



Innovative Approaches for Watershed Protection

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Office of Drinking Water's Mission

We work with others to protect the health of the people of Washington State by ensuring safe and reliable drinking water.




What is Source Water Protection?

- The practices of preventing contamination from entering a source or potential source of drinking water.
- Multiple barrier approach includes source, treatment, delivery, and outreach.
- Focus today will be on watershed protection.





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Reasons for Watershed Protection

- Increasing exposure and risk
- Treatment, may not treat the contaminant
- Changes in land cover lead to changes in water quality – increasing cost of treatment



Reasons for Watershed Protection (cont.)

- September 2014 AWWA Journal
 - *Protecting forested watershed is smart economics for water utilities, Gartner, et al*
 - EPA study: On average \$1 spent on source water protection saved an average of \$27 in water treatment costs
- AWWA conducted recent survey on costs



Reasons for Watershed Protection (cont.)

- Every treatment plant has a limit of turbidity it can treat:
 - Slow sand: 10 NTU with roughing filter.
 - Contact adsorption clarifier and filtration: 30 NTU.
 - Membranes: 80 to 100 NTU.



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Approaches to Watershed Protection (cont.)

- **Regulations**
 - Land acquisition or easements
 - Collaborative management and agreements
 - Watershed planning and emergency response

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Regulatory Overlap

- Department of Health—Safe Drinking Water Act
- Department of Ecology—Clean Water Act
- Department of Natural Resources—Forest Practice Act
- Department of Agriculture—Pesticide Control Act and Pesticide Application Act
- Counties—Land use ordinances



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Regulatory Context

- Washington State drinking water regulations
 - Surface and groundwater under the influence of surface water (GWI) systems must have watershed control plan (WAC 246-290-135 and 246-290-668)
- Washington State Water Quality Standards (WAC 173-201A - Surface Waters)
 - Antidegradation policy –restores and maintains the highest possible quality of the surface water of Washington

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Regulatory Context (cont.)

- Washington Forest Practices Act (FPA)
 - Enacted in 1974 – Title 222 WAC and chapter 76.09 RCW
- Protects public resources while maintaining a viable timber industry.
- Public resources include:
 - Water.
 - Fish.
 - Wildlife.
 - Capital improvements.
- FPARS



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Regulatory Context (cont.)

- Pesticide Application Act
 - RCW 17.21
 - Regulates application and control of the use of various pesticides.
- Pesticide Control Act
 - RCW 15.58
 - Regulates formulation, distribution, storage, transportation, and disposal of any pesticide and dissemination of accurate scientific information for proper use, or nonuse, of any pesticide.



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Regulatory Context (cont.)

- County ordinances
 - Zoning
 - Development regulations
 - Critical Areas
 - Critical Aquifer Recharge Area
- Can use permitting process to restrict or condition certain activities.



Regulatory Context (cont.)

Regulations alone are not enough




City of Olympia Watershed

- Thurston County enacted special zoning.
 - limited high density residential and commercial development.
 - Developed more stringent standards for on-site wastewater systems in the designated geologic sensitive area .
 - Extensive review of new developments under county review, including hydrogeologic assessment.



Approaches to Watershed Protection

- Regulations
- Land acquisition or easements
- Collaborative management and agreements
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Land Protection Tools

- Fee-simple land acquisition
- Conservation easements
 - Agricultural
 - Forestry
 - Recreational
 - Wildlife habitat
- Deed restrictions
- Conservation leases
- MOA, voluntary land agreements

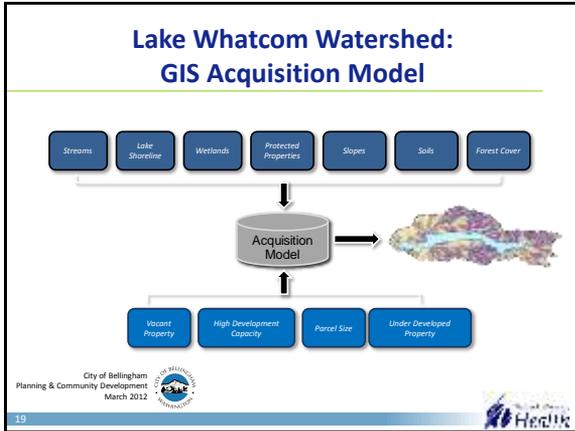


Bellingham



- 30,000 acre watershed
- 1,600 protected acres
- Focus land acquisition around surface water





