

Monitoring Strategy for Surface Water & Groundwater

Mellony Hoskinson

March 12, 2015

Oregon Water Resources Commission Meeting

Agenda Item D



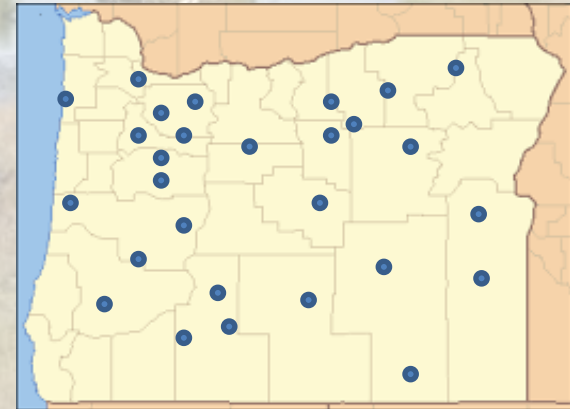
Overview

- **Strategic Monitoring**
- **Current Network**
- **Monitoring Strategy – What & Why**
- **Future Strategic Network**
- **Products and Outcomes**
- **Next Steps**



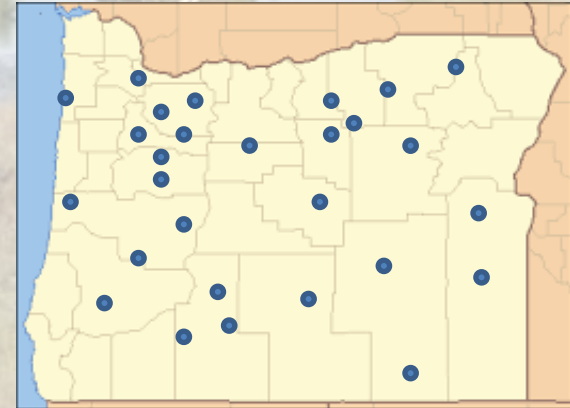
Strategic Monitoring

- Objectives (Why?)
 - Programmatic needs for monitoring data
 - Department mission
- Network Design (Where?)
 - Current/proposed sites
 - Stream gages & observation wells
- Available Resources
 - Equipment
 - Staff – collect/process data



Strategic Monitoring

- **Objectives** (Why?)
 - Programmatic needs for monitoring data
 - Department mission
- **Network Design** (Where?)
 - Current/proposed sites
 - Stream gages & observation wells
- **Available Resources**
 - Equipment
 - Staff – collect/process data



Strategic Monitoring



*Serve the public
by practicing and promoting
wise long-term water management*



**Data Collection
Field Services**

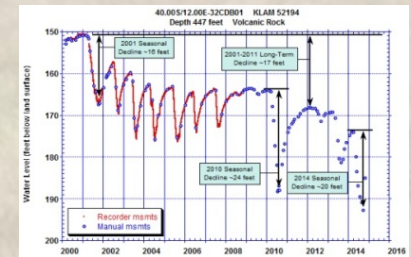
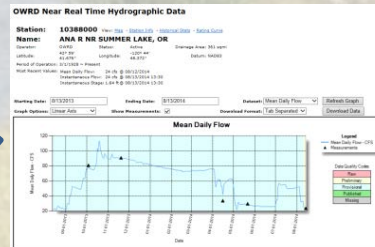


Strategic Monitoring



*Serve the public
by practicing and promoting
wise long-term water management*

**Data Analysis
Technical Services**



**Data Collection
Field Services**



Strategic Monitoring

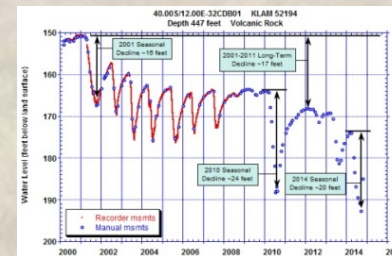
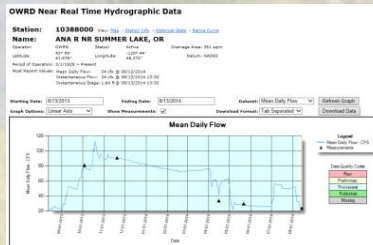


