

# 6<sup>th</sup> Annual North Santiam Watershed Summit

## Drought Contingency Planning

May 12, 2016



## Introduction

The City of Salem is working with watershed stakeholders to develop the North Santiam Watershed (NSW) Drought Contingency Plan (DCP). The intent of the DCP is to identify critical priorities for water and seek alignment among the many basin stakeholders for how to address those priorities under drought conditions.

The DCP planning process involves working with several Work Groups and a Task Force to enable local stakeholders to collaboratively develop a coordinated response to drought in the North Santiam watershed. This includes:

- **Drought Monitoring** involves predicting and recognizing drought conditions
- **Vulnerability Assessment** identifies and evaluates the risks and impacts of drought
- **Mitigation Actions** reduce risks and impacts before drought
- **Response Actions** reduce impacts during drought
- **Operational and Administrative Framework** identifies roles and responsibilities
- **DCP Update Process** conducts post-drought evaluation to ensure effectiveness, and improve future implementation and response

The City of Salem's 2016 and 2017 annual North Santiam Summits are designed to contribute to the Drought Contingency Plan. Task force members, work group members and other stakeholders are invited to attend these day-long workshops. At the workshops, attendees have the opportunity to discuss process, identify gaps, and begin to understand the complexity of managing water for multiple purposes.

The 2016 North Santiam Summit was held on May 12, 2016 from 9:00 a.m. to 3:00 p.m. at the Marion County Public Works Facility (5155 Silverton Road NE, Salem). The goals of the Summit were to provide an interactive method to get early feedback in the drought planning effort on outcomes and values, and on the current work of the drought planning work groups: monitoring/data and vulnerability frameworks. Electronic polling, a panel discussion, roundtable and group discussions, and worksheets/feedback forms were used to collect feedback from participants and shown in the agenda below.

### Summit Agenda

1. Welcome / Introductions / Electronic Polling— <i>Who's in the room</i>
2. Drought Contingency Planning Project Overview: Expected Outcomes
3. Electronic Polling—Drought Planning Values
4. Lessons Learned in 2015—Facilitated Panel Discussion
5. Drought Monitoring Framework <ul style="list-style-type: none"><li>– Workshop Summary</li><li>– Roundtable worksheet / discussion on potential data sources</li><li>– Polling on data sources</li></ul>
6. Vulnerability Assessment <ul style="list-style-type: none"><li>– Workshop Summary</li><li>– Roundtable worksheet / discussion on key factors to drought resiliency</li><li>– Polling on resiliency factors</li></ul>
7. Planning Outcomes Group Discussion
8. Next Steps

More than 30 people participated (see sign-in sheet in Appendix) from multiple organizations and agencies:

- City of Salem
- Federal Lakes Recreation Committee Detroit Lake (FLRCDL)
- Marion County
- Marion Soil & Water Conservation District (MSWCD)
- National Weather Service (NWS)/ National Oceanic and Atmospheric Administration (NOAA)
- Norpac Foods
- North Santiam Watershed Council
- Oregon Department of Agriculture (ODA)
- Oregon Department of Fish & Wildlife (ODFW)
- Oregon Department of Forestry (ODF)
- Oregon Parks and Recreation Department, Detroit Lake State Park (OPRD)
- Oregon Water Resources Department (OWRD)
- Senator Ron Wyden's Office
- Santiam Water Control District (SWCD)
- US Army Corps of Engineers (USACE)
- US Forest Service – Detroit (USFS)
- USDA-Natural Resource Conservation Service (NRCS)
- Consultant team: GSI, David Evans, Barney & Worth, Inc.



Participants learn more about the North Santiam Watershed Drought Contingency Plan project.

## Participant Feedback

### Agenda Item 1. Who is in the room?

Results of the electronic polling show participants attended the Summit anticipating they would have an opportunity to provide input and learn more about the drought planning effort.

I am here today to:	Response
• Provide input	42%
• Learn more about drought planning	31%
• I'm here for the free lunch!	17%
• Network	11%

A good representation of interests participated with a mix of agriculture, environmental, municipal water, recreation, and forestry people. Twenty-three percent of participants selected “other” as response. These participants were involved in water management and weather forecasting. These participants represent federal, state, county, city, special districts, private company and non-profits.

<b>My work focuses on:</b>	<b>Response</b>	<b>My work focuses on:</b>	<b>Response</b>
• Agriculture	27%	• Municipal water	14%
• Other	23%	• Recreation	14%
• Environmental	18%	• Forestry	5%
<b>I work for a:</b>	<b>Response</b>		
• Federal agency	22%		
• State	22%		
• County	17%		
• City	13%		
• Private company	13%		
• Non-profit	9%		
• Special District	4%		

50% of attendee have been working in the North Santiam watershed for more than 10 years, 13% more than 5 years. This was a balance, with 38% of participants fairly new to the area. The most voted for reason participants like work their work is the challenge of managing for multiple uses.

<b>I have been working in the North Santiam watershed for:</b>	<b>Response</b>
• A few years	38%
• More than 5 years	13%
• More than 10 years	29%
• A very long time	21%

<b>What I like most about my work in the watershed:</b>	<b>response</b>
• The challenge of managing for multiple uses	36%
• Improving the watershed	23%
• Collaborating with partners	18%
• Providing services to constituents	14%
• Being on the river / in the watershed	9%



## **Agenda Item 2. Drought Contingency Planning Project Overview: Expected Outcomes**

Patricia Farrell, City of Salem provided background on the reasons for drought planning, and an overview of the Drought Contingency Planning Project, cost sharing partners, project schedule and the six expected outcomes of the drought plan.

## **Agenda Item 3. Drought Planning Values**

Participants were asked to rank how important the following drought planning values are on a scale of 1 (not important) to 7 (very important)?

Top-tier values (1<sup>st</sup> and 2<sup>nd</sup>) include the value of the resource and various cooperative planning efforts. The 3<sup>rd</sup> tier value relates to the need for more flexibility in responding to drought than is currently available. Following established protocols was the lowest ranked value.

### *1<sup>st</sup> tier values:*

- The watershed is a shared resource valued by all. (Mean: 6.39)
- Drought planning should be an ongoing, iterative effort. (6.33)

### *2<sup>nd</sup> tier*

- Good interagency communications is vital for effective drought response. (6.17)
- Impacts to multiple variables (e.g. public health, economic, recreation, environmental and others) should be considered to prioritize drought vulnerabilities. (6.09)
- Impacts of drought mitigation and response should be a coordinated effort across all water users. (6.00)

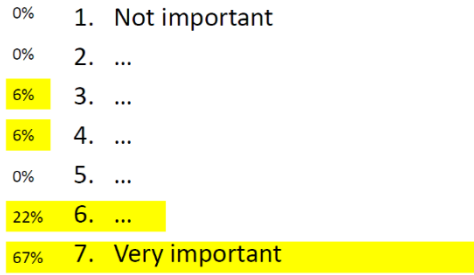
### *3<sup>rd</sup> tier*

- Drought planning solutions should be more flexible than current established protocols. (5.54)

### *Lowest tier*

- Drought planning solutions should follow established protocols (e.g. senior water-prior appropriations, reservoir management, Willamette BiOp, etc.). (4.88)

Following are the detailed polling results with graphs showing the range of participants' values. Top-tiered results are generally supported by all attendees. The lower ranking values have more diverse responses—showing a lack of agreement among attendees.

Value	Mean	Graphs																								
The watershed is a shared resource valued by all.	6.39	 <table><thead><tr><th>Rank</th><th>Description</th><th>Percentage</th></tr></thead><tbody><tr><td>1</td><td>Not important</td><td>0%</td></tr><tr><td>2</td><td>...</td><td>0%</td></tr><tr><td>3</td><td>...</td><td>6%</td></tr><tr><td>4</td><td>...</td><td>6%</td></tr><tr><td>5</td><td>...</td><td>0%</td></tr><tr><td>6</td><td>...</td><td>22%</td></tr><tr><td>7</td><td>Very important</td><td>67%</td></tr></tbody></table>	Rank	Description	Percentage	1	Not important	0%	2	...	0%	3	...	6%	4	...	6%	5	...	0%	6	...	22%	7	Very important	67%
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Good interagency communications is vital for effective drought response.	6.17	<div><div>0%</div><div>1. Not important</div></div> <div><div>0%</div><div>2. ...</div></div> <div><div>0%</div><div>3. ...</div></div> <div><div>4%</div><div>4. ...</div></div> <div><div>25%</div><div>5. ...</div></div> <div><div>21%</div><div>6. ...</div></div> <div><div>50%</div><div>7. Very important</div></div>
Impacts to <u>multiple</u> variables (e.g. public health, economic, recreation, environmental and others) should be considered to prioritize drought vulnerabilities.	6.09	<div><div>0%</div><div>1. Not important</div></div> <div><div>0%</div><div>2. ...</div></div> <div><div>5%</div><div>3. ...</div></div> <div><div>5%</div><div>4. ...</div></div> <div><div>14%</div><div>5. ...</div></div> <div><div>32%</div><div>6. ...</div></div> <div><div>45%</div><div>7. Very important</div></div>
Impacts of drought mitigation and response should be a coordinated effort across all water users.	6.00	<div><div>0%</div><div>1. Not important</div></div> <div><div>0%</div><div>2. ...</div></div> <div><div>0%</div><div>3. ...</div></div> <div><div>0%</div><div>4. ...</div></div> <div><div>35%</div><div>5. ...</div></div> <div><div>31%</div><div>6. ...</div></div> <div><div>35%</div><div>7. Very important</div></div>
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#### **Agenda Item 4. Lessons Learned in 2015—Facilitated Panel Discussion**

A panel of North Santiam watershed stakeholders and water resource managers participated in a facilitated discussion about the 2015 drought and answered attendees' questions. Panel members included:



- Dwayne Barnes, Water System Manager, City of Salem
- Karen Hans, STEP Biologist, Oregon Department of Fish & Wildlife
- Grady McMahan, District Ranger, US Forest Service
- Margaret Matter, PhD, Water Resource Specialist, Oregon Department of Agriculture
- Mary Karen Scullion, Portland District Willamette Valley Reservoir Regulator, US Army Corps of Engineers
- Brent Stevenson, District Manager, Santiam Water Control District

Questions and a summary of the discussion follows:

*What happened—what was unexpected? How did you cope?*

Panelists agreed that the severity of the 2015 drought meant they were not sure what might happen—but they were prepared to monitor the situation and make changes as needed. Examples included the US Army Corp of Engineers' need for fast inter-agency decisions on flow management, Oregon Department of Fish & Wildlife's fishing restrictions, and US Forest Service's response to recreation users flocking away from the reservoir to the upper watershed's streams, increased driving in the dry lake bed and disturbance to historical artifacts.

*How did you communicate with the public, partners, your leadership?*

Oregon Department of Fish & Wildlife and the US Forest Service reported that communications with the public were well received by the public, but that communications across watershed partners could be improved. Others agree that more coordinated communications would improve public, partners' and leadership's understanding of the drought issue and responses.

*What lessons did you learn? What would your agency do differently?*

- Santiam Water Control District: Just communicating with the public is not going to solve the problem—it isn't a means to manage operations. What is required now is for partners to discuss and plan for an unknown future. The climate is changing, now is the opportunity to be better prepared.
- US Army Corps of Engineers: Need to have a plan to deal with winter/summer droughts.
- Oregon Department of Fish & Wildlife: The public was very supportive of actions their department took in response to the drought. "People want us to protect the resources."
- US Forest Service: There is a need to plan ahead—to be ready. Relationships are very important. We are working with the public marinas and our partners.
- City of Salem: The City needs a secondary source of water in case of earthquakes or other natural disasters, including drought, as well as being ready to curtail water use.
- Oregon Department of Agriculture: The Department can help with communicating with the agriculture community.

Andy Bryant with the National Weather Service (NWS) / National Oceanic and Atmospheric Administration also reported that their group would like to help coordinate messaging with the partners and help with a shared response mechanism.

### **Agenda Item 5. Drought Monitoring Framework**

An overview of the drought monitoring framework was presented including questions the framework was endeavoring to answer and early objectives.

#### **Drought Monitoring Framework Questions**

- How many levels of drought should be used?
- What indicators should be included?
- What are the triggers for each indicator?
- What data sources should be used?
- What are the key dates or time periods for monitoring?

#### **Early Objectives**

- ✓ Determine system-wide
- ✓ warning signs
- ✓ Utilize existing readily available information.
- ✓ Integrate with federal, state and local monitoring efforts.
- ✓ Start simple; adapt and improve over time.



Examples of levels of droughts used by other organizations were also shared. Following the presentation, attendees completed worksheets, and participated in a roundtable discussion that concluded with electronic polling. The results below include electronic polling and written comment from the worksheets.

<b>How many levels of drought should be used for the watershed drought plan?</b>	
36%	Create a more complex system: 4-5 stages
21%	Use an existing more complex system
18%	Create a simple system: 2-3 stages
13%	Use an existing simple system

#### **Use Existing**

- US Drought Monitor but scale it to the basin level
- US Drought Monitoring system – needs consistency
- U.S. Drought Monitor categories? Do the “heads up” for developing or near-threshold conditions
- Use an existing simple system to match weather service; ok, advisory, watch, warn, drought
- Use an existing more complex system, 4-5 steps – use examples
- External/Internal – combine data from existing systems
- Use current system in tandem with new plans; start simple and build/adapt
- Depends on target audience. Improve existing simple system as needed (for public use); improve existing complex system as needed (for use of regulators and water managers)

#### **Stages**

- Include a “heads up” stage
- 1 Heads Up, 2 Low, 3 Mid, 4 High, 5 Crisis
- 4 steps, but 1<sup>st</sup> can be the normal status so you could call it 3 if you don't count #1

#### **Easy for Public Communications**

- An easy overlapping matrix
- Easy for public/concern over public fright
- Common language for the public and messaging

#### **Unique System**

- N. Santiam has a unique set of challenges/characteristics/users and should be addressed with a tailored drought management plan

<b>What type of indicators should be used? (Multiple choices allowed)</b>	
17%	Snowpack
16%	Rainfall
15%	Stream flows into Detroit reservoir
14%	Temperature
14%	Reservoir level
11%	Flows out of the reservoir
7%	Fish runs

#### **Water**

- Water-use data, H2O quality data
- Water temperatures

- Groundwater storage?
- Flows out of the reservoir – more of effect than cause
- Snow water equivalent
- Natural flow vs. stored water
- The key factor is whether the reservoir is likely to run dry
- Maybe projected withdrawals downstream

#### **Soils**

- Normal wet areas now dry
- Soil moisture; groundwater levels; fire danger

#### **Climate Forecasting**

- Climate outlook – even though there is a lot of uncertainty they have some usefulness!
- Water temperatures, monthly & seasonal temperature/precipitation outlooks, seasonal water supply forecasts
- Historical data showing usage of water

#### **Feedback from Public**

- Human input
- Farmers, those deeply in touch w/ resources
- Human factor is less accurate but still valid

#### **Other:**

- Unmanaged vs. managed/mitigated factors. We should focus on “natural” factors such as water coming into the reservoir vs. water that is released from the reservoir
- Any data collected should be melded into a larger, universal graphic – a common operating picture for everyone to use

<b>Which data sources do you use? (Multiple choices allowed)</b>	<b>Use</b>
National Weather Service Climate Prediction Center (NWS-CPC)	17%
USACE Willamette Project Teacup Diagrams	16%
NRCS Water Supply and Reservoir Storage Reports (& SNOTEL sites in basin)	13%
USGS Streamflows Water Watch website	13%
Northwest River Forecast Center Water Supply Forecast	10%
NOAA Climate Prediction Center, Drought Information website	10%
OWRD Drought Watch website	8%
National Drought Mitigation Center US Drought Monitor	6%
USBOR AgriMet Climate Station (Detroit)	6%
<b>Others you know and use:</b> <ul style="list-style-type: none"> <li>• River gauges</li> <li>• NRCS has a lot of products</li> <li>• USACE Drought Watch Website (NWP – Missions Water-Drought)</li> <li>• NOAA/NWS Remote Sensing Center (analysis of snow-covered area &amp; snow water content)</li> <li>• USGS Datagrapher</li> </ul>	

What is the most appropriate time period for group monitoring of watershed conditions?	
72%	Year-round
14%	Spring-Summer
14%	Only start when agencies agree there is a potential for drought
0%	Summer

**Other comments:**

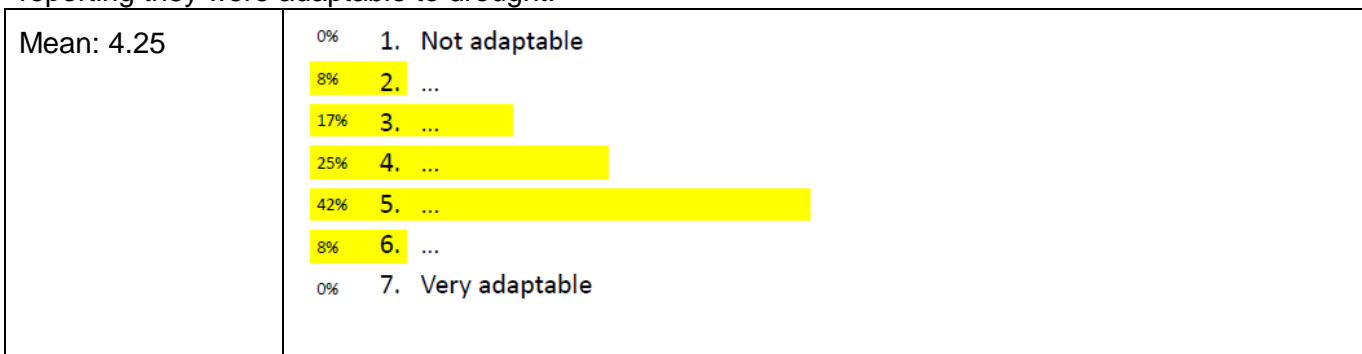
- Year round favored by group – changing climate so drought may occur in any month
- Needs to be continuous – with data available to all
- Meet quarterly to discuss and provide situational awareness communicate with stakeholders
- Watching winter snow and temp is important and watching spring refill is important—are the reservoirs going to fill?
- Winter snow pack monitoring data should be incorporated
- Spring/Fall – prep/debrief, following water year
- January-May is most critical – early spring rainfall
- With emphasis at particular times
- Need flexibility here. Should be more group interaction before/during/after drought instances
- How do we track carryover effect from previous year?
- What are the carry-over effects from one water year to the next?
- Monthly but highlight key dates or check-in periods. End of water year debrief

### **Agenda Item 6. Vulnerability Assessment**

An overview of the vulnerability assessment was presented. The objective of the vulnerability assessment is to evaluate the risks and impacts of drought. The approach is to identify and catalog the assets and resources that are at risk.