Bellingham Source Water Protection

- Source water protection program emphasizes:
 - Land acquisition—protection.
 - Landowner agreements.
 - Surveillance.
 - Education.
- *Funded with \$12 per month fee.*

Land Acquisition

- Land purchase can be expensive and need to demonstrate community benefits
- And remember, once you own the land, you need to manage the land
- Example: Arcata Community Forest
 - Annual revenue from the forest: \$450,000
 - Annual cost to manage: \$300,000

Approaches to Watershed Protection

- Regulations
- Land acquisition or easements
- Collaborative management and agreements
- Watershed planning and emergency response

City of Aberdeen

- 7,400 acre watershed
- City owns 1,200 acres near intake and dam
- Remainder owned by Simpson, Rayonier, and U.S. Forest Service

City of Aberdeen (cont.)

City of Aberdeen (cont.)

- 1971: City worked with Grays Harbor County to pass ordinance.
- 1978: Developed agreement with U.S. Forest Service.
- Early 1990s: Developed agreements with private timber companies.
 - Initially done to gain filtration avoidance.
 - Useful today to make sure activities in the watershed do not result in excessive turbidity.

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City of Aberdeen County Ordinance

- 1971: City worked with Grays Harbor County to pass an ordinance protecting entire watershed.
- Prohibits:
 - Unlawful entry.
 - Dumping or other activities that pollute the watershed and water bodies.
- Grays Harbor County Sheriff's office has authority to enforce.
- Defines penalties for violation (fines or jail time).

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City of Aberdeen Forest Service Agreement

- 1978: Agreement executed.
- Objective is to maintain high quality water from the Wishkah River Municipal Watershed.
 - U. S. Forest Service (USFS) responsible for administration of forest lands, but will not patrol on behalf of city.
 - City responsible for all improvements and operations of the water system.

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City of Aberdeen Forest Service Agreement (cont.)

- City and U. S. Forest Service mutually agree to:
 - Annual meeting to review previous year and discuss future year's activities.
 - Consultation meetings, if necessary or desired by either party.



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City of Aberdeen Rayonier and Simpson Agreements

- Agreements are similar in nature.
- Agreements were signed in 1993 and 1994 in an effort to obtain filtration avoidance.
- Reference county ordinance.
- Grants the owner (Rayonier or Simpson) the right to enter the watershed for harvest activities and management of its properties.
- City granted use of its road in return for acceptance of restrictions in the agreement.

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City of Aberdeen

- Allowed activities include:
 - Forest management and harvest.
 - Growing, protecting, cultivating, and producing timber, trees, and forest growth.
 - Constructing, maintaining, and using roads, trails, and other improvements.
- Any other activities not allowed without prior written consent by the city.
- Notify city of activities and meet regularly.



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Boistfort Valley Water

- Stillman/Little Mill Creek watershed is 27 square miles, mostly forested.
- Multiple landowners, major land owner is Weyerhaeuser who actively harvests in this area.
- Boistfort Valley Water (BVW) has good relationship with Weyerhaeuser and has relied on verbal agreements.
 - Weyerhaeuser granted easements to BVW for intakes and roads at no cost.

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Boistfort Valley Water (cont.)

- Many changes in watershed and source turbidity.
 - Flooding- 2007
 - Logging/road construction
 - Land sloughing
- Current watershed control plan very weak.



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Boistfort Valley Water (cont.)



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Boistfort Valley Water (cont.)

- CAC/filter plant difficult to operate, if influent turbidity exceeds 30 NTU.
- BVW has invested over one million dollars in constructing presedimentation facilities.
- Wildwood WTP still periodically shut down due to high turbidity.



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Boistfort Valley Water (cont.)



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Boistfort Valley Water (cont.)



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Boistfort Valley Water (cont.)



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Boistfort Valley Water (cont.)

- November 2012, BVW alerted that Weyerhaeuser harvesting 100-acre plot in watershed.
- Heavy rains had just occurred, resulting in increased turbidity in Little Mill Creek.
- BVW requested Weyerhaeuser not to log.
- Health, Weyerhaeuser, DNR, and BVW met; Weyerhaeuser agreed to postpone logging.

