen
 - Riparian conditions

Figure from Ecology (2011)



Some Existing Data Sites

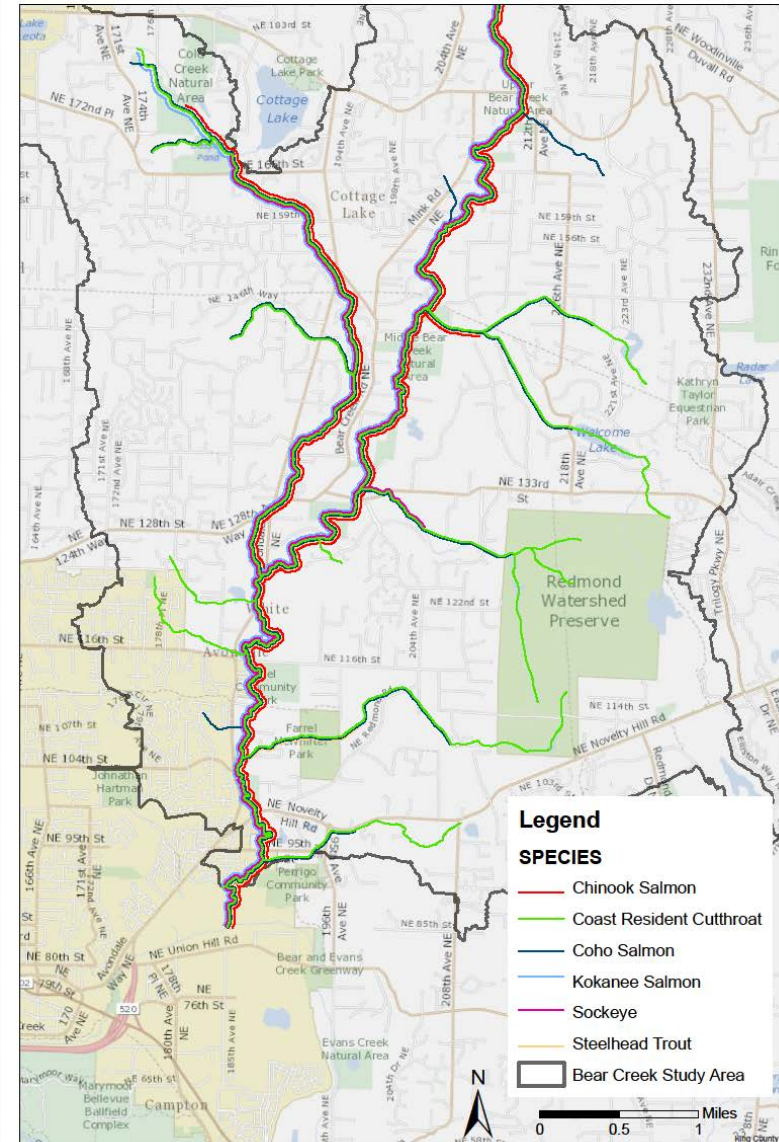
- City of Redmond
- City of Woodinville
- Snohomish County
- WA Dept. of Transportation
- King County



Channel and Fish Survey

- Select Stream reaches using existing spawning distribution mapping
- Obtain Property Access (Thank YOU!)
- Map in-stream and bank habitats
- Survey for juvenile fish a few days a month (Feb – Jun)