As with the drought monitoring agenda item, following the presentation, attendees completed worksheets, and participated in a roundtable discussion that concluded with electronic polling. The results below include electronic polling and written comment from the worksheets.

Participants were asked how adaptable they were to drought on a scale of 1 (not adaptable) to 7 (very adaptable). A range of adaptability was reported from a few saying they had low adaptability to 50% reporting they were adaptable to drought.



- Different crops can be planted in some areas and different scheduling and irrigation methods and strategies can minimize water use in critical periods.
- It takes a whole community to have the ability to adapt.

- Emergency management is reactionary; however Marion County is wanting to take a proactive approach to focus efforts of prevention and protection to improve response by identifying mitigation action items.
- To do any changes on the ground i.e., moving boat docks we still have to abide by NEPA and ESA consultation. So we are somewhat limited in acting quickly, but we are very adaptable where we can.
- The City of Salem only has one source of drinking water & limited storage.
- The will is there. Oregon doesn't yet have enough experience to effectively adapt.
- NRCS is very dependent on the amount of yearly funding we receive to work on projects to address drought conditions.
- NWS can provide useful info and data and adapt this to the needs. We are increasingly flexible in how we deliver and package this information.
- Our organization adapts on two fronts; one is to adapt to low water supply, and second to be responsive to constituents.
- We can curtail use to a point but still need to maintain fire flow and sanitary/health needs.

Participants were also asked to rank how different actions to improve watershed drought resiliency ranked on a scale of 1 (not useful) to 7 (very useful).

The very top tier action is to diversify sources of water—the most sure method of being adaptable to drought in the North Santiam watershed. A number of 2<sup>nd</sup> tier actions include actions that agencies could take that help manage their water systems. 3<sup>rd</sup> tier actions focus on communications, partnerships and managing the cost of water, which were viewed as action with less reliability to actually result in less water use. At the bottom are updating water laws, water banking and regulation enforcement.

*1<sup>st</sup> tier action:*

- Diversify sources of water (Mean: 6.24)

*2<sup>nd</sup> tier*

- Rehabilitate old infrastructure (5.70)
- Create drought planning / response partnerships (5.67)
- Invest in monitoring improvements (5.50)
- Build new/enhance diversion/storage facilities (5.44)
- Use less water (5.26)
- Make operational changes (5.24)
- Store more water (5.23)

*3<sup>rd</sup> tier*

- Develop better communication channels between water users (4.91)
- Share water resources through partnerships (4.52)
- Price water differently (4.52)

*4<sup>th</sup> tier*

- Update water laws (3.95)
- Provide mechanism for water banking / transfer / leasing programs (3.83)
- Increase investment in water regulation enforcement (3.13)

Following are the detailed polling results with graphs showing range of participants' values. As with the drought planning values, top-tier results are generally supported by all attendees. The lower ranking values have more diverse responses—showing a lack of agreement among attendees.

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Action	Mean	Distribution
Build new/enhance diversion/storage facilities	5.44	<p>0% 1. Not useful</p> <p>6% 2. ...</p> <p>0% 3. ...</p> <p>13% 4. ...</p> <p>31% 5. ...</p> <p>25% 6. ...</p> <p>25% 7. Very useful</p>
Use less water	5.26	<p>5% 1. Not useful</p> <p>11% 2. ...</p> <p>11% 3. ...</p> <p>5% 4. ...</p> <p>11% 5. ...</p> <p>11% 6. ...</p> <p>47% 7. Very useful</p>
Make operational changes	5.24	<p>0% 1. Not useful</p> <p>5% 2. ...</p> <p>0% 3. ...</p> <p>24% 4. ...</p> <p>29% 5. ...</p> <p>24% 6. ...</p> <p>19% 7. Very useful</p>
Store more water	5.23	<p>0% 1. Not useful</p> <p>8% 2. ...</p> <p>8% 3. ...</p> <p>23% 4. ...</p> <p>8% 5. ...</p> <p>23% 6. ...</p> <p>31% 7. Very useful</p>

Action	Mean	Distribution																								
Develop better communication channels between water users	4.91	<p>A horizontal bar chart with 7 bars representing ratings from 1 to 7. The bars are yellow. The percentages and labels are: 9% 1. Not useful, 0% 2. ..., 5% 3. ..., 27% 4. ..., 14% 5. ..., 27% 6. ..., 18% 7. Very useful.</p> <table border="1"> <thead> <tr> <th>Rating</th> <th>Percentage</th> <th>Description</th> </tr> </thead> <tbody> <tr><td>1</td><td>9%</td><td>Not useful</td></tr> <tr><td>2</td><td>0%</td><td>...</td></tr> <tr><td>3</td><td>5%</td><td>...</td></tr> <tr><td>4</td><td>27%</td><td>...</td></tr> <tr><td>5</td><td>14%</td><td>...</td></tr> <tr><td>6</td><td>27%</td><td>...</td></tr> <tr><td>7</td><td>18%</td><td>Very useful</td></tr> </tbody> </table>	Rating	Percentage	Description	1	9%	Not useful	2	0%	...	3	5%	...	4	27%	...	5	14%	...	6	27%	...	7	18%	Very useful
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6	27%	...																								
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Share water resources through partnerships	4.52	<p>A horizontal bar chart with 7 bars representing ratings from 1 to 7. The bars are yellow. The percentages and labels are: 0% 1. Not useful, 19% 2. ..., 10% 3. ..., 14% 4. ..., 29% 5. ..., 14% 6. ..., 14% 7. Very useful.</p> <table border="1"> <thead> <tr> <th>Rating</th> <th>Percentage</th> <th>Description</th> </tr> </thead> <tbody> <tr><td>1</td><td>0%</td><td>Not useful</td></tr> <tr><td>2</td><td>19%</td><td>...</td></tr> <tr><td>3</td><td>10%</td><td>...</td></tr> <tr><td>4</td><td>14%</td><td>...</td></tr> <tr><td>5</td><td>29%</td><td>...</td></tr> <tr><td>6</td><td>14%</td><td>...</td></tr> <tr><td>7</td><td>14%</td><td>Very useful</td></tr> </tbody> </table>	Rating	Percentage	Description	1	0%	Not useful	2	19%	...	3	10%	...	4	14%	...	5	29%	...	6	14%	...	7	14%	Very useful
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Price water differently	4.52	<p>A horizontal bar chart with 7 bars representing ratings from 1 to 7. The bars are yellow. The percentages and labels are: 10% 1. Not useful, 5% 2. ..., 14% 3. ..., 10% 4. ..., 33% 5. ..., 14% 6. ..., 14% 7. Very useful.</p> <table border="1"> <thead> <tr> <th>Rating</th> <th>Percentage</th> <th>Description</th> </tr> </thead> <tbody> <tr><td>1</td><td>10%</td><td>Not useful</td></tr> <tr><td>2</td><td>5%</td><td>...</td></tr> <tr><td>3</td><td>14%</td><td>...</td></tr> <tr><td>4</td><td>10%</td><td>...</td></tr> <tr><td>5</td><td>33%</td><td>...</td></tr> <tr><td>6</td><td>14%</td><td>...</td></tr> <tr><td>7</td><td>14%</td><td>Very useful</td></tr> </tbody> </table>	Rating	Percentage	Description	1	10%	Not useful	2	5%	...	3	14%	...	4	10%	...	5	33%	...	6	14%	...	7	14%	Very useful
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Update water laws	3.95	<p>A horizontal bar chart with 7 bars representing ratings from 1 to 7. The bars are yellow. The percentages and labels are: 14% 1. Not useful, 10% 2. ..., 14% 3. ..., 29% 4. ..., 10% 5. ..., 10% 6. ..., 14% 7. Very useful.</p> <table border="1"> <thead> <tr> <th>Rating</th> <th>Percentage</th> <th>Description</th> </tr> </thead> <tbody> <tr><td>1</td><td>14%</td><td>Not useful</td></tr> <tr><td>2</td><td>10%</td><td>...</td></tr> <tr><td>3</td><td>14%</td><td>...</td></tr> <tr><td>4</td><td>29%</td><td>...</td></tr> <tr><td>5</td><td>10%</td><td>...</td></tr> <tr><td>6</td><td>10%</td><td>...</td></tr> <tr><td>7</td><td>14%</td><td>Very useful</td></tr> </tbody> </table>	Rating	Percentage	Description	1	14%	Not useful	2	10%	...	3	14%	...	4	29%	...	5	10%	...	6	10%	...	7	14%	Very useful
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7	14%	Very useful																								
Provide mechanism for water banking / transfer / leasing programs	3.83	<p>A horizontal bar chart with 7 bars representing ratings from 1 to 7. The bars are yellow. The percentages and labels are: 22% 1. Not useful, 22% 2. ..., 0% 3. ..., 6% 4. ..., 11% 5. ..., 33% 6. ..., 6% 7. Very useful.</p> <table border="1"> <thead> <tr> <th>Rating</th> <th>Percentage</th> <th>Description</th> </tr> </thead> <tbody> <tr><td>1</td><td>22%</td><td>Not useful</td></tr> <tr><td>2</td><td>22%</td><td>...</td></tr> <tr><td>3</td><td>0%</td><td>...</td></tr> <tr><td>4</td><td>6%</td><td>...</td></tr> <tr><td>5</td><td>11%</td><td>...</td></tr> <tr><td>6</td><td>33%</td><td>...</td></tr> <tr><td>7</td><td>6%</td><td>Very useful</td></tr> </tbody> </table>	Rating	Percentage	Description	1	22%	Not useful	2	22%	...	3	0%	...	4	6%	...	5	11%	...	6	33%	...	7	6%	Very useful
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6	33%	...																								
7	6%	Very useful																								

Action	Mean	Distribution
Increase investment in water regulation enforcement	3.13	<p>17% 1. Not useful</p> <p>35% 2. ...</p> <p>13% 3. ...</p> <p>9% 4. ...</p> <p>13% 5. ...</p> <p>4% 6. ...</p> <p>9% 7. Very useful</p>

#### Additional actions:

- Increase floodplain storage
- Thinning in forests (where really dense)

#### What are some limiting factors and potential incentives for improving watershed resiliency?

##### Limiting factors

- Existing water law; city revenue
- Cities make money from water delivery vs. conservation
- Public not aware of the true value of water
- Pricing water to its value
- Subsidized Ag – cost to consumers
- Politics, budget/funding, laws
- Funding
- Often monetary and political
- Cost of operations, resources, infrastructure, funding. Buy-in feasibility
- Money, sustainability, staffing
- Money/economic impact
- More storage would be very helpful but projects are typically stopped by very few complainants
- Different needs
- The limiting factor for the City of Salem is the elevation of our intake and its ability to collect water at low flow levels
- Max volume of Detroit Reservoir (no more storage potential)
- High uncertainty in short-term (<2 weeks) and long-term (monthly/seasonal) forecasts.

##### Incentives

- More aware community, better plan workforce, greater opportunities for funding sources.
- Public awareness, continuity of community response
- Financial
- Financial incentives rebates or some reward/acknowledgement
- Clear goals/reclaimed water
- Funding – Marion County being the largest irrigated county in Oregon and #1 agricultural producing County is dependent on water to be successful
- Forest (reduce uptake)
- Spring rain (cloud seeding)

## **Agenda Item 7. Planning Outcomes Group Discussion**

Summit participants completed a worksheet and participated in a group discussion on what they would like to see as the outcomes of the planning efforts. Following are the results of the worksheet and notes from the group discussion.

<b>Qty</b>	<b>What outcomes from the planning process will be most useful to your organizations?</b>
18	Identify mitigation actions for implementation before drought conditions
17	Identify response actions for implementation during drought conditions
16	Develop a framework for administering the plan, and updating it on a regular basis
15	Identify critical water supply needs (i.e., vulnerabilities)
11	Define drought conditions

### **Other outcomes:**

- NWS is part of the Oregon Water Availability Committee which is looking at more objective measures for statewide drought condition identification. It would be good to at least maintain communication between NSWC and state reps on this topic
- Keep in mind the need on the possibility that flexibility and adaptability are needed
- Help/suggestion on how Marion Co. can assist
- Identify trigger/action/implementation for each level of drought
- Recommend policy/procedural strategies
- Framework for multiple drought years in a row. What would downstream users do if there were no Detroit Dam? (Due to failure or dam removal.)
- Developing the framework and be able to find partners that could help (NRCS) by applying for RCPP – Regional Conservation Partnership Program. Which plan can be administrated?
- Planning is a good thing
- Make the plan useable, not just another 3-ring binder on the shelf; ODFW knows when there is a drought, we need a framework for working with other agencies
- Continue to rethink how we use water and how we can use water wiser
- Plan to increase storage and ground water absorption by some significant percentage

### **What would make the plan a success for you and your organization?**

#### **Triggers**

- Define levels of drought along with real action steps to take
- Agriculture, and any group, would have sufficiently accurate and timely information to take appropriate steps
- A logical definition of drought stages

#### **Resiliency**

- If it resulted in additional storage, diversified supplies for cities and other overall systems improvements
- Keep more water in the river
- Plan that would put us more firmly on a path to a naturally sustainable society--adoption of permaculture principles for the good times as well as the bad
- See water waste dramatically reduced toward zero

## **Mitigation**

- Identifying mitigation factors for implementation
- Actionable goals and objectives that are feasible and have a time constraint
- Implemented quickly if conditions would change in a rapid manner. As reacting to a sudden storm system going on, to capture as much water as possible
- It helped make decisions for resourcing water outflows from Detroit Dam
- If it would could be used as a drought contingency to plan for the water control manuals
- Being ready to implement good water conservation measures during drought

## **Communications**

- To have enough communication to forecast as best as possible; what's the "trickled down" effect for administering drought restriction; idea bouncing for education/outreach to water stakeholder & communities that will be potentially impacted
- If we're more aware of the thresholds for drought impacts and the specifics of those impacts, we can provide more useful information and forecasts via the news media and social media
- All stakeholders should take common message
- Add ability to come up with a common message in spite of conflicting priorities
- Agreed-upon plan/criteria for all groups in the N. Santiam Watershed. Improve and focus communications throughout these groups
- If I knew what others were doing and they know what we can do
- To understand what role we can have and play to help this basin-wide effort
- To have our users and needs heard/understood

## **Other**

- That the plan would then "trickle down" to our City planning level
- One that is feasible and supported by the stakeholders
- Generally, it's successful if it works, that is, the consequences of a drought were reduced because of the plan



## **What ongoing organizational/partnership structure would work best for your organization?**

Note: The group agreed that the organization would depend on how complex the plan is and what level of commitment would be required from organizations.

### **Timing**

- I think an annual group with working subgroups would be good and regular (monthly) or more frequent communications
- One that is ongoing and doesn't just meet in time of disaster. Not making decisions in a vacuum
- Monthly update; could be as simple as email or a conference call, and quarterly meetings with stakeholders
- Quarterly meetings or monthly check-ins
- Regular meetings bi-monthly in winter, monthly in summer, where each of the stakeholders provides status and share concerns

### **Representation**

- Management by objective using a functional rep from each category
- This group should continue to meet occasionally
- We already have an established working relationship with county and city emergency management, so if there is a way to tie in drought information (in more detail) through this communication!
- Council of Governments
- Some variation of a technical advisory group
- Federal/State/local government with input from private stakeholders
- Implemented by OWRD
- An ongoing group that would review, implement plan – keep communication with a “working group”. Kind of like USACE phone calls
- Having partnership that have the same goals and objectives that can move projects forward with matching funding toward conserving water resources
- ODFW is at the table; fish and wildlife given due consideration

## **What advice do you have for the planning workgroups and project team?**

### **Format**

- Utilize a recognized method & format for the plan. Place executive summary and include actions steps as simple tear-out from plan
- Get as specific as possible – ease of implementation and for possible funding opportunities
- Keep it more simple than voluminous and have room for adaptive management
- Make plan as flexible – i.e., adaptive as possible

### **Partnerships**

- Work with state reps from Oregon Water Resources Dept.
- Seek to understand other viewpoints
- Listen to all input, then rank solutions on cost/benefit
- Keep people engaged and involved

### **Learn from Others**

- No need to reinvent the wheel. Look to the South and East. Look at lessons learned and methods from those who have already gone through the process
- Leverage Water 2100 work
- Utilize CPC & HWRFC forecast tools

## **Other**

- Think about sustainability
- Keep your eye on the target. Make water resources number one priority on addressing current and future
- Consider regulatory ESA hurdles as limiting factors to improving resiliency but not roadblocks
- Use best global view to identify and encourage as many low cost local solutions as possible
- Restoration of natural forest especially streamside and riparian areas
- Fish/fishers, farmers, trees and other animals including people retain or gain the ability to produce a long, long line of children, grandchildren, etc.