*Serve the public
by practicing and promoting
wise long-term water management*

**Data Analysis
Technical Services**

Resources

**Data Collection
Field Services**



Strategic Monitoring



*Serve the public
by practicing and promoting
wise long-term water management*

Programs/Strategies

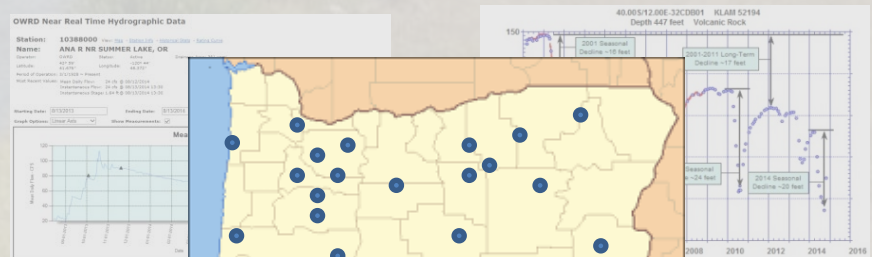
Objectives



Data Analysis
Technical Services

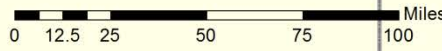
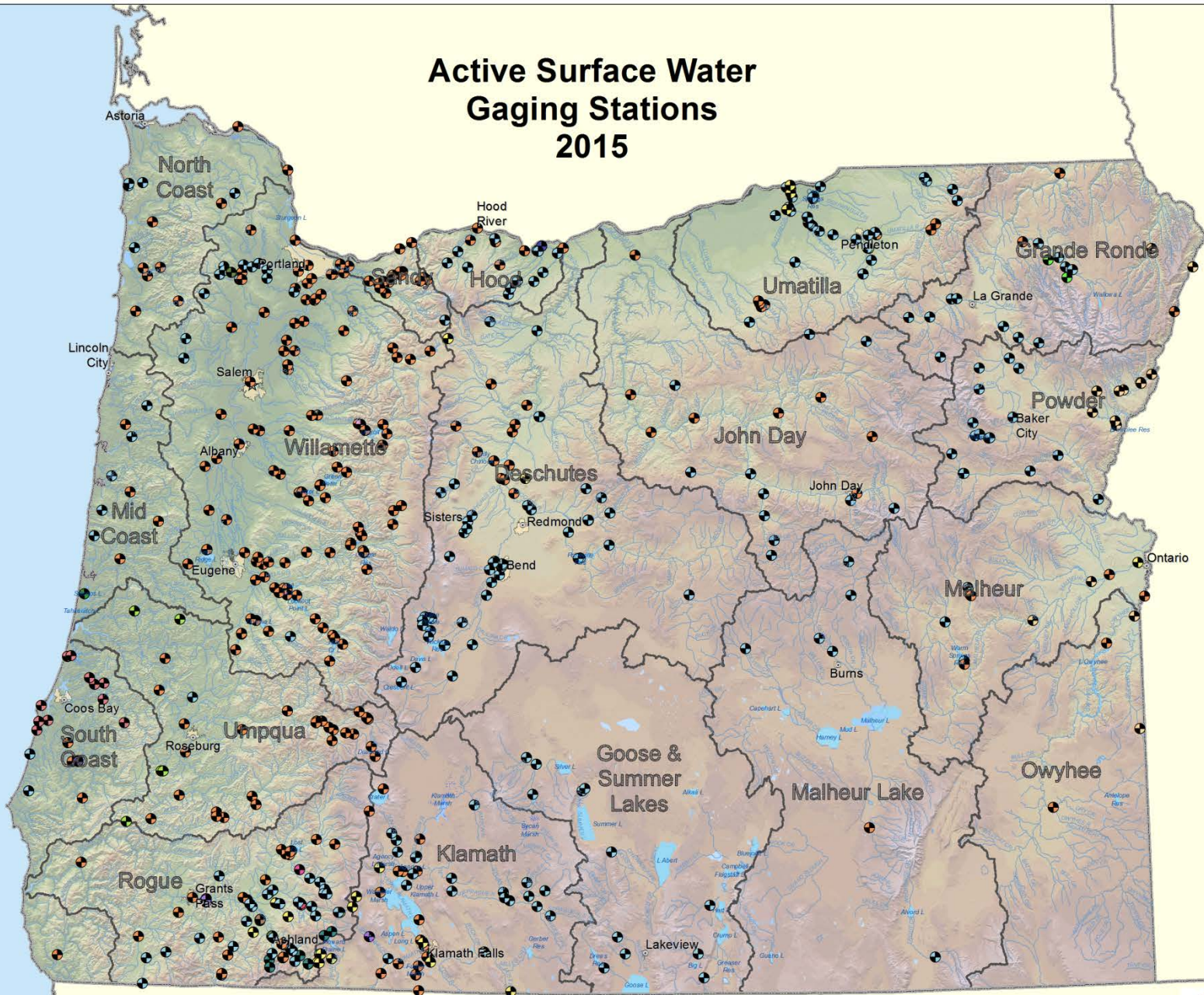
Resources

