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Source Water Protection Planning **A new tool for long term sustainability of source water quality**

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engineers | scientists | innovators

1. Rowan Schmidt: How **Ecosystem Service Valuation** & Quantification Tools Can Support Municipal Drinking Water Source Protection
2. Tom Hickmann: **Ground Water Contamination** from UIC's
3. Kristel Fesler: **First Steps to Implement** a Source Water Protection program for a Surface Water System
4. Karl Morgenstern: **Use of Voluntary Incentives** To Protect Drinking Water in the McKenzie Watershed, Oregon
5. Kim Swan: What is Source Water Protection Planning? And Why Go Beyond the State Guidelines and Rules? **Current Status and Future Plans** for the Clackamas River Water Providers

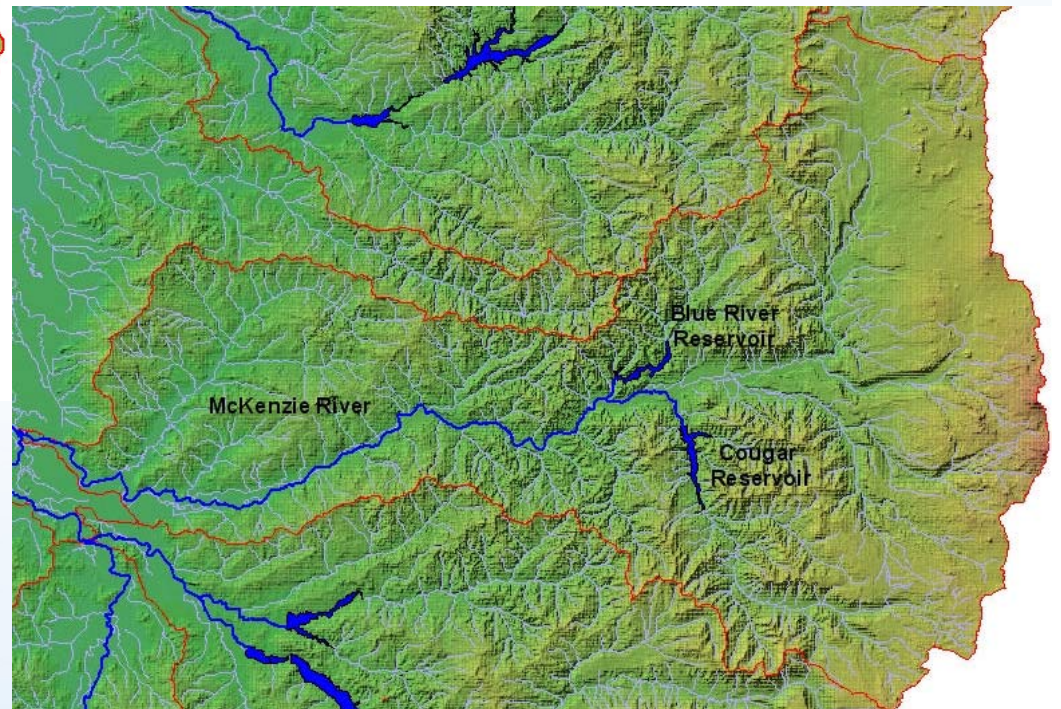
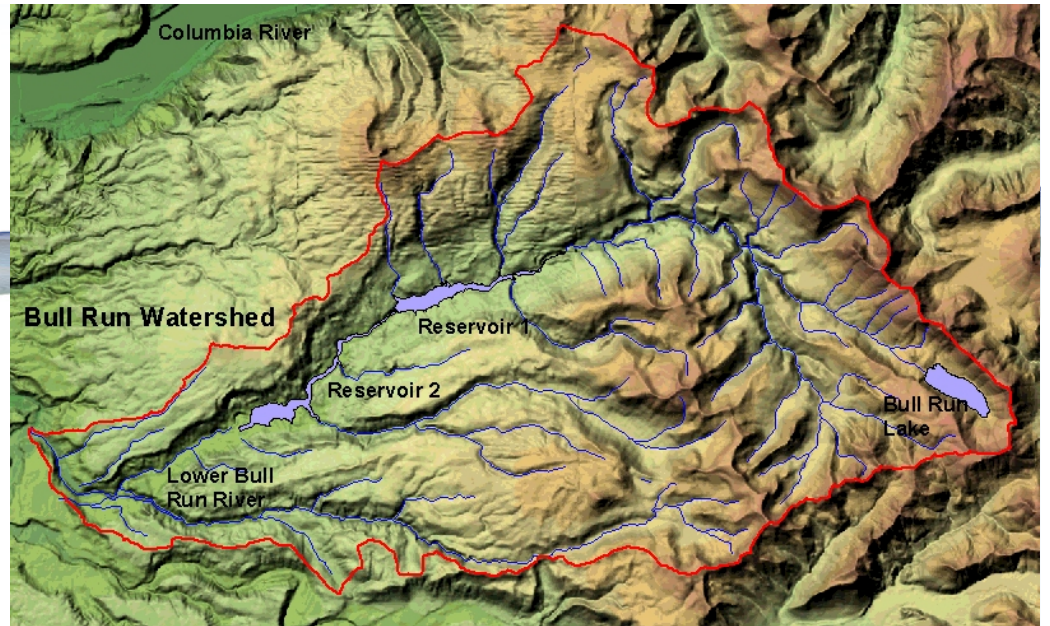
- **Federal Regulations**
 - Clean Water Act
 - Safe Drinking Water Act
- **State Agencies**
 - Oregon Department of Water Resources
 - Oregon Health Authority
 - Oregon Department of Environmental Quality
 - Idaho Department of Water Resources
 - Idaho Department of Environmental Quality
 - Washington Department of Ecology
 - Washington State Department of Health
- **State Programs**
 - Well Head Protection Plans and Areas