## **What does success look like? (Group discussion summary)**

### **Outcomes**

- ✓ Fish survive
- ✓ Incrementally better
- ✓ Plan leads to need for sustainable water use
- ✓ Maximize water use w/o waste (stop leaks, educate, efficiency of use inflow vs. consumption)
- ✓ What didn't happen (economic loss, Detroit)
- ✓ Most Useful: Response actions > Something happens / Mitigation > Something happens

### **Communications/Roles**

- ✓ Method for all stakeholders to be heard
- ✓ Know what each other are doing
- ✓ Clear roles
- ✓ Actions, steps
- ✓ Understanding steps/path forward for each
- ✓ Defining drought/triggers for everyone
- ✓ Partner with other agencies
- ✓ What role can an organization play?
- ✓ How to manage? Organize?
- ✓ Local work group
- ✓ Formal and more inclusive
- ✓ Who's using the water? Make sure at table
- ✓ Similar effect at state level – coordinate

### **Funding/Projects**

- ✓ Ways to tie to funding via plan
- ✓ Encourage small cost effective projects
- ✓ ID clear mitigation projects/actions for future funding
- ✓ ID high priority/biggest bang
- ✓ 10s of millions of money available (low competition now)
- ✓ Have mitigation projects "ready to go" for grant money
- ✓ Mitigation projects to address key vulnerable assets

## **Other**

- ✓ Could use to update USACE plan
- ✓ Depends on mitigation/response actions
- ✓ If actions/plan clear then "runs itself"
- ✓ Review WW2100/climate prediction
- ✓ Keep simple/adaptive management
- ✓ Is there value to centralized organization?
- ✓ What happens in multi-year drought?

### **Agenda Item 8. Next Steps**

A preview of the drought planning process through May 2017 was presented at the conclusion of the meeting.

Now-December	Workgroups develop recommendations for: Drought monitoring Vulnerability Assessment Response and Mitigation Actions Operational Framework and plan Update Public Outreach / North Santiam Watershed Council
March 2017	Draft Plan issued Annual Basin Summit
May 2017	Drought Contingency Plan

## Appendix

- Participants
- Agenda
- Worksheets
- Summit Comment Form
- PowerPoint Presentation

## Summit Participants

1. Mark Steele	Norpac Foods	<a href="mailto:steele@norpac.com">steele@norpac.com</a>
2. Randy Beniz	Norpac Foods	<a href="mailto:rbentz@norpac.com">rbentz@norpac.com</a>
3. Dwayne Barnes	City of Salem	<a href="mailto:dbarnes@cityofsalem.net">dbarnes@cityofsalem.net</a>
4. Adam Crateau	Marion Co.	<a href="mailto:acrateau@co.marion.or.us">acrateau@co.marion.or.us</a>
5. Rebecca McCoun	North Santiam Watershed Council	<a href="mailto:council@northsantiam.org">council@northsantiam.org</a>
6. Meredith Hoffman	Marion SWCD	<a href="mailto:Meredith.Hoffman@marionswcd.net">Meredith.Hoffman@marionswcd.net</a>
7. Donald Cavanaugh CPT	US Army Corps of Engineers	<a href="mailto:donald.f.cavanaugh@usace.army.mil">donald.f.cavanaugh@usace.army.mil</a>
8. Alyssa Mucken	Oregon Water Resources Dept.	<a href="mailto:alyssa.m.mucken@state.or.us">alyssa.m.mucken@state.or.us</a>
9. Fritz Graham	Sen. Wyden	<a href="mailto:Fritz_graham@wyden.senate.gov">Fritz_graham@wyden.senate.gov</a>
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11. Adam Sussman	GSI	<a href="mailto:asussman@gsiws.com">asussman@gsiws.com</a>
12. Dave Carpenter	ODF	<a href="mailto:dcarp@wvi.com">dcarp@wvi.com</a>
13. Karen Hans	ODFW	
14. Jason Pulley	City of Salem	<a href="mailto:jpulley@cityofsalem.net">jpulley@cityofsalem.net</a>
15. Gary Pullman	Salem (citizen)	<a href="mailto:Gary.pullman@gmail.com">Gary.pullman@gmail.com</a>
16. Andy Bryant	NOAA/NWS Portland	<a href="mailto:Andy.bryant@noaa.gov">Andy.bryant@noaa.gov</a>
17. Ethan Rosenthal	David Evans	
18. Mike Gotterba	Salem PW	<a href="mailto:mgotterba@cityofsalem.net">mgotterba@cityofsalem.net</a>
19. Brandin Krempasky	City of Salem PW	<a href="mailto:bkrempasky@cityofsalem.net">bkrempasky@cityofsalem.net</a>
20. Kathleen Silva	MCEM	<a href="mailto:ksilva@co.marion.or.us">ksilva@co.marion.or.us</a>
21. Roger Stevenson	City of Salem	<a href="mailto:rstevenson@cityofsalem.net">rstevenson@cityofsalem.net</a>
22. Brent Stevenson	SWCD	<a href="mailto:Brents.swed@wvi.com">Brents.swed@wvi.com</a>
23. Joe Arbow	ODF	<a href="mailto:Joseph.m.arbow@oregon.gov">Joseph.m.arbow@oregon.gov</a>
24. Patricia Farrell	City of Salem	<a href="mailto:pfarrell@cityofsalem.net">pfarrell@cityofsalem.net</a>
25. Grady McMahan	US Forest Service – Detroit	<a href="mailto:gmcghan@fs.fed.us">gmcghan@fs.fed.us</a>
26. Dave & Jeanne White	FLRCDL	<a href="mailto:djwhite@wvi.com">djwhite@wvi.com</a>
27. Bob Rea	OPRD Detroit Lake State Park	<a href="mailto:Robert.rea@oregon.gov">Robert.rea@oregon.gov</a>
28. Margaret Matter	ODA	<a href="mailto:mmater@oda.state.or.us">mmater@oda.state.or.us</a>
29. Chris Kewitz	City of Salem	<a href="mailto:ckewitz@cityofsalem.net">ckewitz@cityofsalem.net</a>
30. Jamie Sheahan Alonso	USFS – Detroit	<a href="mailto:jsheahanalonso@fs.fed.us">jsheahanalonso@fs.fed.us</a>
31. Caitlin Esping	MCEM	<a href="mailto:cespring@co.marion.or.us">cespring@co.marion.or.us</a>



# 2016 North Santiam Basin Summit

## Drought Contingency Planning

Marion County Public Works (5155 Silverton Road NE, Salem)

Thursday, May 12, 2016, 9:00 a.m. to 3:00 p.m.

### Agenda

9:00 p.m.	Welcome / Introductions Electronic Polling— <i>Who's in the room</i>
9:15	Drought Contingency Planning Project Overview: Expected Outcomes
9:30	Electronic Polling—Drought Planning Values
9:45	Lessons Learned in 2015—Facilitated Panel Discussion
<b>11:00</b>	<b>BREAK</b>
11:15	Drought Monitoring Framework <ul style="list-style-type: none"><li>– Workshop Summary</li><li>– Roundtable worksheet / discussion on potential data sources</li><li>– Polling on data sources</li></ul>
<b>Noon</b>	<b>LUNCH (Provided courtesy of City of Salem and Trexler Farm)</b>
1:00	Vulnerability Assessment <ul style="list-style-type: none"><li>– Workshop Summary</li><li>– Roundtable worksheet / discussion on key factors to drought resiliency</li><li>– Polling on resiliency factors</li></ul>
<b>1:50</b>	<b>BREAK</b>
2:00	Planning Outcomes Group Discussion: <i>What outcomes from the planning process will be most useful to your organization?</i>
2:40	Next Steps
3:00 p.m.	Adjourn

# North Santiam Watershed Summit

May 12, 2016

## Drought Monitoring Framework Worksheet

**How many levels of drought should be used for the watershed drought plan?**

- ☐ Create a simple system: 2-3 stages
  - ☐ Create a more complex system: 4-5 stages
  - ☐ Use an existing simple system
  - ☐ Use an existing more complex system
  - ☐ A different idea:
- 
- 

**What type of indicators should be used?**

- |  |                                      |
|--|--------------------------------------|
| <input type="checkbox"/> Stream flows into Detroit reservoir | <input type="checkbox"/> Rainfall    |
| <input type="checkbox"/> Flows out of the reservoir          | <input type="checkbox"/> Temperature |
| <input type="checkbox"/> Reservoir level                     | <input type="checkbox"/> Fish runs   |
| <input type="checkbox"/> Snowpack                            | <input type="checkbox"/> Others:     |
- 
- 

**Do you know about these data sources? Which ones do you commonly use? (Circle the answer)**

- |  |            |
|--|------------|
| <input type="checkbox"/> National Weather Service Climate Prediction Center (NWS-CPC)              | Know / Use |
| <input type="checkbox"/> NRCS Water Supply and Reservoir Storage Reports (& SNOTEL sites in basin) | Know / Use |
| <input type="checkbox"/> USACE Willamette Project Teacup Diagrams                                  | Know / Use |
| <input type="checkbox"/> Northwest River Forecast Center Water Supply Forecast                     | Know / Use |
| <input type="checkbox"/> USBR AgriMet Climate Station (Detroit)                                    | Know / Use |
| <input type="checkbox"/> National Drought Mitigation Center US Drought Monitor                     | Know / Use |
| <input type="checkbox"/> NOAA Climate Prediction Center, Drought Information website               | Know / Use |
| <input type="checkbox"/> OWRD Drought Watch website  | Know / Use |
| <input type="checkbox"/> USGS Streamflows Water Watch website                                      | Know / Use |
| <input type="checkbox"/> Others you know and use:  |            |
- 
- 

**What is the most appropriate time period for group monitoring of watershed conditions?**

- |  |  |
|--|--|
| <input type="checkbox"/> Year-round  | <input type="checkbox"/> Spring-Summer       |
| <input type="checkbox"/> Only start when agencies agree there is a potential for drought | <input type="checkbox"/> Summer              |
|  | <input type="checkbox"/> Another time period |
- 
- 

*(Optional)*

Name \_\_\_\_\_

Organization \_\_\_\_\_

# North Santiam Watershed Summit

May 12, 2016

## Vulnerability Assessment Worksheet

How adaptable is your organization to drought on a scale of 1 (not adaptable) to 7 (very adaptable)? Please circle your answer.

1                      2                      3                      4                      5                      6                      7

Not  
adaptable

Very  
adaptable

Comments:

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---

---

Here are a list of actions that could improve watershed drought resiliency. Which ones do you think are most useful? Are they short- or long-term solutions?

Actions	Most useful? (Check the box)	Short-term solution	Long-term solution
Use less water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Share water resources through partnerships	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diversify sources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Store more water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Develop better communication channels between water users.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Make operations changes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rehabilitate old infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Build new/enhance diversion/storage facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Update water laws	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Create drought planning / response partnership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water banking / transfer / leasing programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase investment in water regulation enforcement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Price water differently	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Monitoring improvements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

What are some limiting factors and potential incentives for improving watershed resiliency?

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(Optional)

Name \_\_\_\_\_

Organization \_\_\_\_\_

**North Santiam Watershed Summit**  
**May 12, 2016**  
**Planning Outcomes Group Discussion Worksheet**

**What outcomes from the planning process will be most useful to your organizations? (Check all that apply)**

- ☐ Define drought conditions
- ☐ Identify critical water supply needs (i.e., vulnerabilities)
- ☐ Identify mitigation actions for implementation before drought conditions
- ☐ Identify response actions for implementation during drought conditions.
- ☐ Develop a framework for administering the plan, and updating it on a regular basis.
- ☐ Other outcomes:

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**What would make the plan a success for you and your organization?**

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**What ongoing organizational/partnership structure would work best for your organization?**

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**What advice to you have for the planning workgroups and project team?**

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*(Optional)*

Name\_\_\_\_\_

Organization\_\_\_\_\_

# North Santiam Watershed Summit

May 12, 2016

## COMMENT FORM

Thank you for participating in the North Santiam Basin Summit! Please take a moment to give us feedback on today's meeting. We will use it to make next year's meeting even better.

What was your overall impression of the today's summit?

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What did you like best? What could have been better?

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Was the information presented of interest to you?

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Do you feel like you had an opportunity to share your ideas and thoughts with others?

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---

Do you have recommendations for future Summit activities?

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Other comments or suggestions?

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*(Optional)*

Name\_\_\_\_\_

Organization\_\_\_\_\_

Email\_\_\_\_\_Phone\_\_\_\_\_

**Thank you!**

## Summit Comment Form Feedback

<b>What was your overall impression of the today's summit?</b>
• Well done. Interesting agenda.
• I thought it was informative and useful.
• Productive dialog, good packing of meeting. Useful to have forms for directed discussion.
• Pleasant surprise
• I learned a lot and think the summit gathered the right people together to discuss the important issue that networking is key.
• Agree that this process continues to develop. Most players now acknowledge that "their" way won't work for all players.
• Very well organized and interesting. High level of engagement by participants.
• This was my first summit, and I enjoyed hearing from all the stakeholders.
• Very inclusive
• Excellent Summit
• Liked the format
<b>What did you like best? What could have been better?</b>
• Collaborative actions.
• I liked the polling and table conversations.
• Survey/question forms
• Lunch! Good structure, facilitation, crowd. I did miss tribes participation, OWEB
• I liked the active surveys and the ability to listen to the stakeholder concerns and eagerness to address new ideas to handle drought.
• I always enjoy the meeting people and relationships.
• Food of course! Polling was fun! But more importantly we talked about real problems and identified real solutions. Worksheet questions were difficult to answer.
• Listening to stakeholders
• Autopolling!
• The technical input and feedback from the diverse stakeholders was excellent.
<b>Was the information presented of interest to you?</b>
• Yes, good cross
• Yes it was.
• Yes. We're trying to understand more at local level about drought thresholds & impacts.
• Yes, above my paygrade (much of it)
• Yes, I learned a lot and it helps as we move forward in the DCP.
• Yes
• Very much
• Yes
• Yes!
• Yes
• Yes

<b>Do you feel like you had an opportunity to share your ideas and thoughts with others?</b>
• Yes
• Yes I do.
• Yes
• Yes
• Yes, the company/stakeholders were diverse and open to hearing different opinions.
• Good table discussions. Exercises enabled more in depth discussions.
• Yes!
• Yes, it was an open forum
• Yes! Thanks tons for having me on the panel!
• Yes
• Yes
<b>Do you have recommendations for future Summit activities?</b>
• Keep up the same steps.
• Not at this time.
• No
• Format was good
• Not really, but please keep USACE involved.
• Do more panel discussions, hearing from the various stakeholders was very valuable.
• No
<b>Other comments or suggestions?</b>
• None at this time.
• None
• Libby did a good job – Patricia too! Personal: the define success question depressed me.
• Great lunch! Thanks!
• Nice job!! Very productive meeting.

# 2016 North Santiam Basin Summit

## **Drought Contingency Planning**



Marion County Public Works  
Thursday, May 12, 2016



# Agenda

## 9:00 a.m.

- Welcome / Introductions
- Drought Contingency Planning Project Overview
- Lessons Learned in 2015
- Drought Monitoring Framework--Workshop Summary

## Noon

- LUNCH *Courtesy of City of Salem and Trexler Farm*
- Vulnerability Assessment—Workshop Summary
- Planning Outcomes Group Discussion
- Next Step

## 3:00 p.m.

- Adjourn

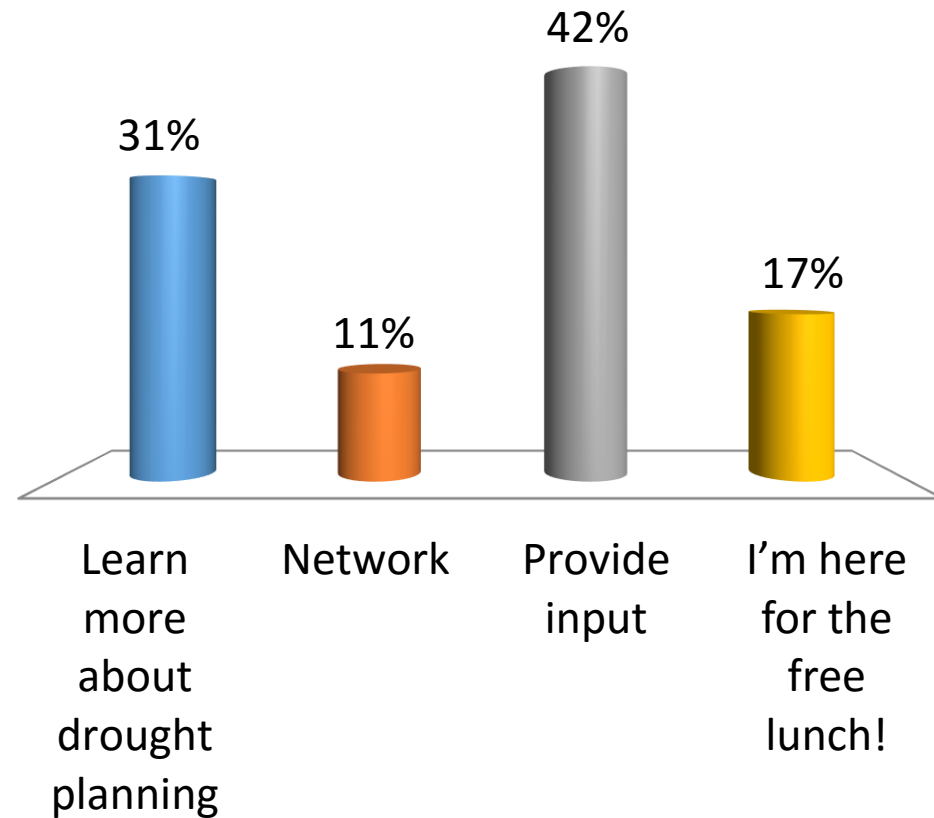
# Electronic Polling— Who is in the room?