Data Collection
Field Services



Network Design

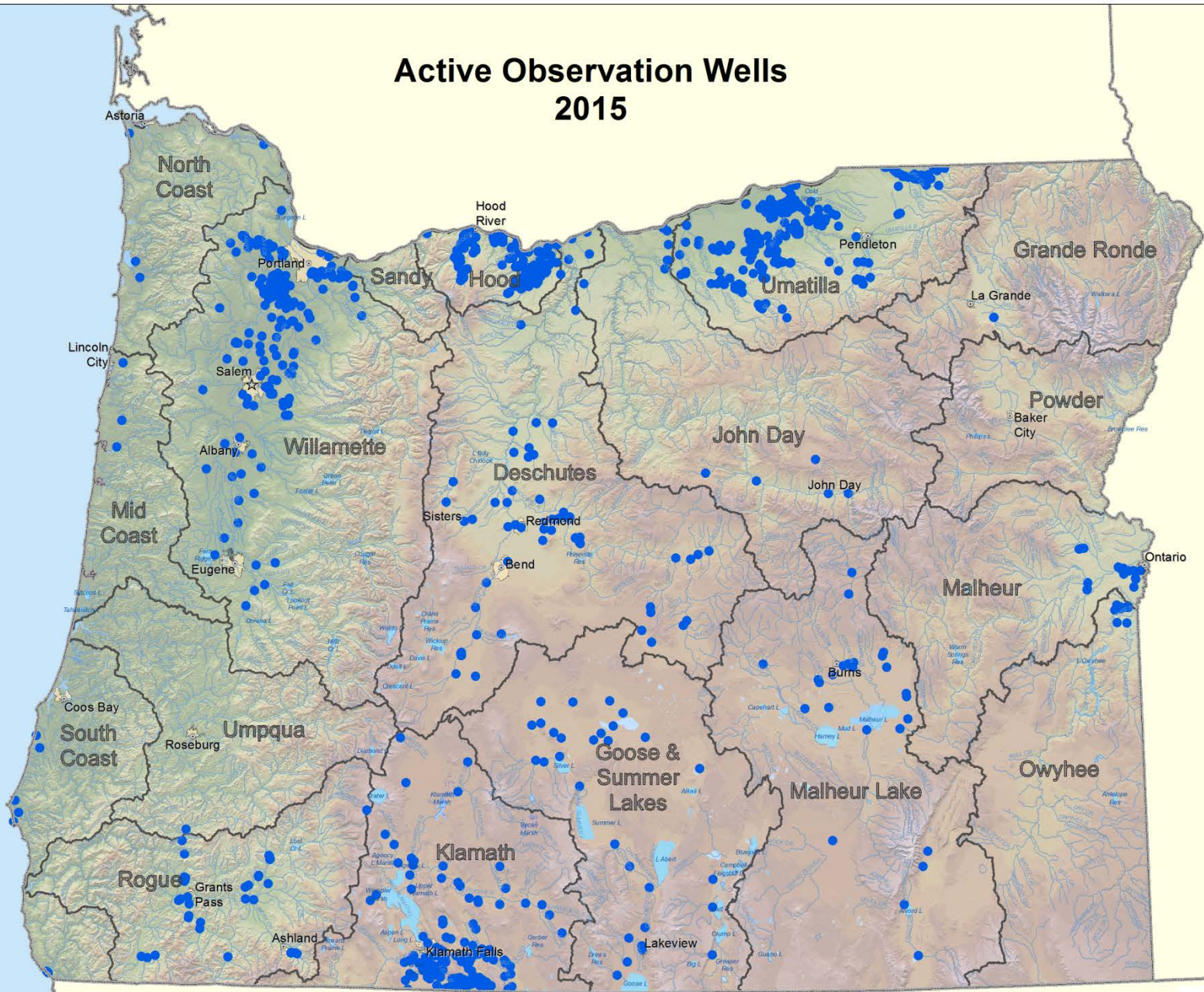
Active Surface Water Gaging Stations 2015