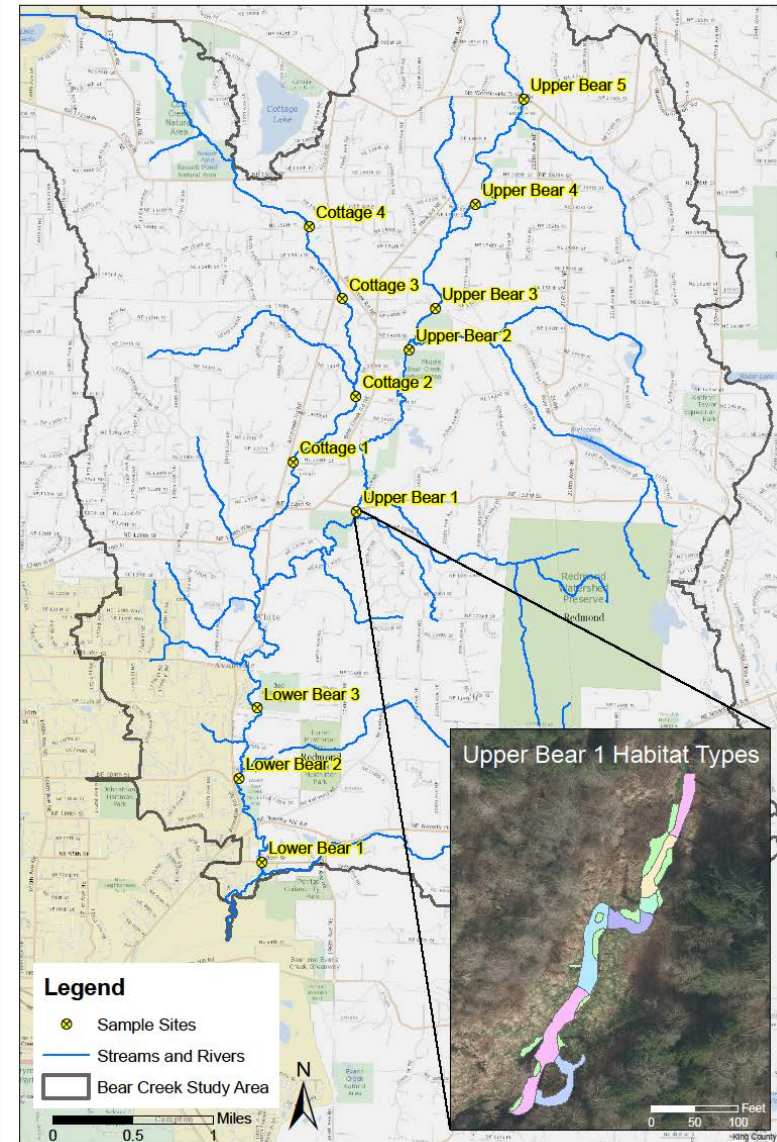
Salmonid Distribution



Channel and Fish Survey

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Juvenile Salmonid Sample Sites



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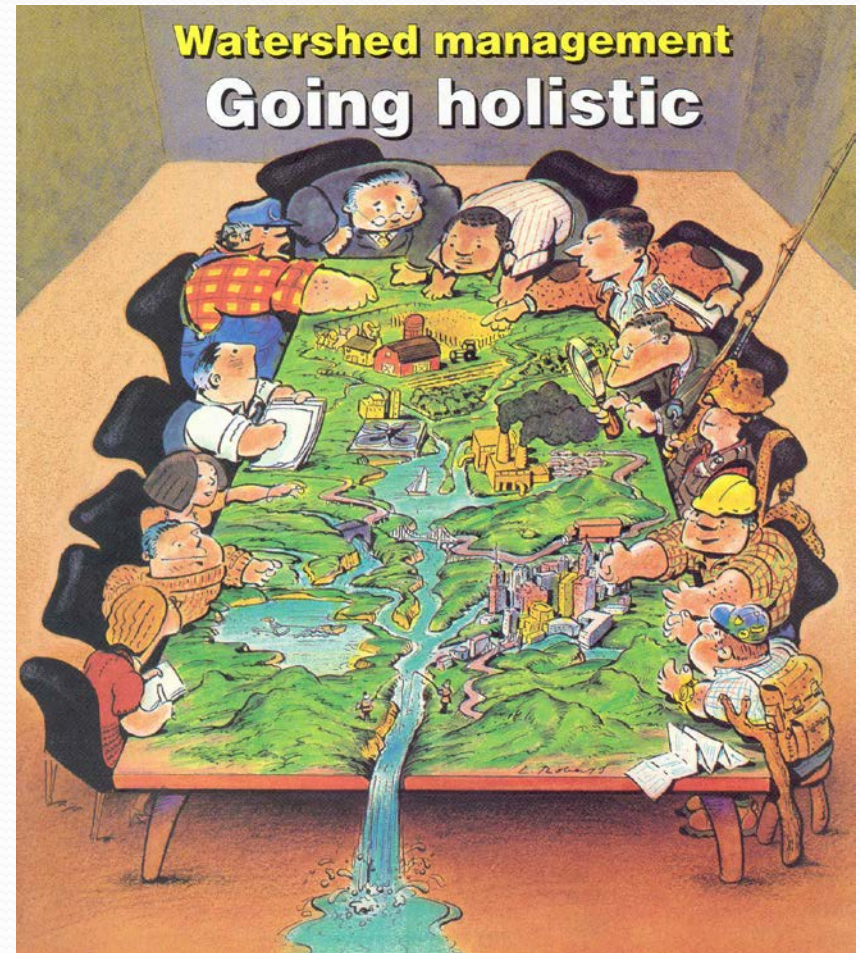