# I am here today to...

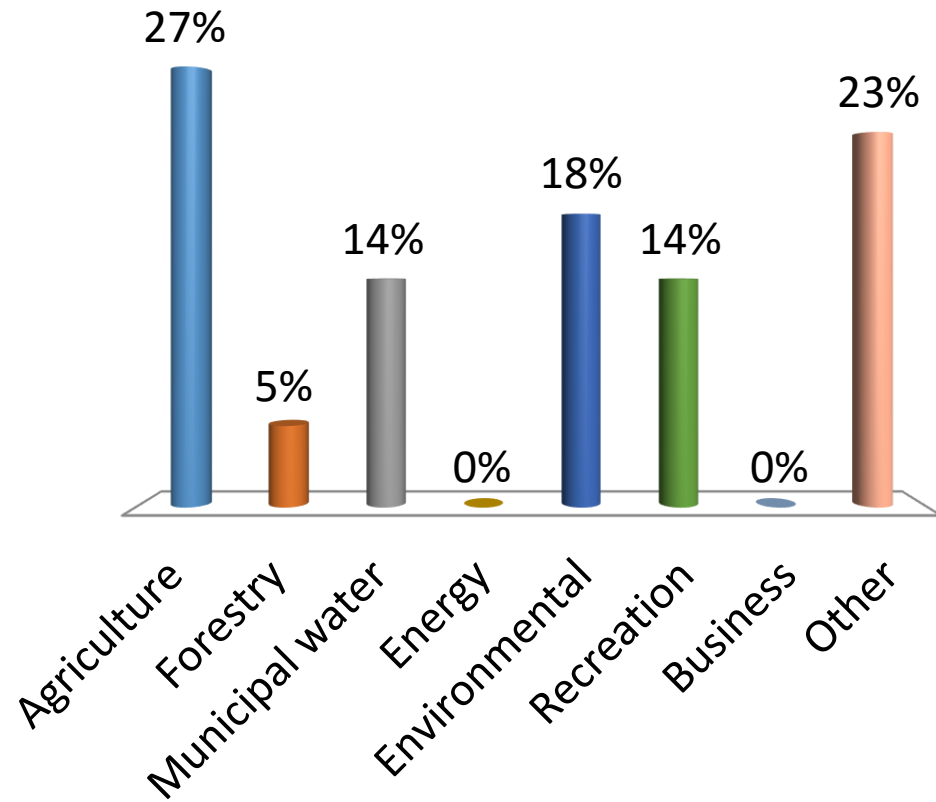
(multiple answers allowed)

1. Learn more about drought planning
2. Network
3. Provide input
4. I'm here for the free lunch!



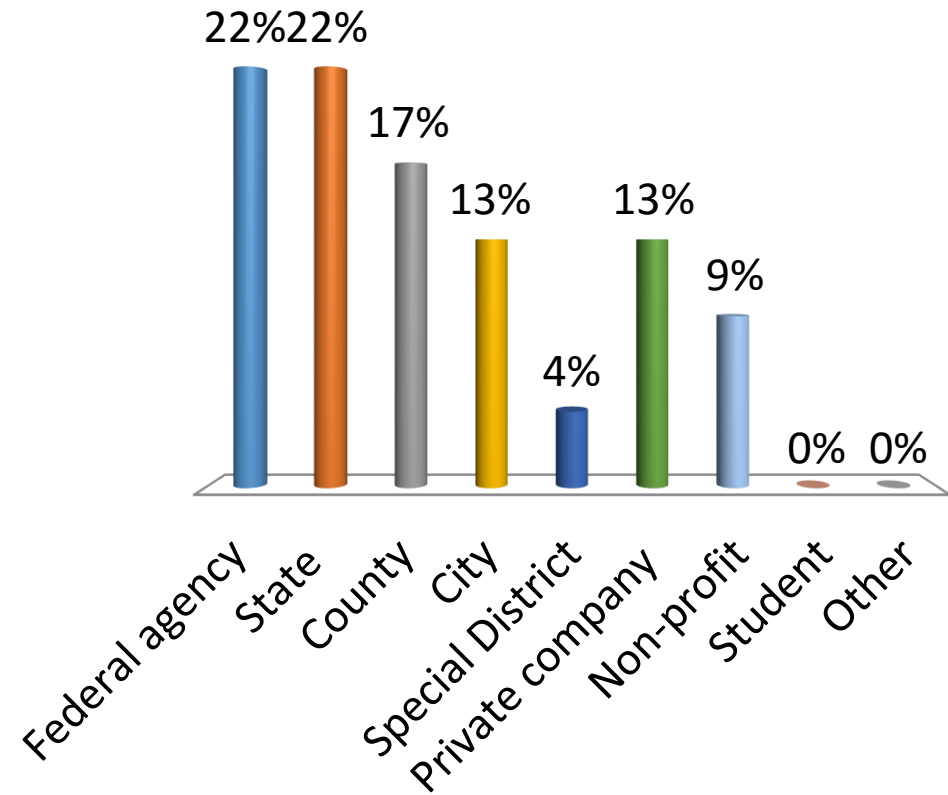
# My work focuses on:

1. Agriculture
2. Forestry
3. Municipal water
4. Energy
5. Environmental
6. Recreation
7. Business
8. Other



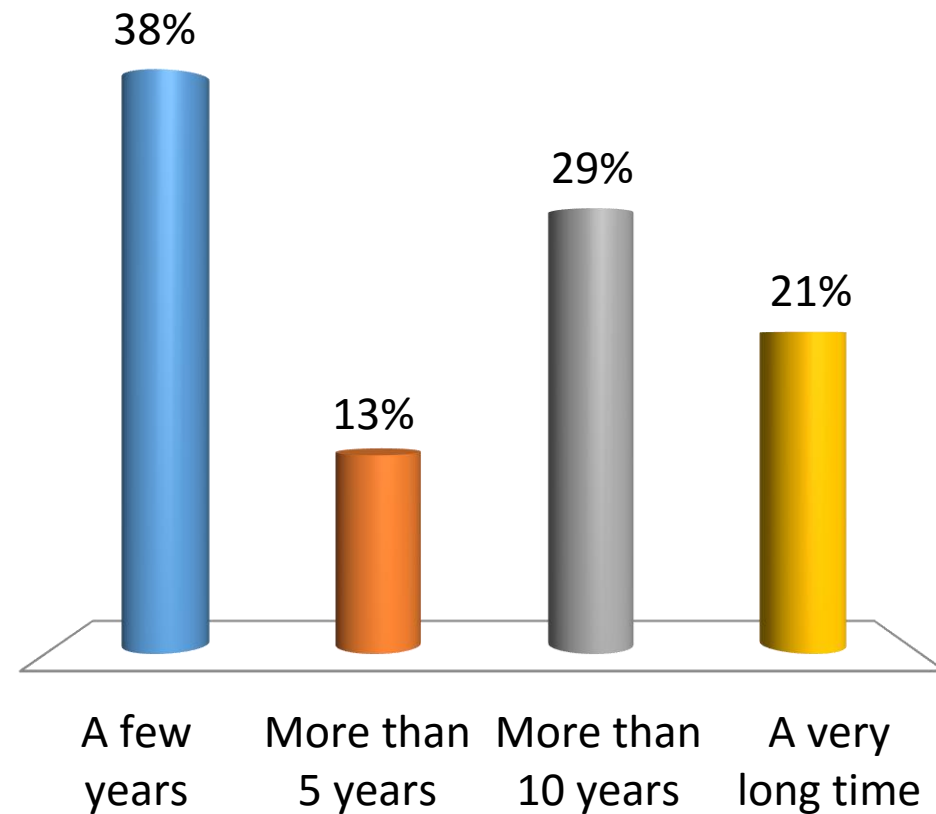
# I work for a:

1. Federal agency
2. State
3. County
4. City
5. Special District
6. Private company
7. Non-profit
8. Student
9. Other



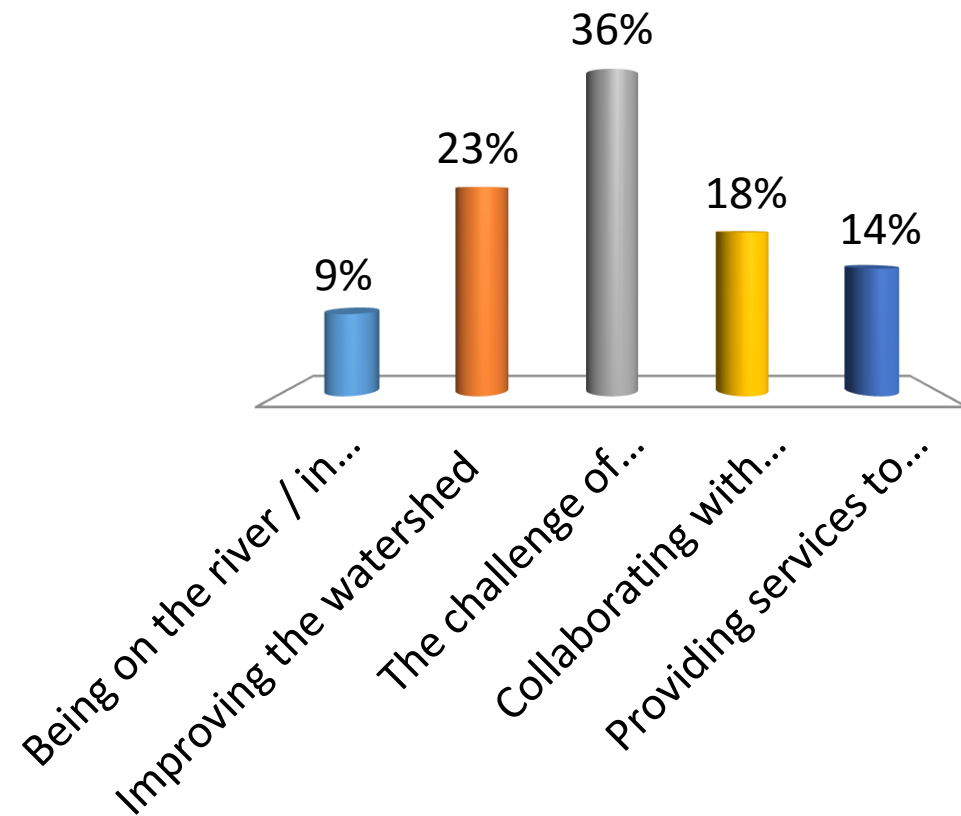
# I have been working in the North Santiam watershed for:

1. A few years
2. More than 5 years
3. More than 10 years
4. A very long time

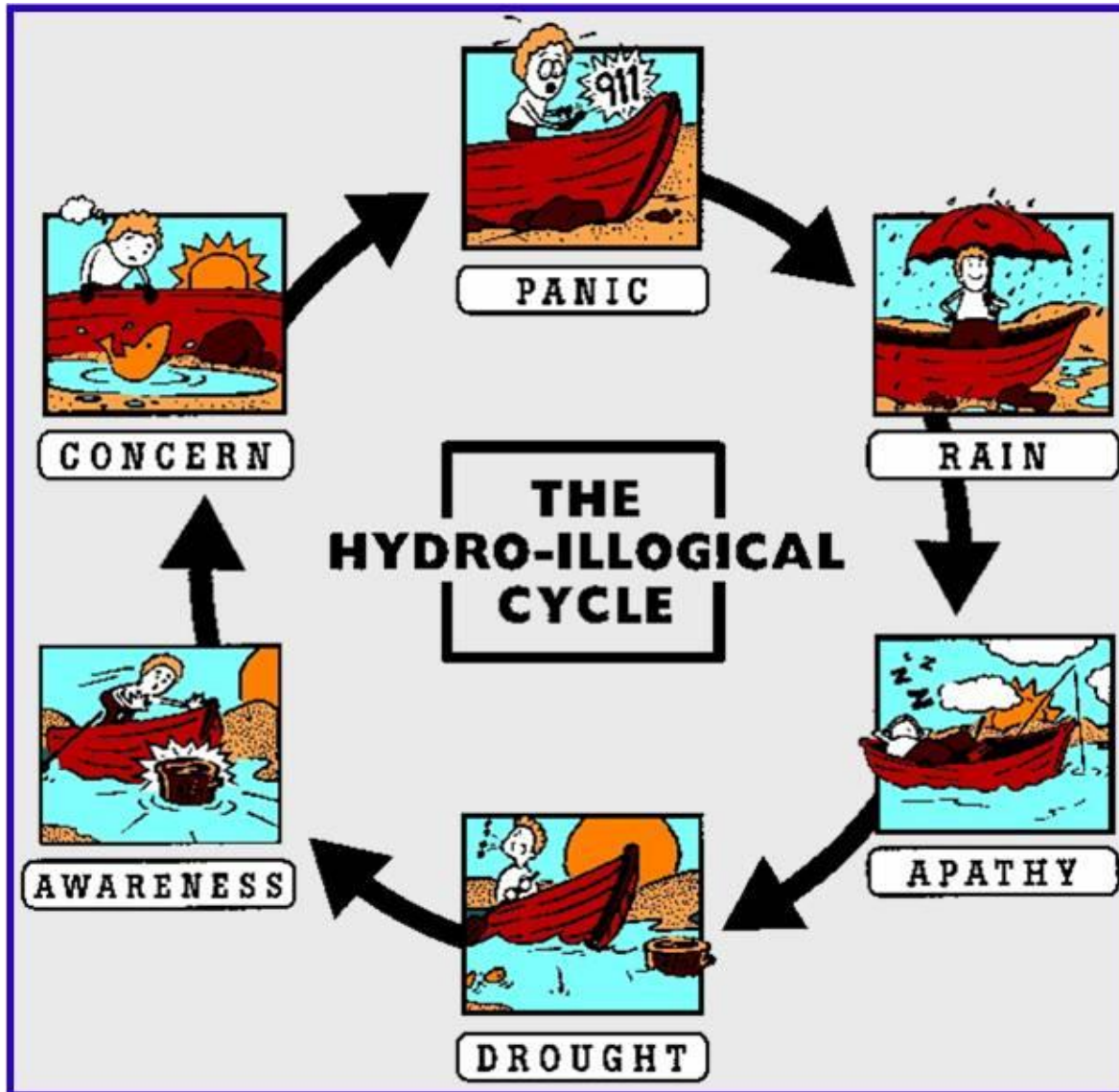


# What I like most about my work in the watershed:

1. Being on the river / in the watershed
2. Improving the watershed
3. The challenge of managing for multiple uses
4. Collaborating with partners
5. Providing services to constituents



# Drought Planning



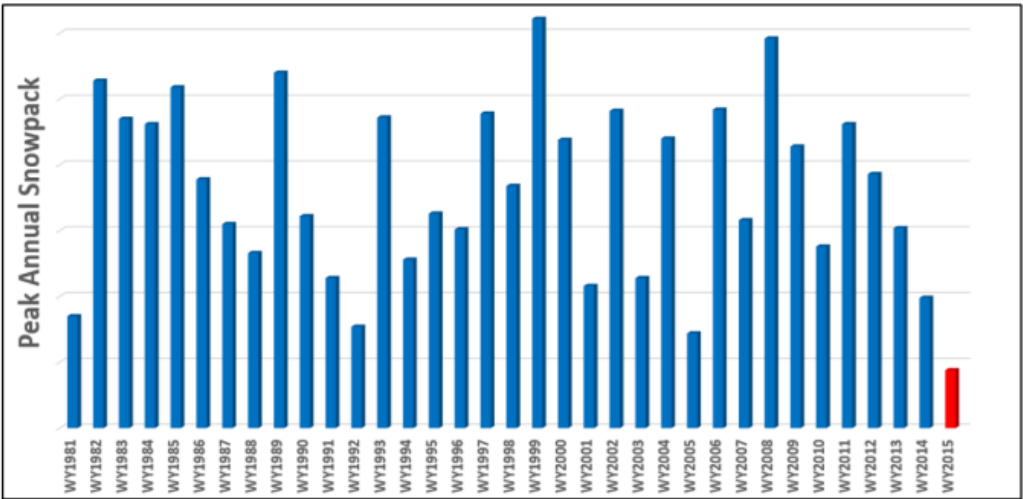
“Droughts are the Rodney Dangerfield of natural hazards. They get no respect.”