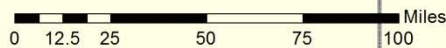
DISCLAIMER & CONTACT INFO
 This product is for informational purposes and may not have been prepared for, or is suitable for, legal, engineering, or scientific purposes. Users of this information should consult the primary data and information sources to ascertain the quality of the data.
 The map is produced by the Oregon Water Resources Department from digital data. Any errors or omissions in the data should be directed to the Geographic Information Systems section. The GIS section welcomes any comments or questions at the Web or by phone (503) 725-1200.
 Mailing address:
 725 Summer St., SE, Suite A
 Salem, OR 97302-0208
 Web address:
 http://www.wrd.oregon.gov



Active Observation Wells 2015



monitoring_wells.mxd 1/16 03/20/15



DISCLAIMER & CONTACT INFO
 The products on this observational resource map may not have been prepared for, or be suitable for, legal, engineering, or scientific purposes. Users of this information should consult the primary data and information sources to ascertain the quality of the data.
 The map is produced by the Oregon Water Resources Department from digital data. Any errors or omissions in the data should be directed to the Geographic Information Systems section. The GIS section welcomes any comments or questions at the Web or by phone (503) 725-1200.
 Mailing address:
 725 Summer St., SE, Suite A
 Salem, OR 97301-0200
 Web address:
 http://www.wrd.state.or.us



Why develop a Monitoring Strategy?

- 1. 2011 Stream Gage Network Evaluation*
- 2. Integrated Water Resources Strategy*
- 3. Resources*
- 4. Key Performance Measures*
- 5. STREAM Team*

OWRD Plan for Development of a
Strategic Surface Water and
Groundwater Monitoring Network

Oregon Water Resources Department

2015



Why develop a Monitoring Strategy?

1. 2011 Stream Gage Network Evaluation

OWRD STREAM GAGING NETWORK EVALUATION FOR WATER DISTRIBUTION

Jonathan L. La Marche, PE

State of Oregon
Water Resources Department

Open File Report SW 2011 – 01



November 2011

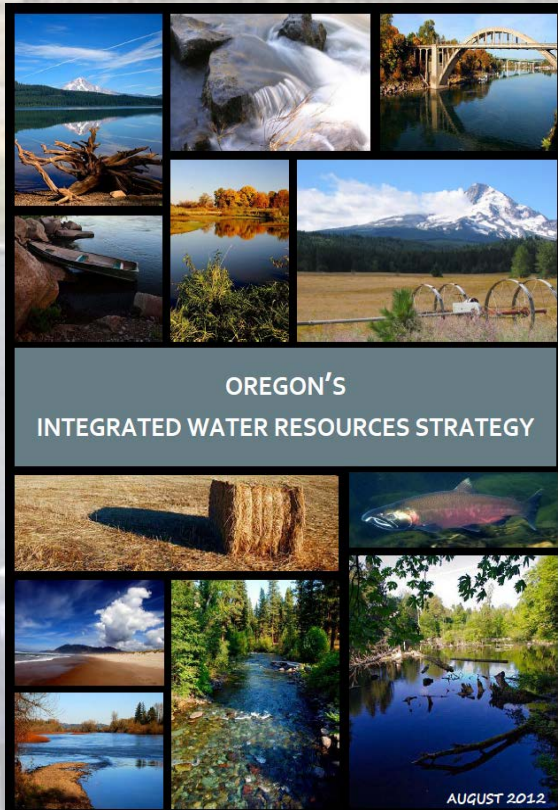
- 6 gage network goals
- 2 evaluations completed

The Monitoring Strategy for Surface Water and Groundwater is a continuation of this effort.