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Boistfort Valley Water (cont.)

- Worked with BVW to obtain a source water grant to characterize the watershed and develop a written agreement with Weyerhaeuser.
- BVW hired contractors to negotiate with Weyerhaeuser, conduct watershed characterization (geotech), and update watershed control plan.

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Boistfort Valley Water (cont.)

- Options being considered by BVW include:
 - Compensate Weyerhaeuser financially not to log certain areas of the watershed.
 - Purchase the land.
 - Negotiate with Weyerhaeuser on larger riparian buffers.
 - Install another presedimentation basin.
 - Upgrade water treatment plant.

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Boistfort Valley Water (cont.)

- Two meetings with Weyerhaeuser, BVW, DNR, Health, and Lewis County.
- Weyerhaeuser working with BVW.
 - Agreed to postpone logging on 100-acre parcel until January 2015.
 - Agreed to larger buffers on steep slopes.
 - Closely coordinating with BVW on hunting leases.
 - Designated contact person for BVW to call.
 - Offered to help with re-locating intake.

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Boistfort Valley Water (cont.)



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Approaches to Watershed Protection

- Regulations
- Land acquisition or easements
- Collaborative management and agreements
- **Watershed planning and emergency response**

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Watershed Planning

- All public water supplies required to have a watershed control plan.
 - Identify boundaries, landowners, and activities.
 - Present control measures (monitoring, patrols, agreements).
 - Operations and emergency provisions.
- Implement the plan.
- Update in the Water System Plan at a minimum.

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Watershed Planning (cont.)

- Level of watershed control influences treatment selection
 - Watershed ownership and control allows some systems to achieve filtration avoidance.
 - Seattle and Bremerton
 - High quality sources and watershed control through agreements or other efforts allow less costly treatment
 - Camas
 - Systems with little control over watershed activities need treatment or in some cases, supplemental sources.
 - Castle Rock



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Bremerton Video

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Emergency Response Planning

- Knowing the risks can help prepare for, mitigate, or potentially avoid an emergency.
- Source water protection includes an emergency plan that:
 - Emphasizes prevention.
 - Identifies main threats.
 - Details response procedures.
 - Determines replacement options (contingencies).
- Great tools are available on our website at www.doh.wa.gov/drinkingwater

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Eugene, OR Emergency Response Plan

- Sole source of supply
- Very large watershed (1,338 square miles)
- Limited control and multiple land uses



Source: Karl Morgenstern, EWEB, PNW AWWA Conference, May 2014

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Eugene, OR Emergency Response Plan (cont.)

- Sheds located along the river equipped with pumps, booms, sorbent pads, containment barrels, compressors, boats, and other materials needed to address a spill.
- Conduct drills with all agencies: Fish and Wildlife, Transportation, Ecology, Office of Drinking Water, local health, fire department, state and local police, USFS.

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Contamination is Expensive

- A community may spend millions of dollars responding to contamination.
- Responding to contamination is about 200 times more costly than prevention.



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Case Study: Elk River Spill, January 2014

- 10,000 gallons of crude Methylcyclohexanemethanol (MCHM) leaked into the Elk River 1.5 miles upstream of the West Virginia American Water intake.



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- 300,000 customers
- Six-nine day “do not use” order
- Replaced all treatment plant filters \$1.2 million
- Estimated total cost 70 million

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Oil Transportation

- Risk
 - Increase rail transport, and oil and fuel transported by pipelines.
- Response
 - Be aware of risks and incorporate them into emergency response planning.
 - Communicate with local responders; help them understand the impacts a spill or fire to your system.



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Fire and Drought

- Need to manage watershed and fuel to minimize fire risk
- Drought has only compounded the fire risk
- Be prepared for loss of a surface water source
 - Have a back-up source
 - Enhance treatment capabilities for increased turbidity
- Emergency loans available from DWSRF Program

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Funding

Department of HealthSource Water Protection Grants

- Up to \$30,000 per eligible study
- Examples
 - Ilwaco
 - Boistfort
 - Carbonado

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Funding

Voluntary incentive program

Eugene OR

Bonds

Flagstaff AZ

USFS – Community forests

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Communication and outreach

- Your customers know what's at stake, and are willing to pitch in
- Speak to your customers in language they understand
- Look to business community for new partners

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Questions?

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