*Don Wilhite,  
University of  
Nebraska*



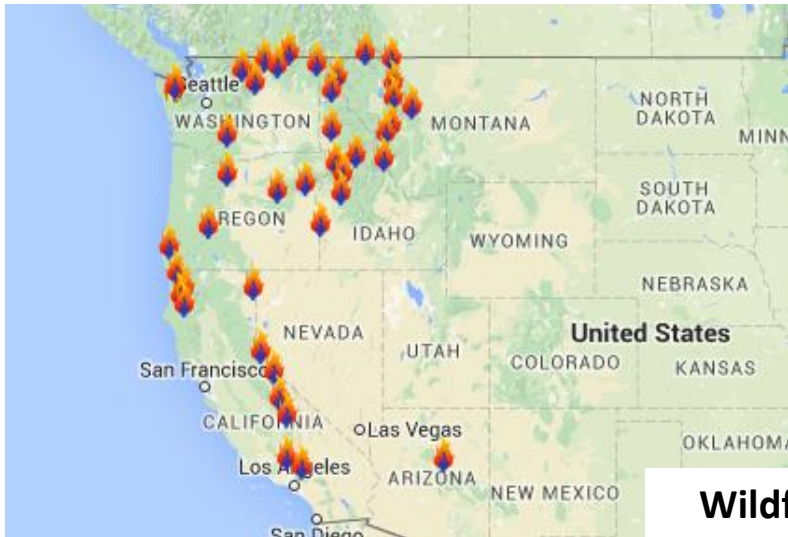
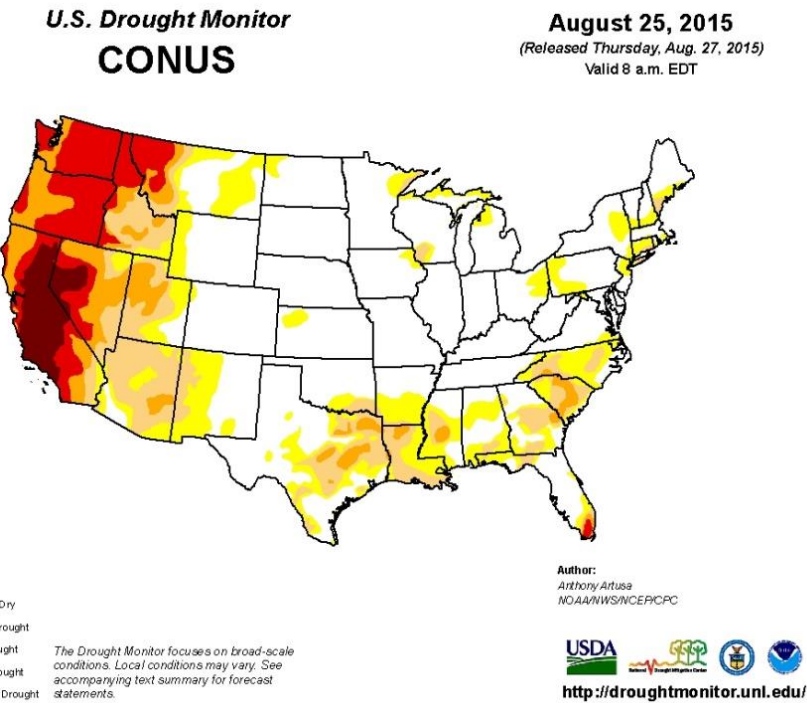
# 2015- A Year of Heat, Drought, & Wildfires

Figure 2: Peak Annual Snowpack (Water Year 1981 – 2015)



Source: NRCS Snow Survey Program

## Drought Conditions August 25, 2015

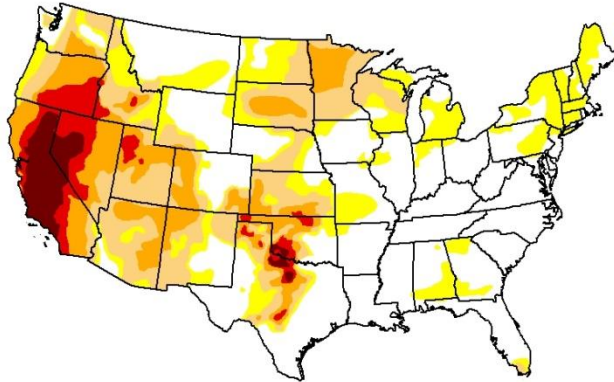


## Wildfires August 18, 2015

# Comparison of 2015 and Current Conditions

## U.S. Drought Monitor CONUS

May 5, 2015  
(Released Thursday, May 7, 2015)  
Valid 7 a.m. EST



### Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

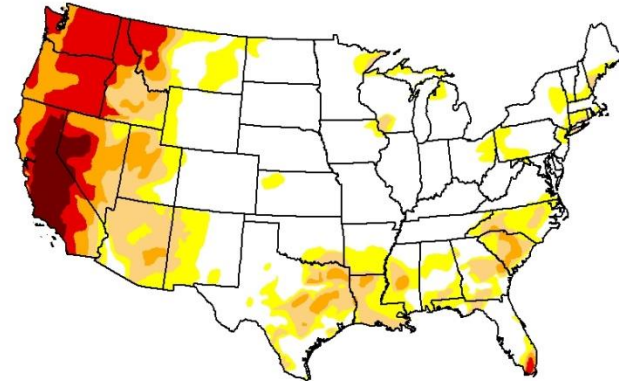
Author:  
Mark Svoboda  
National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

## U.S. Drought Monitor CONUS

August 25, 2015  
(Released Thursday, Aug. 27, 2015)  
Valid 8 a.m. EDT



### Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

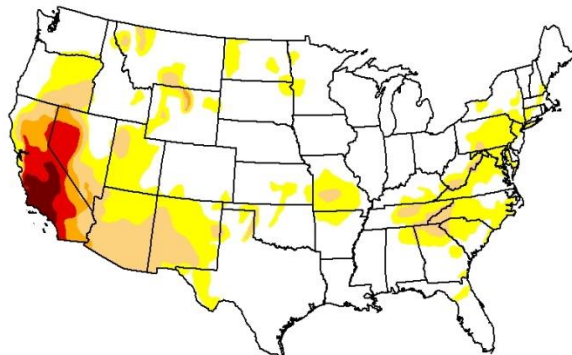
Author:  
Anthony Artusa  
NOAA/NWS/NCEP/PCP



<http://droughtmonitor.unl.edu/>

## U.S. Drought Monitor CONUS

May 3, 2016  
(Released Thursday, May 5, 2016)  
Valid 8 a.m. EDT



### Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

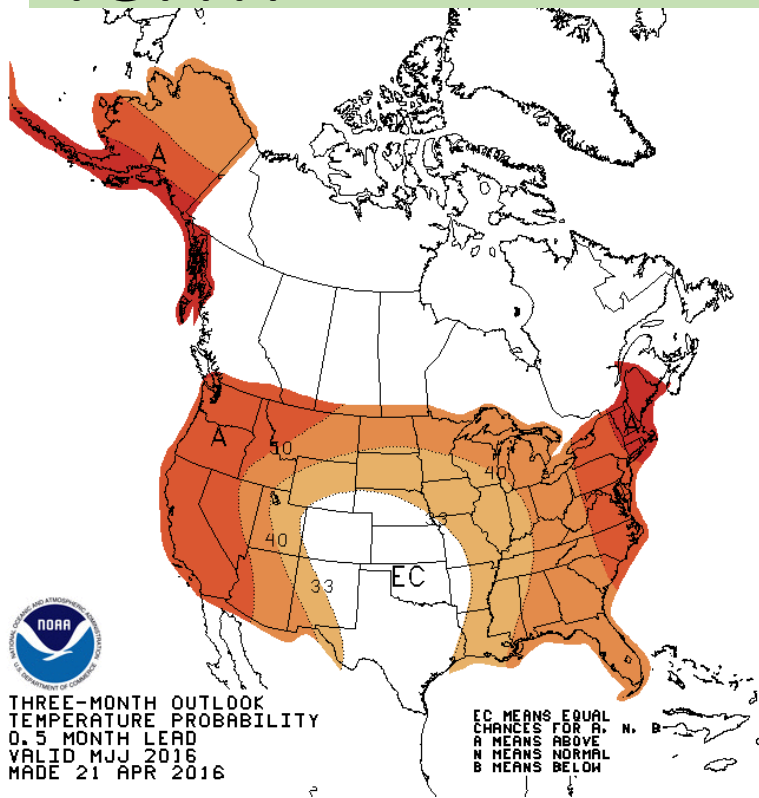
Author:  
Brian Fuchs  
National Drought Mitigation Center



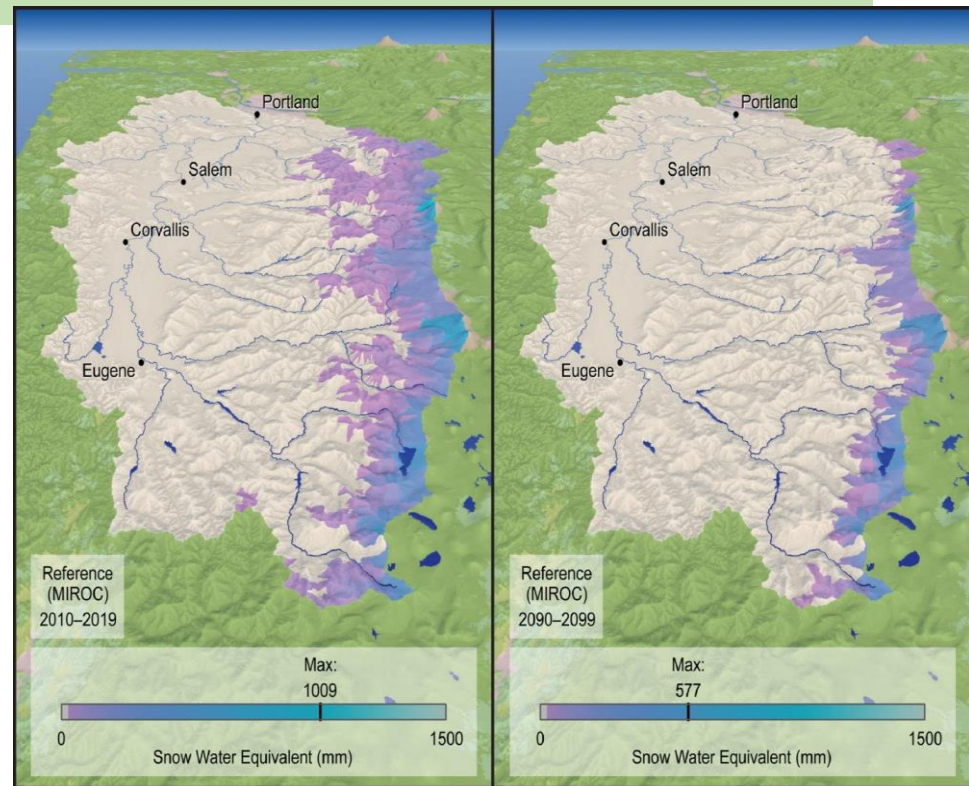
<http://droughtmonitor.unl.edu/>

?

# Future Forecasts – Short and Long Term



**Above normal temperatures  
predicted**



**Warmer weather may reduce snowpack  
by 63-95% (Willamette 2100)**

# Drought Contingency Planning Project Overview



- Funded in part by a Drought Contingency Planning WaterSMART grant from the Bureau of Reclamation.
- Enable local stakeholders to collaboratively develop a coordinated response to drought in the watershed.
- Two year process



# Cost Share Partners

- City of Salem
- City of Stayton
- Linn Soil and Water Conservation District
- Marion County
- Marion Soil and Water Conservation District
- Norpac Foods, Inc.
- North Santiam Watershed Council
- Oregon Department of Agriculture
- Oregon Department of Environmental Quality
- Oregon Department of Forestry
- Santiam Water Control District
- Stayton Fire District



# Expected Outcomes-6 Elements of the Drought Plan

**Drought Monitoring** involves predicting and recognizing drought conditions

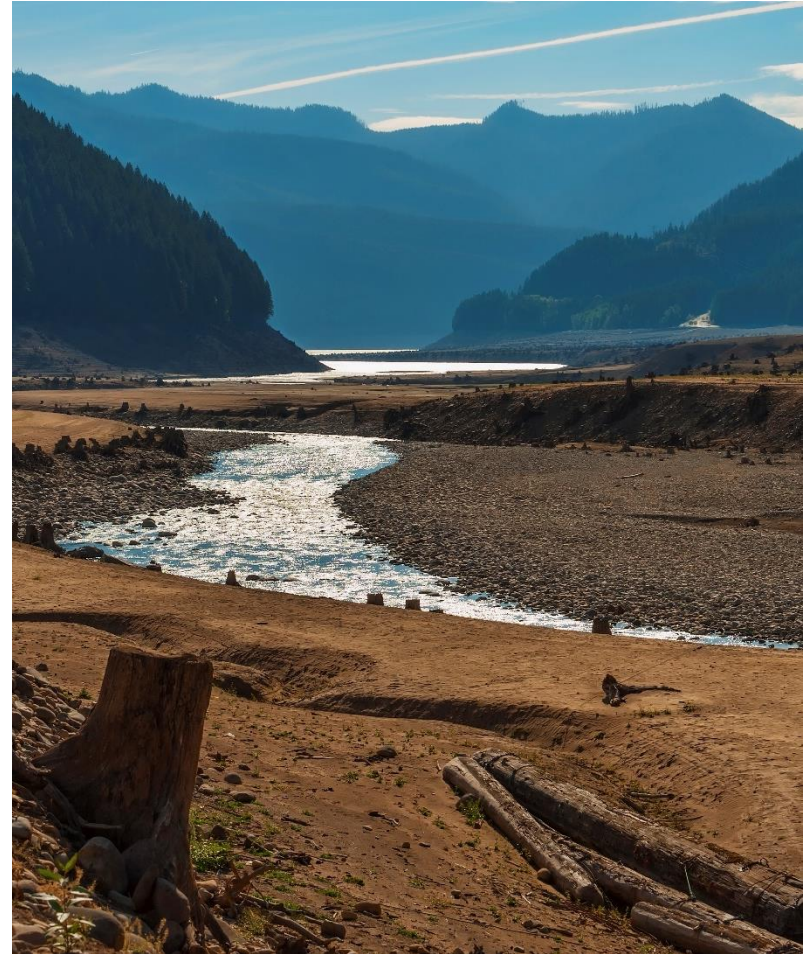
**Vulnerability Assessment** identifies and evaluates the risks and impacts of drought

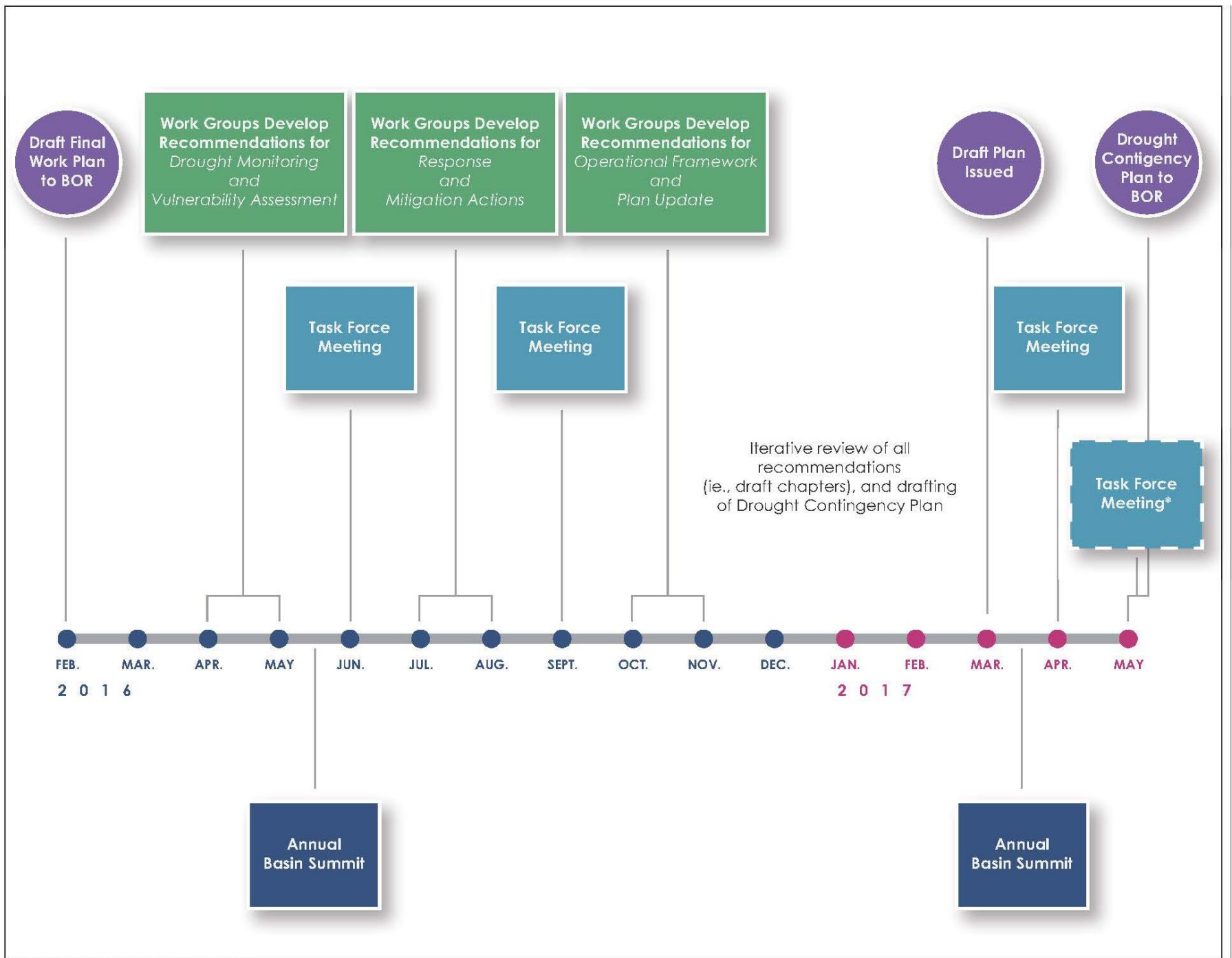
**Mitigation Actions** reduce risks and impacts before drought

**Response Actions** reduce impacts during drought

**Operational and Administrative Framework** identifies roles and responsibilities

**DCP Update Process** conducts post-drought evaluation to ensure effectiveness, and improve future implementation and response





# Electronic Polling—Drought Planning Values

How important are the following drought planning values to you on a scale of 1 (not important) to 7 (very important)?

1	2	3	4	5	6	7
Not Important			Very Important			



# The watershed is a shared resource valued by all.

How important is this drought planning value to you?

0% 1. Not important

0% 2. ...

6% 3. ...

6% 4. ...

0% 5. ...