Why develop a Monitoring Strategy?

2. *Integrated Water Resources Strategy*

- Framework for understanding & meeting water needs
- Recommended actions 1b & 1c



Goal 1: Improve Our Understanding of Oregon's Water Resources

Understand Water Resources Today

Further Understand Limited Water Supplies & Systems
(groundwater, surface water and their interaction)

Improve Water Quality &
Water Quantity Information

Further Understand Our
Water Management Institutions

Understanding Water Resources / Supplies / Institutions

- 1a. Conduct additional groundwater investigations
- 1b. Improve water resource data collection and monitoring
- 1c. Coordinate inter-agency data collection, processing, and use in decision-making

Why develop a Monitoring Strategy?

3. Resources

- Install and maintain new gages & observation wells
- Infrastructure upgrades
 - Replace aging equipment
 - Maintain safety
- 5 new hires scientists and programmers



Why develop a Monitoring Strategy?

3. Resources

- Install and maintain new gages & observation wells
- Infrastructure upgrades
 - Replace aging equipment
 - Maintain safety
- 5 new hires
scientists and programmers

Efficient and effective use of resources



Why develop a Monitoring Strategy?

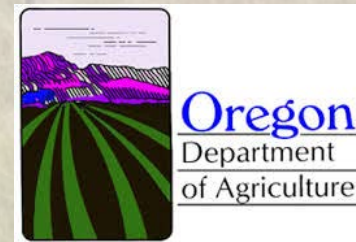
4. Key Performance Measures

KPM #	Key Performance Measures
4	Streamflow Gaging - increase number of stations
5	Assessing Groundwater Resources
6 & 7	Equip Citizens with Information – access to/use of data

Why develop a Monitoring Strategy?

5. *STREAM Team*

- **STR**ategic **E**nterprise **A**pproach to **M**onitoring
- Interactive monitoring strategies
- Collaborative decision making
- Water quality, water quantity, ecosystem services
- Inter-agency tools to improve communication