Strategies Under Consideration



Three Types of Strategies

- Planning and Regulatory
- Capital Projects
- Programmatic Efforts



Planning and Regulatory Strategies

- Past examples include:
 - Sensitive Area Ordinance
 - Critical Area Ordinance
 - Apply maximum impervious area through zoning
 - Require lot clustering that creates protected set aside land
 - Transfer of Development Rights



Capital Project Strategies

- Examples include:
 - Retrofitting existing development with stormwater controls
 - In-stream habitat restoration



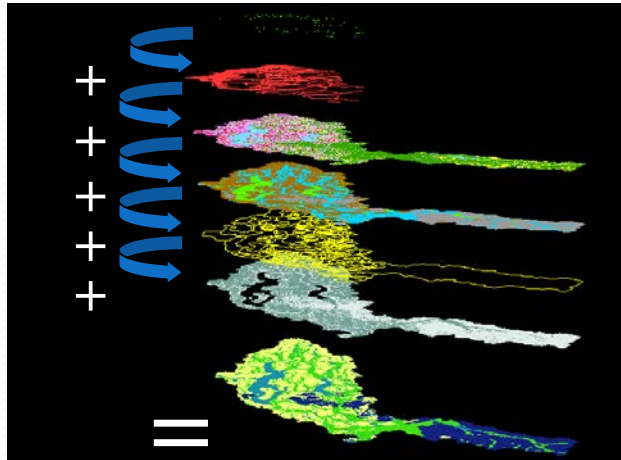
Programmatic Strategies

- Examples include:
 - Deep cleaning stormwater infrastructure
 - Outreach, such as Natural Yard Care
 - Buffer replanting events

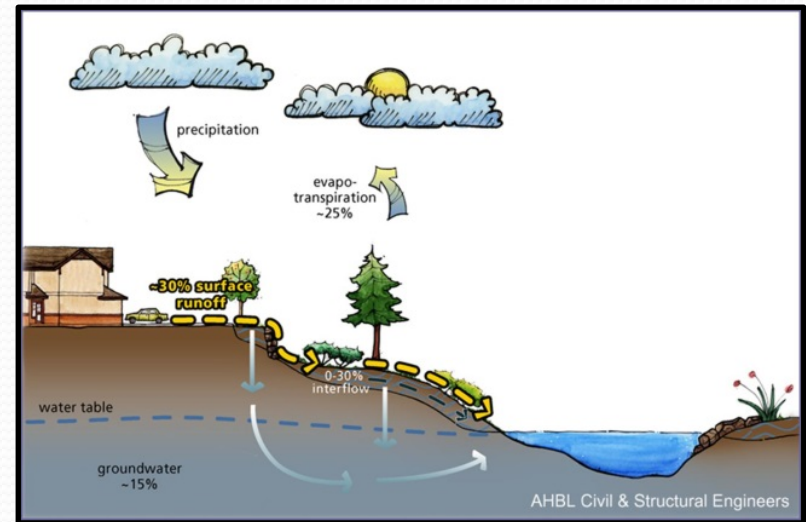


Watershed Modeling?

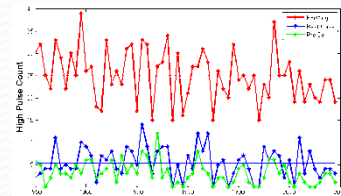
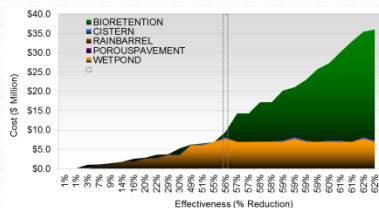
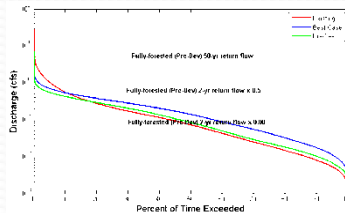
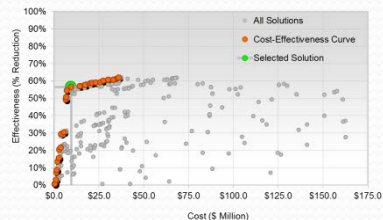
Data to build model



