



## 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.






## 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.



### Approaches to Watershed Protection (cont.)

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

### 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



### 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

### 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



### 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.



### Regulatory Context (cont.)

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



### Regulatory Context (cont.)

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Regulations alone are not enough





### City of Olympia Watershed

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- 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

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



### Land Protection Tools

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



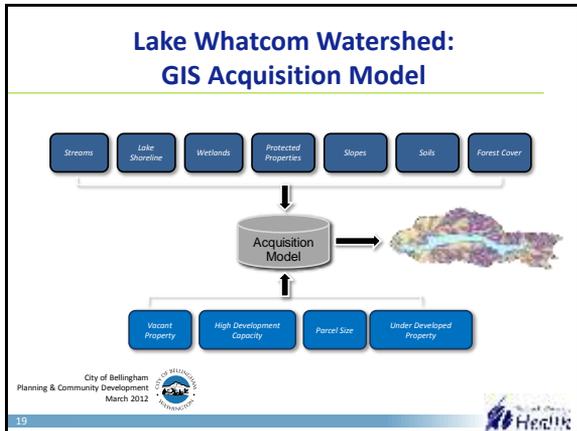
### Bellingham

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- 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](http://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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