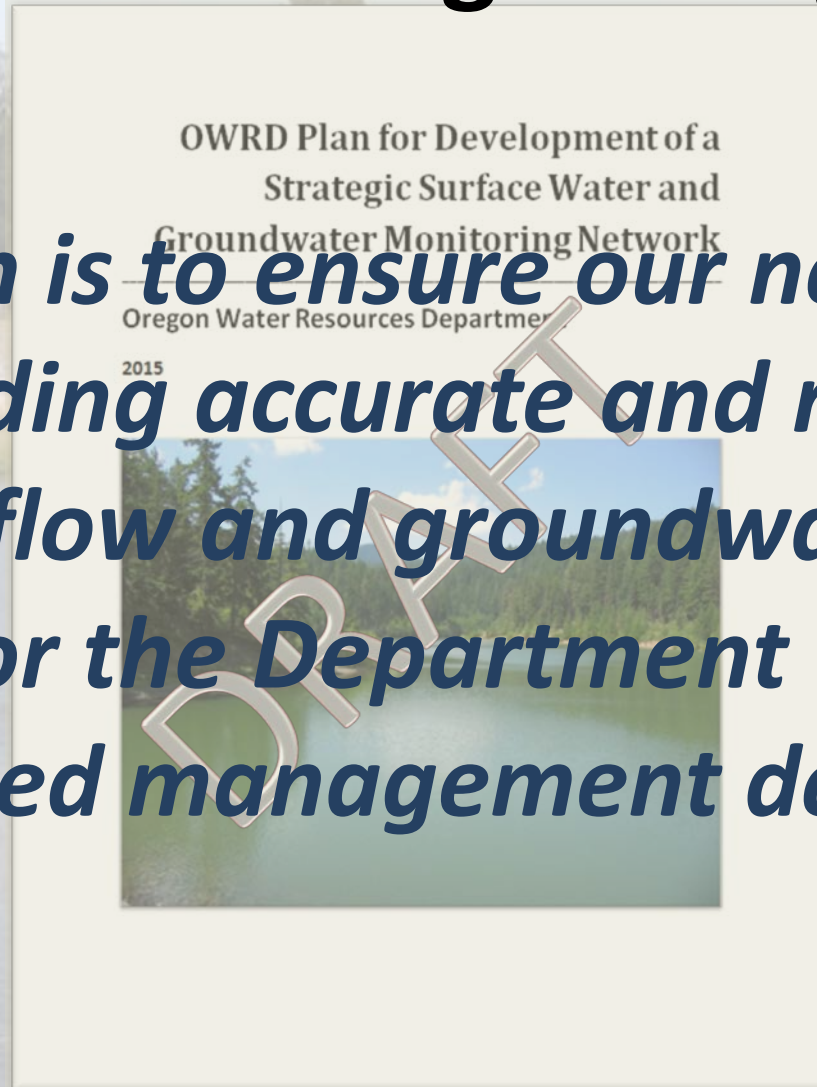
Monitoring Strategy

Our aim is to ensure our network is providing accurate and reliable streamflow and groundwater level data for the Department to make informed management decisions.










Monitoring Strategy

Our aim is to ensure our network is providing accurate and reliable streamflow and groundwater level data for the Department to make informed management decisions.



Monitoring Strategy Progress

	Protocols & Agreements
	Monitoring Network Objectives
	Decision Matrix & Evaluation Criteria
	Programs Assessment
	Evaluation of gages and wells
	List of prioritized sites
	Implement strategic network



Protocols & Agreements

- Cultural resource assessments
- Property access agreements
 - public and private
- Equipment purchasing and price agreement procedures

Coordinated effort

Field Services & Technical Services



Cultural Resources Protocol

Oregon State Historic Preservation Office

Prior to installing a new site:

- **Preliminary assessment**
 - Known archaeological site
- **Inadvertent discovery plan**
 - Site specific
 - List of contacts





Monitoring Network Objectives

- 1. Define hydrologic systems*
- 2. Ensure effective distribution*
- 3. Improve hydrologic modeling*
- 4. Improve short-term forecasting*
- 5. Conduct long-term trend analysis*
- 6. Relate network to program needs*



Decision Matrix & Evaluation Criteria

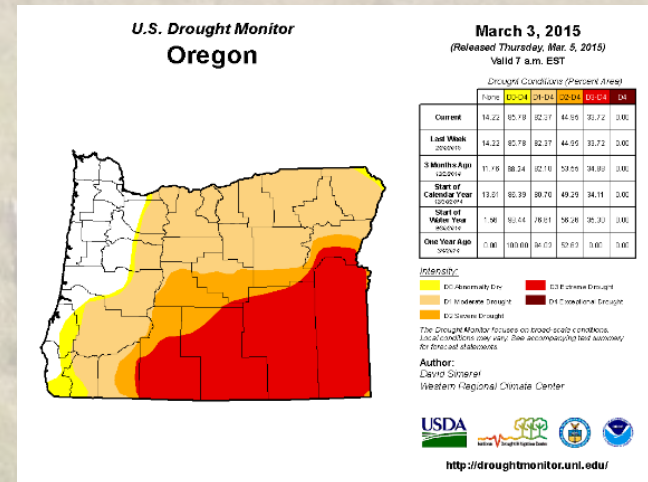
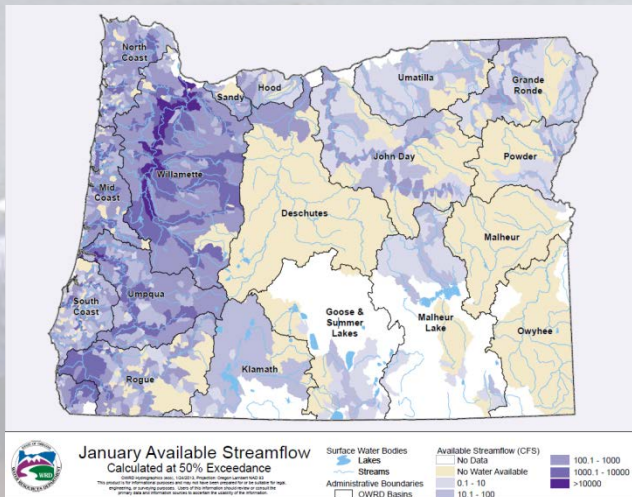
Table 3. Gage alternative evaluation for surface water distribution