Simulate Existing and Future Conditions



Analyze Model Outputs



Model Outputs

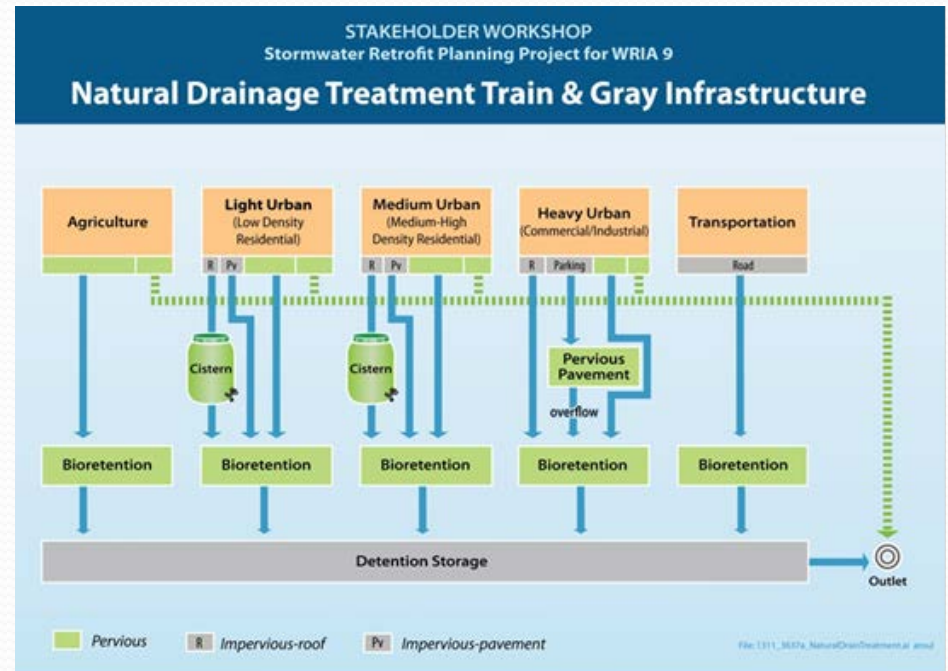


How do strategies get selected?

- Models are used to demonstrate benefit of regulation, programmatic changes, and capital improvement projects.

In concert:

- Identify where habitat needs to be improved.

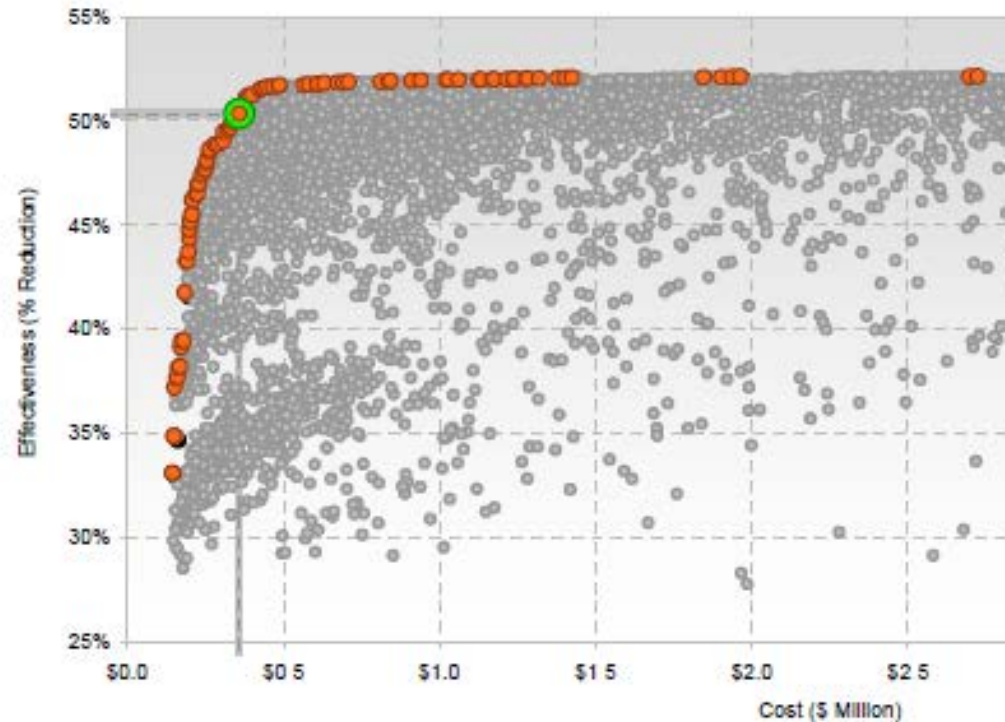


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25%
\$0.0 \$0.5 \$1.0 \$1.5 \$2.0
Cost (\$ Million)

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Thank you! Time for Q & A

Contact Info:

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