Source Water Protection Planning

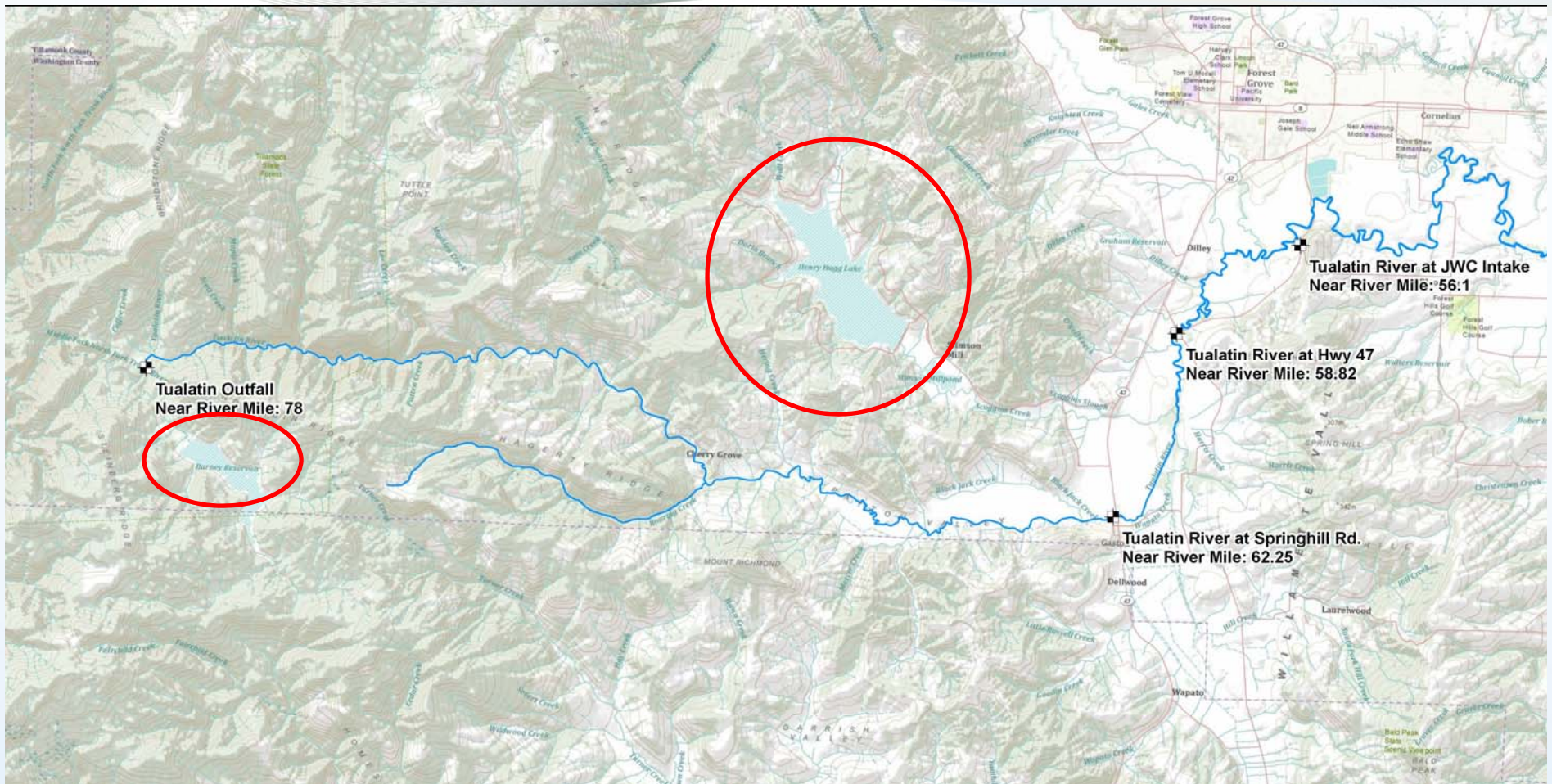
What is it?