Region	WM District	Gage #	Gage	Is the gage used to routinely distribute water and/or regulate users?	Does the gage monitor water where the cumulative demand on the stream typically exceeds available supply?	Would a gaging alternative negatively impact other users by decreasing available water they have a right to?	For gaged diversions or reservoirs, is the physical capacity in excess of the paper right?	Is the gage of high interests to other water users (routinely checked by other users, environment groups, etc.)?	Are there any other management reasons to operate the gage?	Total Score
SC	12	10366000	TWENTYMILE CR NR ADEL, OR	N	N	N	N/A	N	N	0
SC	12	10371500	DEEP CR AB ADEL, OR	N	N	N	N/A	N	N	0
SC	12	103910510	BUCK CR AB PAULINA MARSH NR SILVER LAKE, OR	N	N	N	N/A	N	N	0
SC	17	11491400	WILLIAMSON R BL SHEEP CR NR LENZ, OR	N	N	N	N/A	N	N	0
SC	17	11499100	SYCAN R BL SNAKE CR NR BEATTY, OR	N	N	N	N/A	N	N	0
SC	17	11510000	SPECNCER CR NR KENO, OR	N	N	N	N/A	Y	Y	2
E	8	13275300	POWDER R NR SUMPTER, OR	N	N	N	N/A	N	Y	1
NC	4	14039500	S FK JOHN DAY R NR DAYVILLE, OR	N	N	N	N/A	N	Y	1
NC	4	14040500	JOHN DAY R A PICTURE GORGE, NR DAYVILE, OR	N	N	N	N/A	N	N	0



Programs Assessment

- Part of the Decision Matrix
- Need for monitoring data
- Location of sites





Evaluation – Gages & Wells

- Each site analyzed using the decision matrix
 - Gages and wells
 - Current and proposed sites
- Methods
 - Collaborative decision making
 - Spatial analysis
- Results
 - List of prioritized sites
 - Report, GIS layers, and database



Implementation of Network

- **Current sites**
 - Maintain/upgrade
 - Decommission sites no longer useful
- **Establish new sites**
 - Determine accessibility to site
 - Agreement forms & permits
 - Cultural resource assessments
- **Install new gages and wells**



Implementation of Network

- **Current sites**
 - Maintain/upgrade
 - Decommission sites no longer useful
- **Establish new sites**
 - Determine accessibility to site
 - Agreement forms & permits
 - Cultural resource assessments
- **Install new gages and wells**

STRATEGIC MONITORING NETWORK

Products and Outcomes

- **Prioritized list of sites**
 - Current and new
- **Standard guidance**
 - Training
 - Equipment
 - Quality assurance
 - Data management
 - Permits/Agreements
- **Future updates**
 - Strategy
 - Network

OWRD Plan for Development of a
Strategic Surface Water and
Groundwater Monitoring Network

Oregon Water Resources Department

2015



Next Steps

- **September 2015** *(We will be back!)*
 - **Complete *Plan for Development of a Strategic Monitoring Network***
 - Decision Matrix
 - Programs Assessment
- **Fall 2015**
 - **Begin evaluation of current network**
 - List of prioritized sites
 - Report on results
- **Spring 2016**
 - **Implementation of Strategic Network**

Questions?

Mellony Hoskinson

Hydrographics / Technical Services

Oregon Water Resources Department

503-986-0832

Mellony.D.Hoskinson@wrd.state.or.us