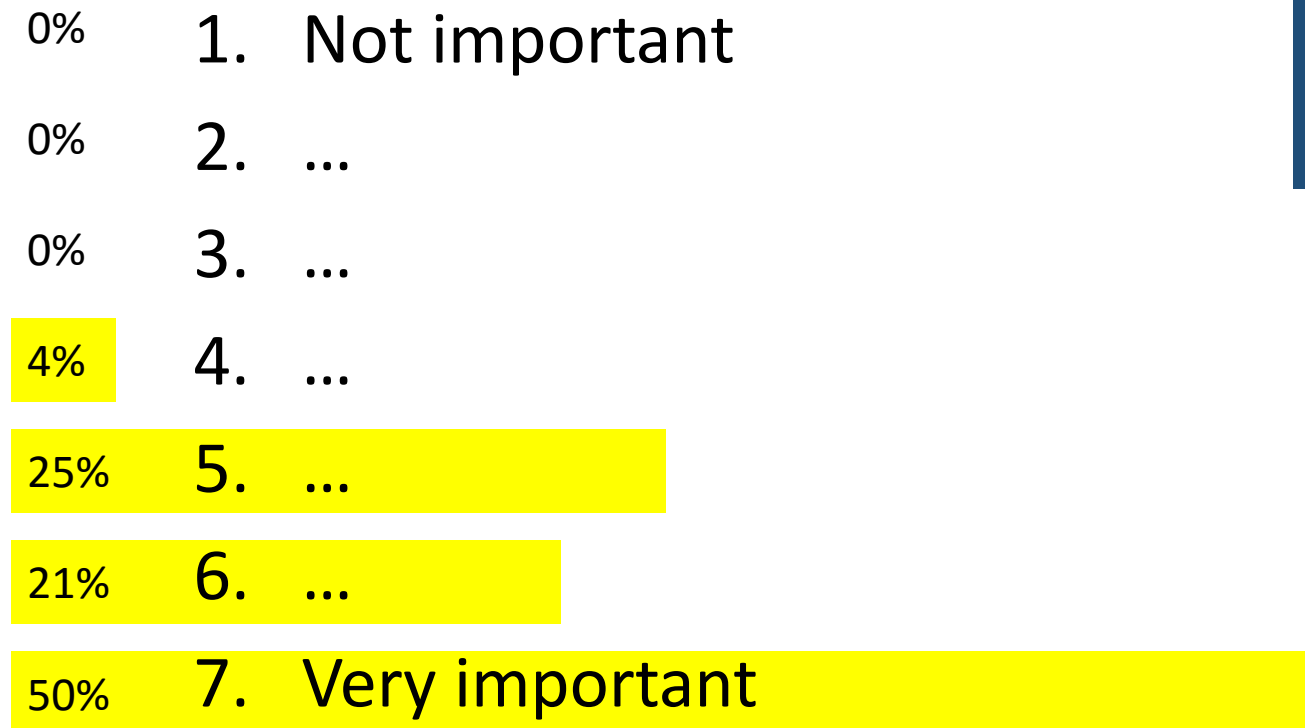
22% 6. ...

67% 7. Very important

Mean = 6.39

# Good interagency communications is vital for effective drought response.

How important is this drought planning value to you?



**Mean = 6.17**

Impacts of drought mitigation and response should be a coordinated effort across all water users.

How important is this drought planning value to you?

0% 1. Not important

0% 2. ...

0% 3. ...

0% 4. ...

35% 5. ...

31% 6. ...

35% 7. Very important

Mean = 6.00

Drought planning solutions should follow established protocols (e.g. senior water-prior appropriations, reservoir management, Willamette BiOp, etc.)

How important is this drought planning value to you?

0% 1. Not important

8% 2. ...

8% 3. ...

25% 4. ...

25% 5. ...

13% 6. ...

21% 7. Very important

Mean = 4.88

Drought planning solutions should be more flexible than current established protocols.

How important is this drought planning value to you?

0% 1. Not important

0% 2. ...

7% 3. ...

18% 4. ...

11% 5. ...

43% 6. ...

21% 7. Very important

Mean = 5.54

Impacts to multiple variables (e.g. public health, economic, recreation, environmental and others) should be considered to prioritize drought vulnerabilities.

How  
important is  
this drought  
planning  
value to you?

0% 1. Not important

0% 2. ...

5% 3. ...

5% 4. ...

14% 5. ...

32% 6. ...

45% 7. Very important

Mean = 6.09

Drought planning should be an ongoing, iterative effort.

How important is this drought planning value to you?

0% 1. Not important

0% 2. ...

0% 3. ...

4% 4. ...

0% 5. ...

54% 6. ...

42% 7. Very important

Mean = 6.33

# Lessons Learned in 2015

## Panel Members

Dwayne Barnes  
Water System Manager, City of Salem

Karen Hans  
STEP Biologist, ODFW

Grady McMahan  
District Ranger, US Forest Service

Margaret Matter, PhD  
Water Resource Specialist, Oregon Department of Agriculture

Mary Karen Scullion  
Portland District Willamette Valley Reservoir Regulator, US Army  
Corps of Engineers

Brent Stevenson  
District Manager, Santiam Water Control District



What happened—what was  
unexpected?

How did you cope?

How did you communicate with  
the public, partners, your  
leadership?

What lessons did you learn?

What would your agency do  
differently?

# BREAK





# Drought Monitoring Framework Questions

- How many levels of drought should be used?
- What indicators should be included?
- What are the triggers for each indicator?
- What data sources should be used?
- What are the key dates or time periods for monitoring?





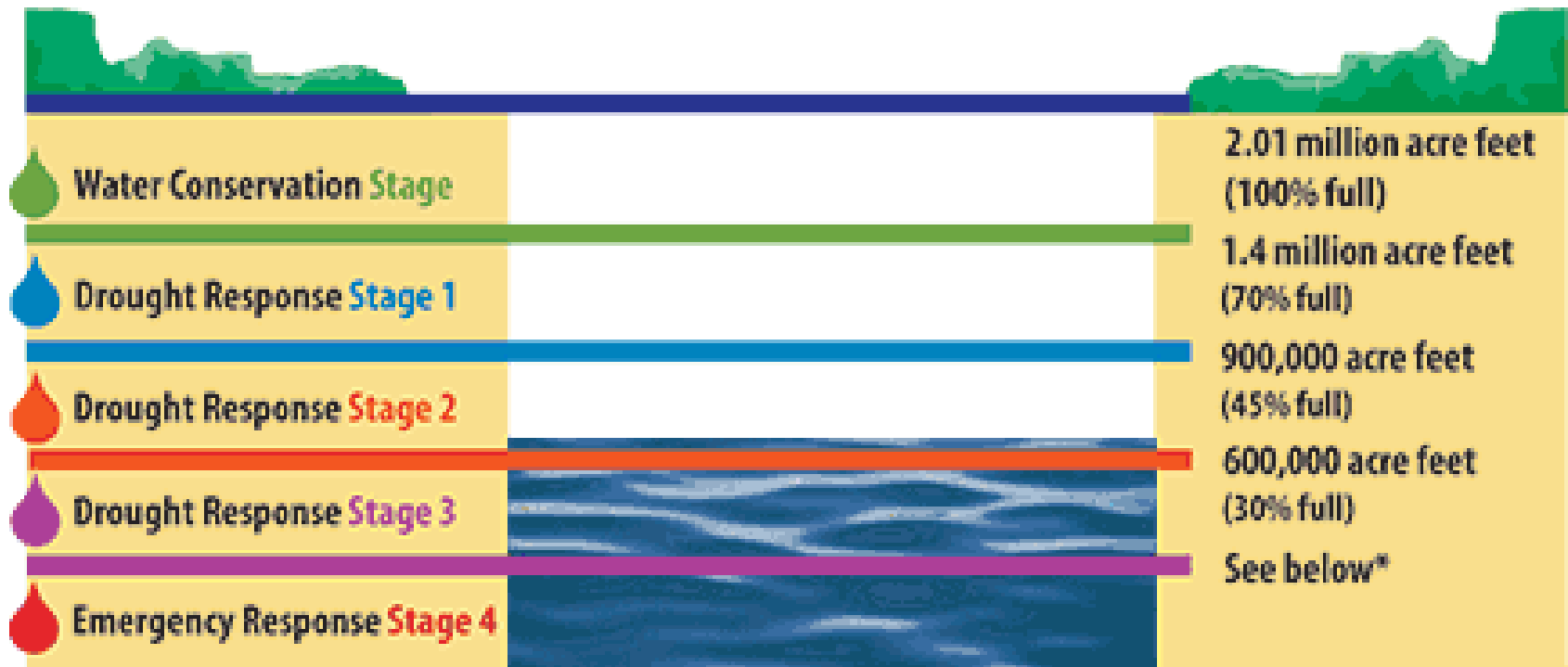
# Early Objectives

- Determine system-wide warning signs (but also understand what each user needs to know, when).
- Utilize existing readily available information.
- Integrate with federal, state and local monitoring efforts.
- Start simple; adapt and improve over time.



Warning sign? 😊

# Levels of Drought—Example



Austin Water-<http://austinklakes.org/drought-conditions>

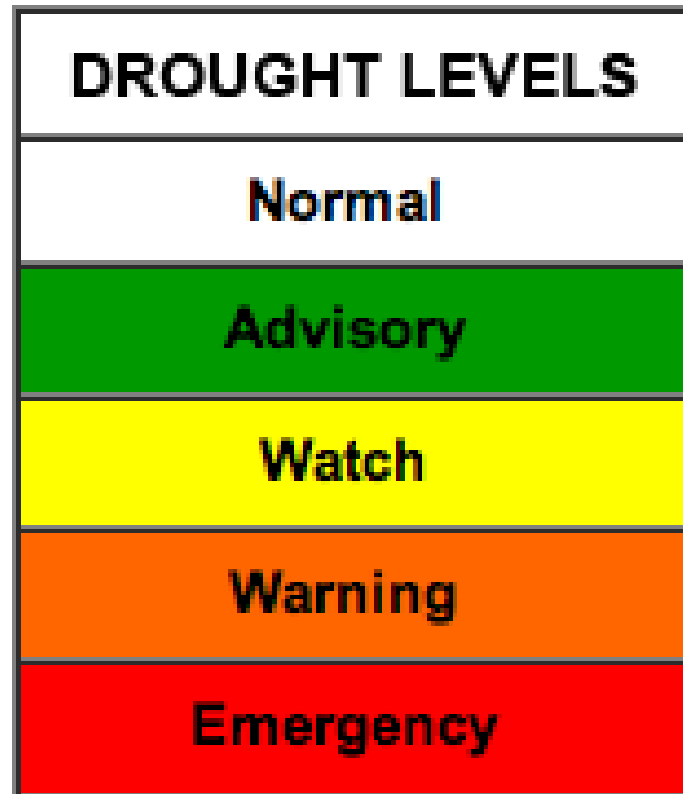


# Levels of Drought—Example

Level	Conditions	Significance	Objective	Target
1 (Green)	Normal Conditions	There is sufficient water to meet human and ecosystem needs	Preparedness	Ongoing reductions in community water use
2 (Yellow)	Dry Conditions	First indications of a potential water supply problem	Voluntary conservation	Minimum 10% reduction
3 (Orange)	Very Dry Conditions	Potentially serious ecosystem or socioeconomic impacts are possible	Voluntary conservation and restrictions	Minimum additional 20% reduction
4 (Red)	Extremely Dry Conditions	Water supply insufficient to meet socio-economic and ecosystem needs	Voluntary conservation, restrictions and regulatory response	Maximum reduction
Loss of Supply		Potential loss of a community's potable or fire fighting supply	Emergency response	Ensure health and safety

Province of British Columbia

# Levels of Drought—Example

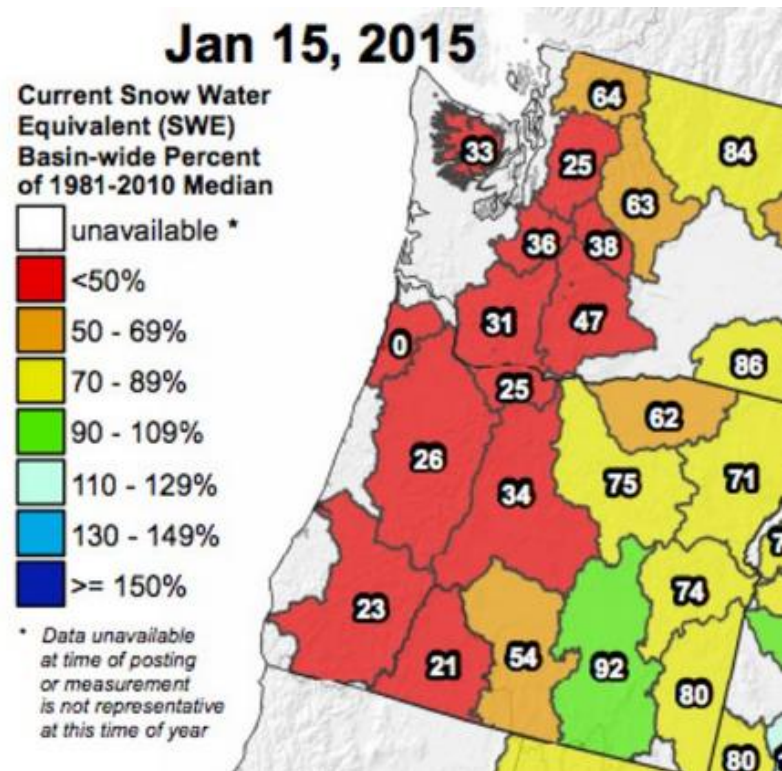


Rhode Island Drought Management

[http://www.wrb.state.ri.us/work\\_programs\\_drought/Hydrologic\\_Drought\\_Indices.pdf](http://www.wrb.state.ri.us/work_programs_drought/Hydrologic_Drought_Indices.pdf)

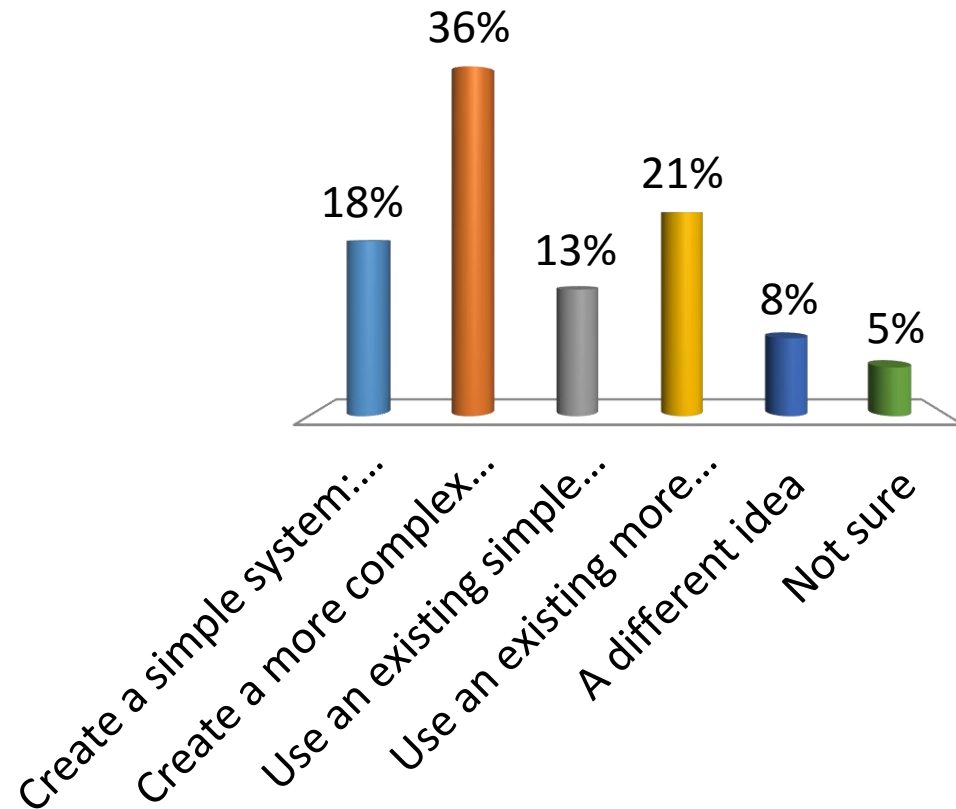
# Drought Monitoring Framework— Roundtable Discussion

- ✓ 20 minutes
- ✓ Complete worksheet
- ✓ Discuss options with people at your table
- ✓ We will collect worksheets!