- Planning – the focus is on the source water
 - Demands
 - Protection of the current resource
 - Plan for next resource
- Water sources (availability, options, water quality)
- Water rights review
- Risks to current supply
- Risks to future supply
- Infrastructure upgrades
- Operations and maintenance
- Technical studies

- Most Water Supply agencies don't control the land area that supplies their source.
- Limited or no ownership or control
- Protected land use (Bull Run River, Cedar River)
- Upstream supply, advantages and disadvantages
- Downstream supply, advantages and disadvantages
- Land uses
 - Forestry
 - Agriculture
 - Urban



Barney Reservoir and Henry Hagg Lake



Why do Source Water Protection Planning?

- Regulations change
- Resiliency
- Risks change
- Land use changes
- Infrastructure upgrade costs
- Operations costs (chemicals, maintenance, back flushing, staff time)
- New water quality problems – algae, zooplankton, or other
- Emerging contaminants (e.g., pharmaceuticals, fire retardants)
- Improve reservoir management at critical time periods
- Getting a handle on massive data sets, trends
- Water rights permits/transfers
- TMDLs – regulatory agencies are looking for new DMAs
- Hydropower

- **Point Sources**
 - Permitted Discharges
 - Spills
 - Event Driven (land slides etc.)
- **Non-Point Sources**
 - Agricultural Runoff
 - Forestry
 - Septic Systems
 - Urban Stormwater (land use change)
 - Algal Blooms

Water Availability?

Costs Enter the Equation

- Cost Benefit Analysis
- Infrastructure Upgrades
 - Increase Capacity
 - Treatment upgrade
 - New technology
 - Treat more disparate water quality conditions
- Operations
 - Change processes
 - Increase man hours
- Maintenance
 - Increase frequency
- Mixed Resource Blending (e.g. well field and surface water)
- Deferred Costs (of any of the above)
- Regulatory Requirements
- Emergency Preparedness and Response

What does Source Water Protection Planning involve?

- Basin Analysis/Source Water Assessment
 - Current Conditions
 - Risk Assessment
 - Future Conditions
- Regulatory Review and Analysis
- Future Needs
- Source Protection Monitoring
- Disaster Preparedness
- “Mitigation” Strategies
 - Point Sources
 - Non-point Sources
- Partnerships
- Public Outreach, Education, Stakeholder Involvement

- Economic valuation of resources
- Rate payer survey
- Upstream land user/stakeholder survey
- Legal agreement review and assessment (what are the options and ideas you might use)
- Voluntary incentive programs
- Conceptual BMPs
 - Who are the stakeholders needed to make them work?
 - What legal and cost frameworks are needed for success?
- Feasibility assessment for a granting program

- Monitoring plan development
- Hydrology analyses
- Risk analysis
- Water quality data analysis
- Water quality database development
 - source water monitoring
 - distribution system monitoring
- Water availability analyses
- Time of travel analyses
- Water quality modeling, rivers or reservoirs
- Pollutant load modeling
- Decision support tools, real time control
- Model peer review
- Management alternatives and BMPs

Possible Best Management Practices

- Nutrient Management Plans - Agriculture
- Nutrient Management Plans – Urban Landscaping
- Integrated Pest Management
- Voluntary Incentive Programs
- Conservation Buffers
- Streamside Management Areas
- Water Quality Basins (detention, retention, wetland)
- Bioretention/Biofilters (swales, media strips, rain gardens)
- Media Filter
- Impervious Area Reduction Programs
- Organic Farming
- Drinking Water Protection Zones
- Emergency Response Plan

Thank you

Questions?

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