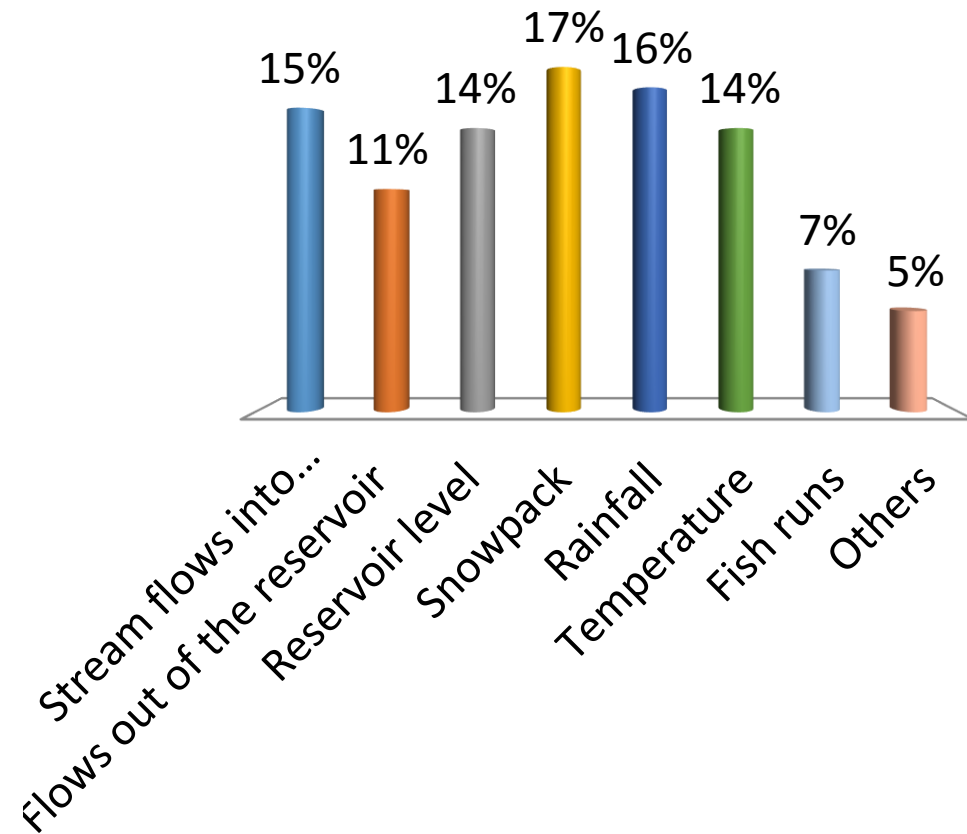
# How many levels of drought should be used? (Multiple responses allowed)

1. Create a simple system:  
2-3 stages
2. Create a more complex  
system:4-5 stages
3. Use an existing simple  
system
4. Use an existing more  
complex system
5. A different idea
6. Not sure



# What type of indicators should be used? (Multiple responses allowed)

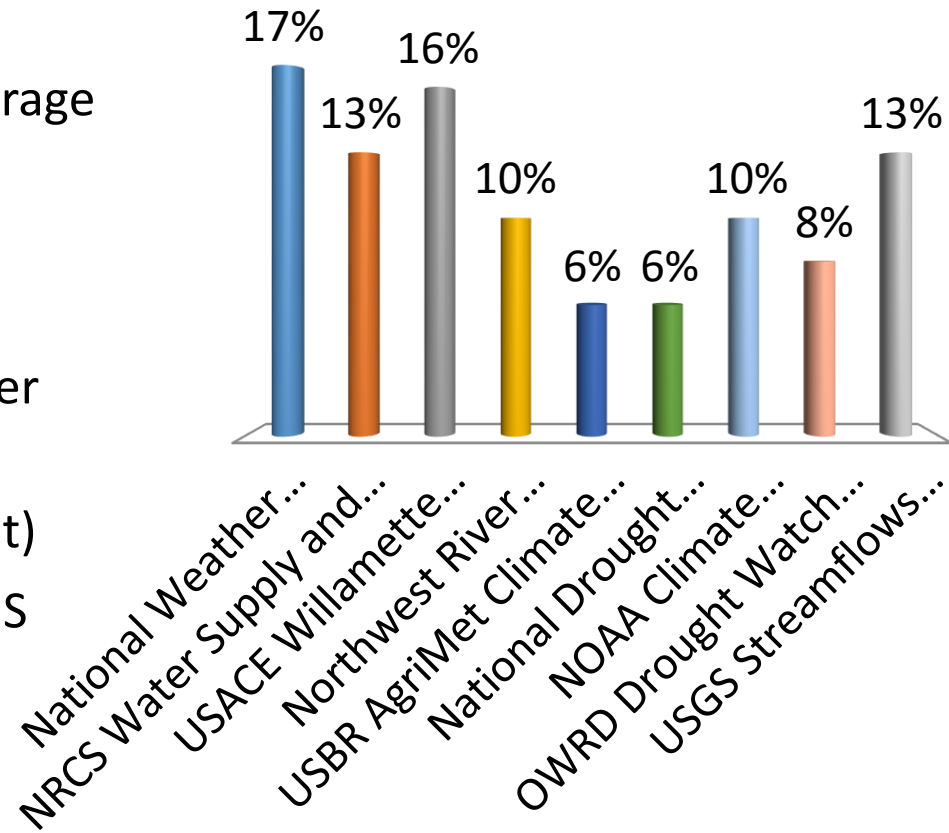
1. Stream flows into Detroit reservoir
2. Flows out of the reservoir
3. Reservoir level
4. Snowpack
5. Rainfall
6. Temperature
7. Fish runs
8. Others



# Which data sources do you use?

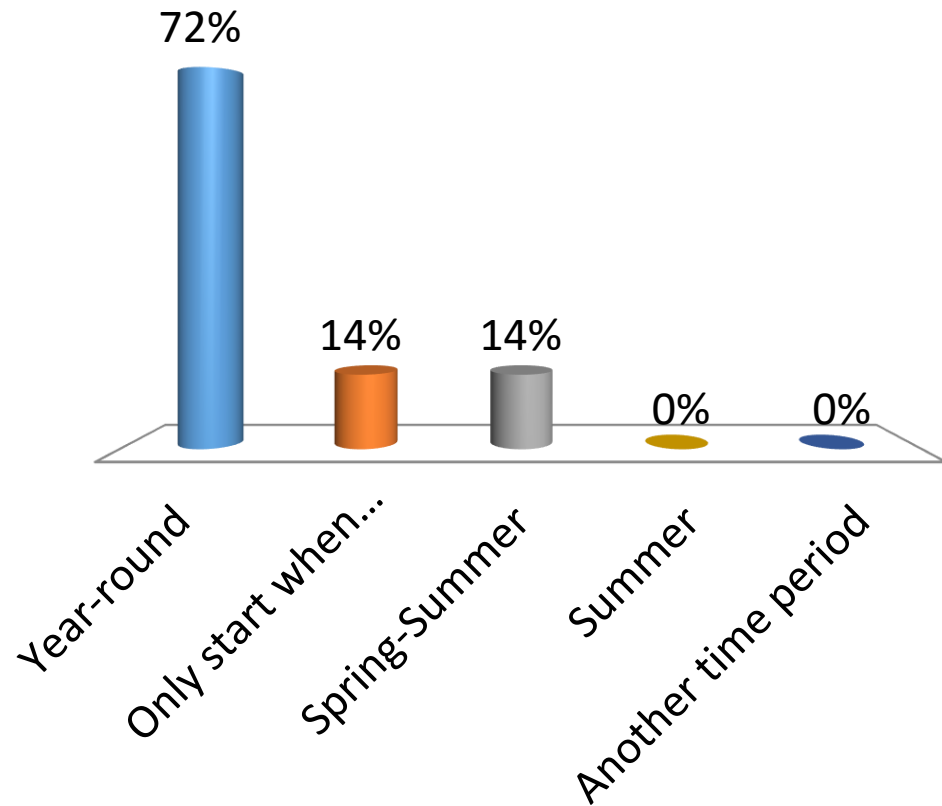
(Multiple responses allowed)

1. National Weather Service Climate Prediction Center (NWS-CPC)
2. NRCS Water Supply and Reservoir Storage Reports (& SNOTEL sites in basin)
3. USACE Willamette Project Teacup Diagrams
4. Northwest River Forecast Center Water Supply Forecast
5. USBR AgriMet Climate Station (Detroit)
6. National Drought Mitigation Center US Drought Monitor
7. NOAA Climate Prediction Center, Drought Information website
8. OWRD Drought Watch website
9. USGS Streamflows Water Watch website



# What is the most appropriate time period for group monitoring of watershed conditions?

1. Year-round
2. Only start when agencies agree there is a potential for drought
3. Spring-Summer
4. Summer
5. Another time period



# LUNCH





# Vulnerability Assessment Workshop Summary

**Objective:** Evaluate the risks and impacts of drought.

**Approach:**

- Identify and catalog the assets (e.g., crops, commercial products) and resources (e.g., drinking water, fish habitat) that are at risk
- Identify base flow conditions using water use/water rights and mandated baseline conditions for aquatic resources.

# Adapting to Drought / Building Resiliency

Some water users may have more flexibility to adapt to drought conditions:

- ✓ Have a diversity of sources
- ✓ Can store water
- ✓ Able to make operational changes
- ✓ Can reduce water use without sever consequences

Building watershed-wide resiliency is tied to understanding and lessening vulnerabilities.



# Vulnerability Assessment— Roundtable Discussion

- ✓ 30 minutes
- ✓ Complete worksheet
- ✓ Discuss options with people at your table
- ✓ We will collect worksheets!

How adaptable are you  
to drought?

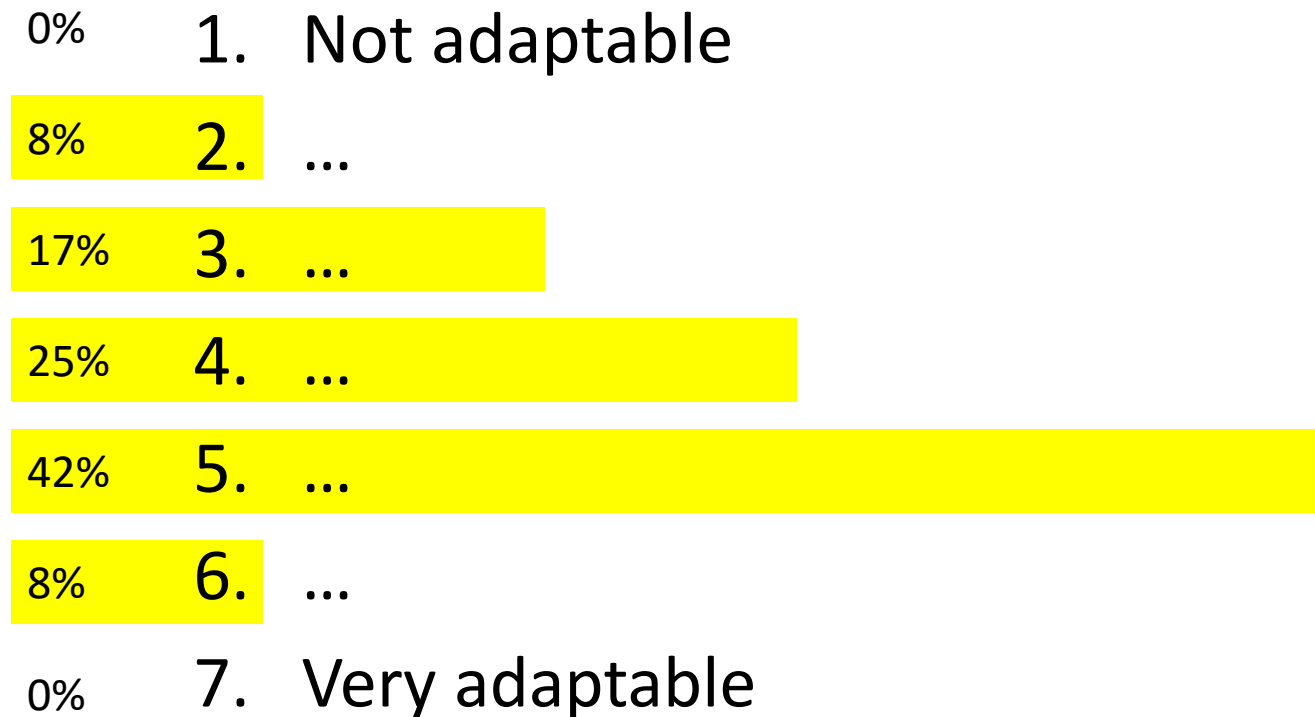
What are key factors to  
drought resiliency for  
the watershed?

# Electronic Polling—Vulnerability Assessment

How adaptable are you to drought on a scale of 1 (not adaptable) to 7 (very adaptable)?

1	2	3	4	5	6	7
Not Adaptable			Very Adaptable			

# How adaptable is your agency to drought?



**Mean = 4.25**

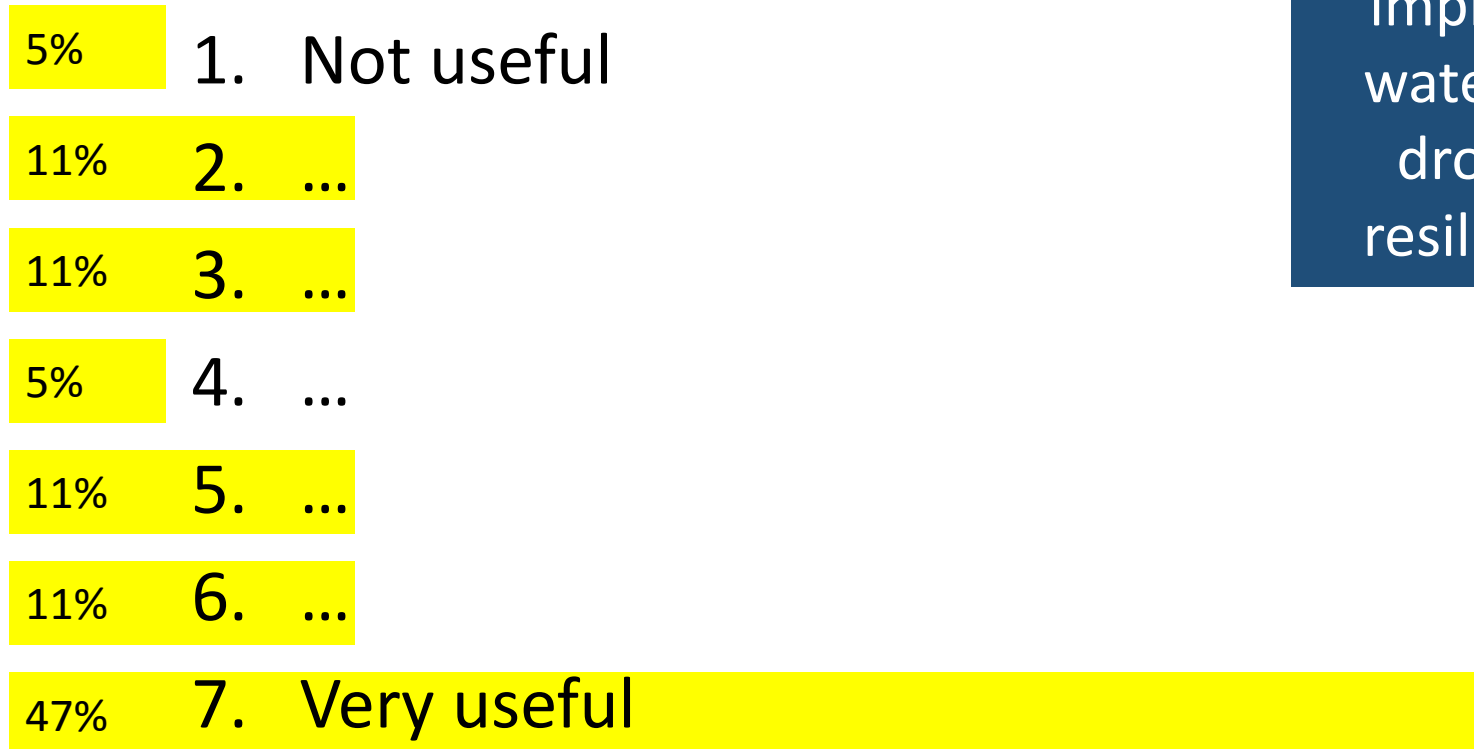
# Electronic Polling—Vulnerability Assessment

How useful are the following actions to improving watershed drought resiliency on a scale of 1 (not useful) to 7 (very useful)?

1	2	3	4	5	6	7
Not Useful			Very Useful			

# Use less water

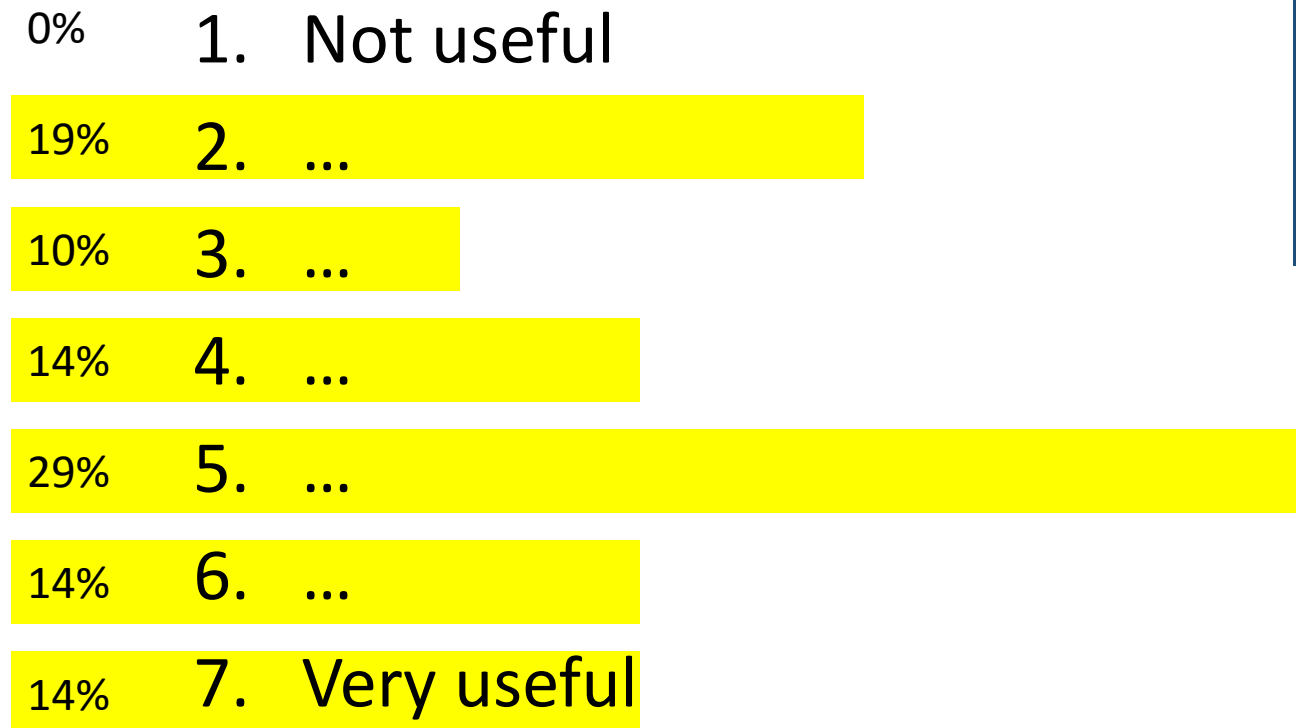
How useful is  
this action to  
improving  
watershed  
drought  
resiliency?



Mean = 5.26

# Share water resources through partnerships

How useful is this action to improving watershed drought resiliency?



Mean = 4.52



# Diversify sources of water

How useful is  
this action to  
improving  
watershed  
drought  
resiliency?

0% 1. Not useful

0% 2. ...

0% 3. ...

0% 4. ...

19% 5. ...

38% 6. ...

43% 7. Very useful

Mean = 6.24

# Store more water

0% 1. Not useful

8% 2. ...

8% 3. ...

23% 4. ...

8% 5. ...

23% 6. ...

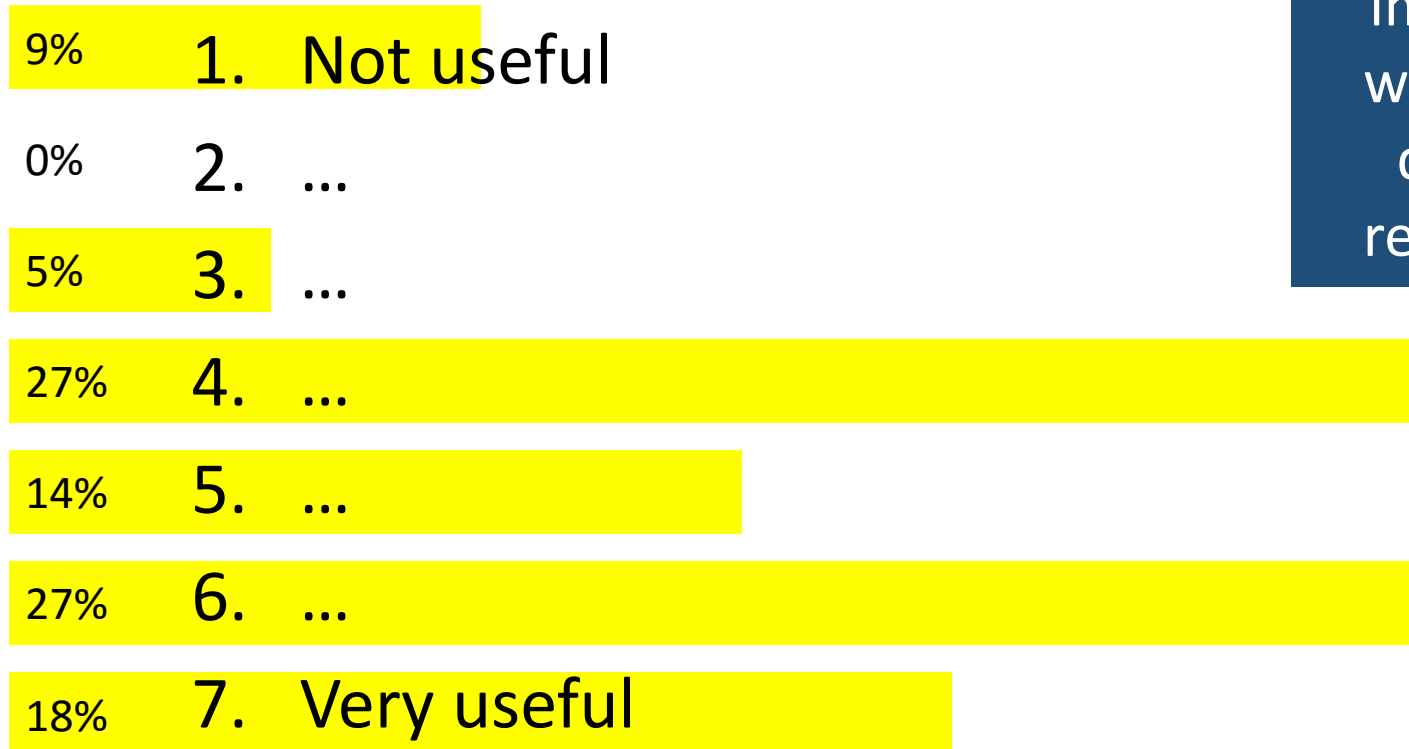
31% 7. Very useful

How useful is  
this action to  
improving  
watershed  
drought  
resiliency?

Mean = 5.23

# Develop better communication channels between water users

How useful is this action to improving watershed drought resiliency?



**Mean = 4.91**

# Make operational changes

How useful is  
this action to  
improving  
watershed  
drought  
resiliency?

0% 1. Not useful

5% 2. ...

0% 3. ...

24% 4. ...

29% 5. ...

24% 6. ...

19% 7. Very useful

Mean = 5.24

# Rehabilitate old infrastructure

How useful is  
this action to  
improving  
watershed  
drought  
resiliency?

0% 1. Not useful

0% 2. ...

0% 3. ...

15% 4. ...

20% 5. ...

45% 6. ...

20% 7. Very useful

Mean = 5.70

# Build new/enhance diversion/storage facilities

How useful is this action to improving watershed drought resiliency?

0% 1. Not useful

6% 2. ...

0% 3. ...

13% 4. ...

31% 5. ...

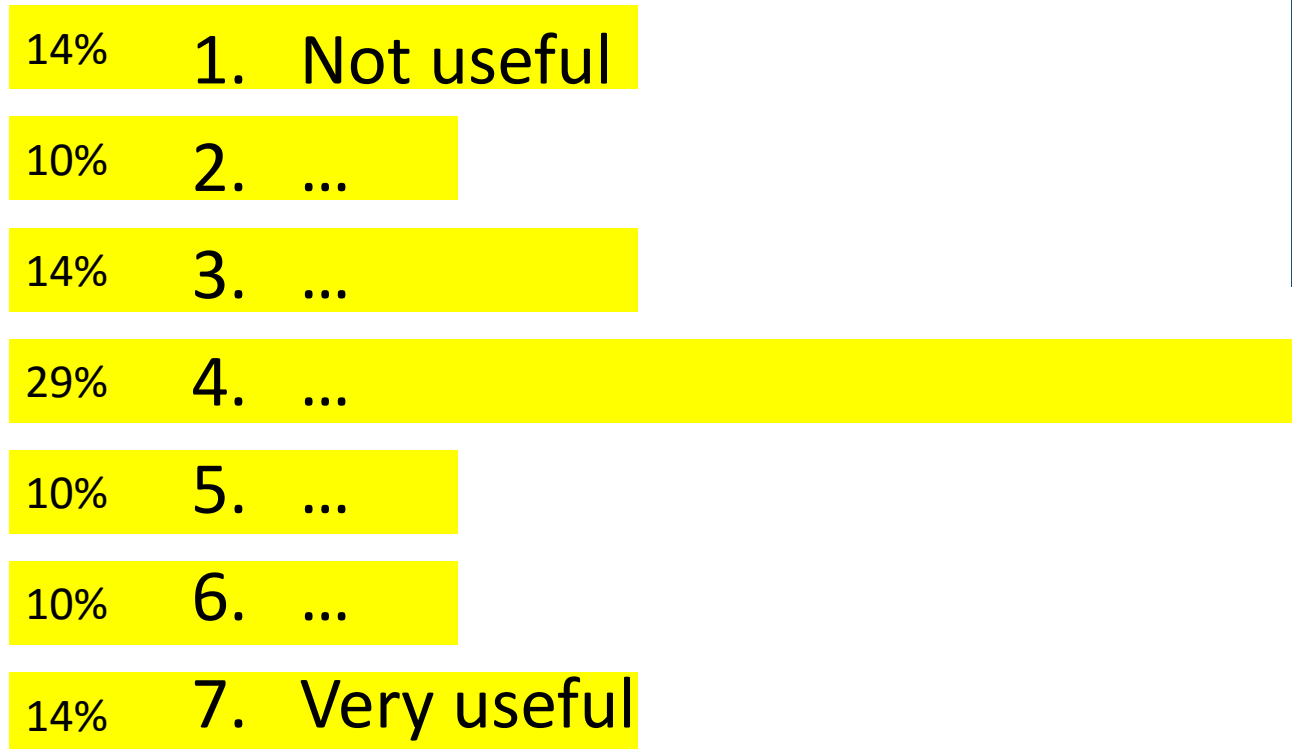
25% 6. ...

25% 7. Very useful

Mean = 5.44

# Update water laws

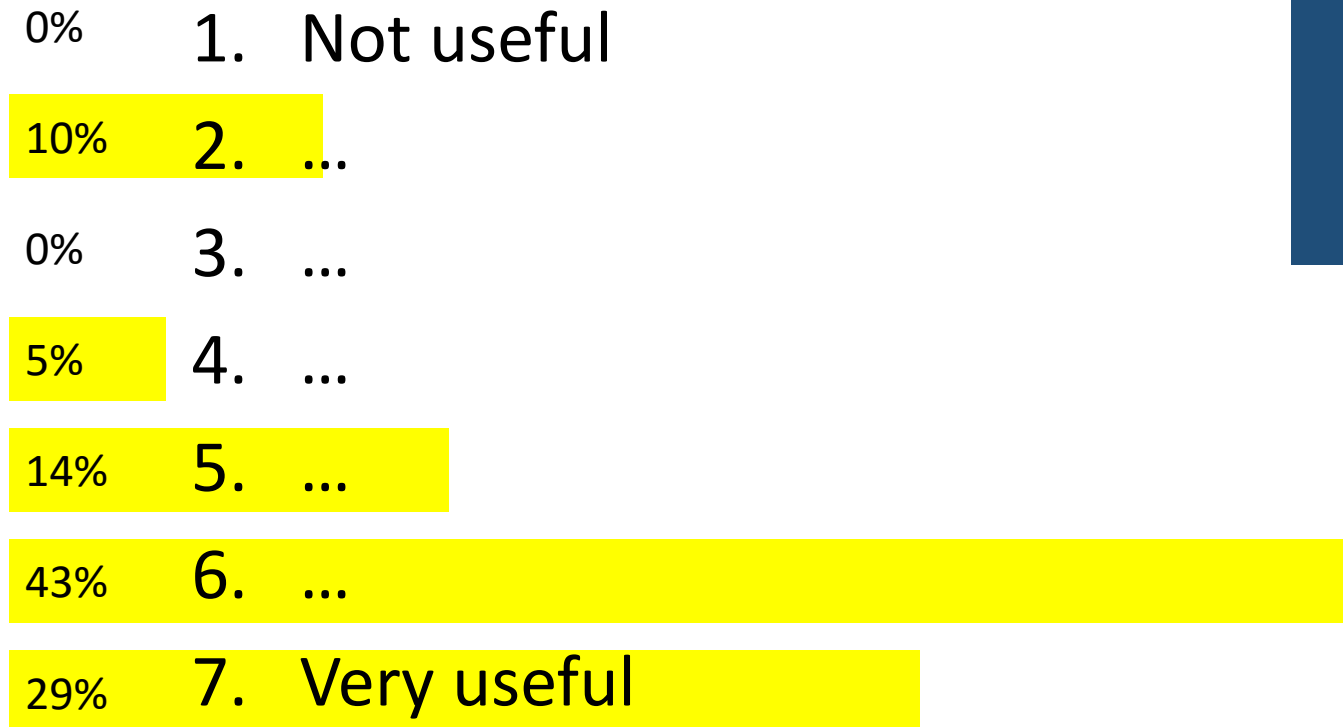
How useful is  
this action to  
improving  
watershed  
drought  
resiliency?



**Mean = 3.95**

# Create drought planning / response partnerships

How useful is this action to improving watershed drought resiliency?

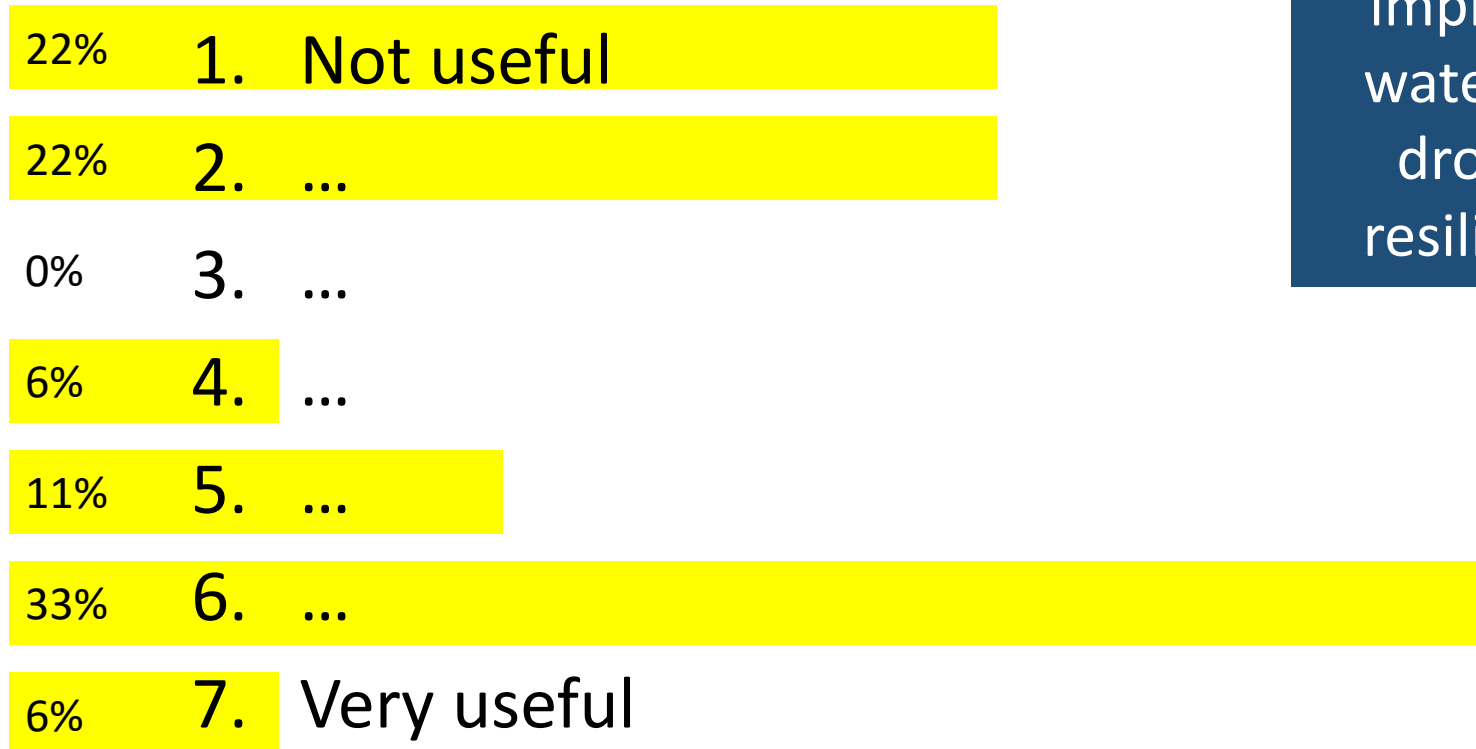


Mean = 5.67



# Provide mechanism for water banking / transfer / leasing programs

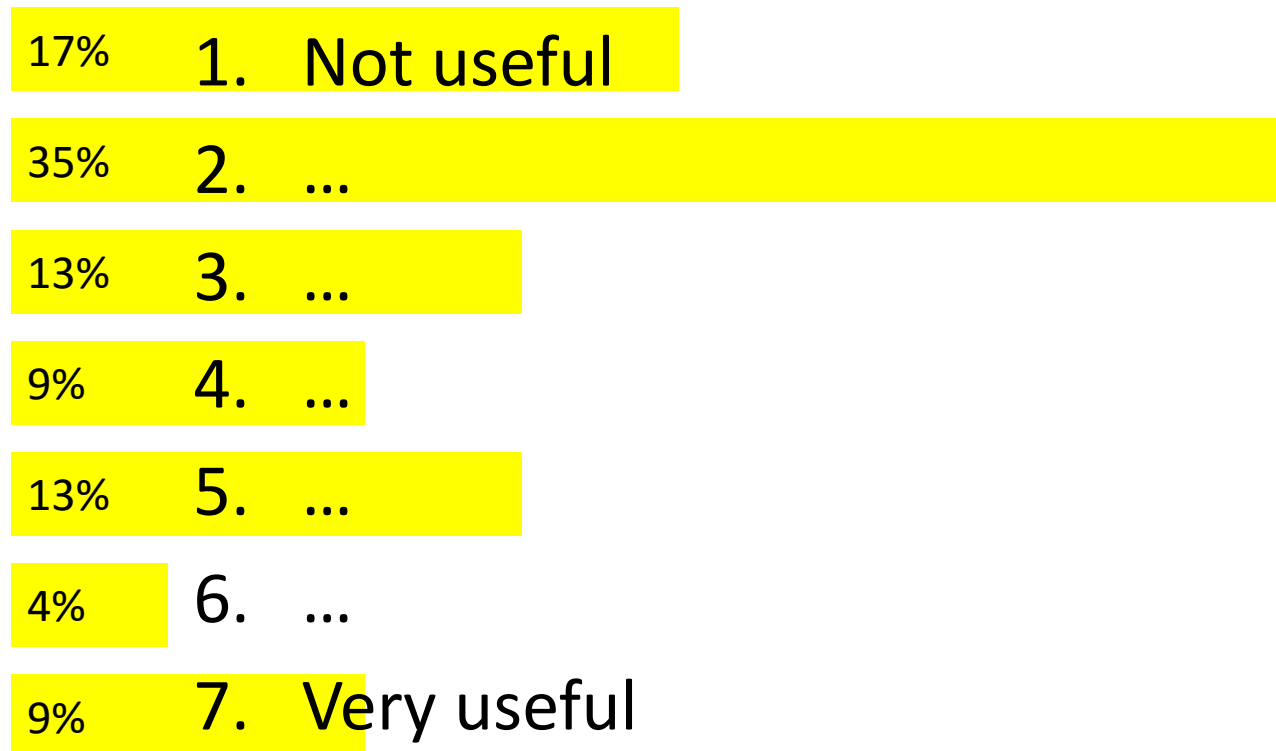
How useful is this action to improving watershed drought resiliency?



Mean = 3.83

# Increase investment in water regulation enforcement

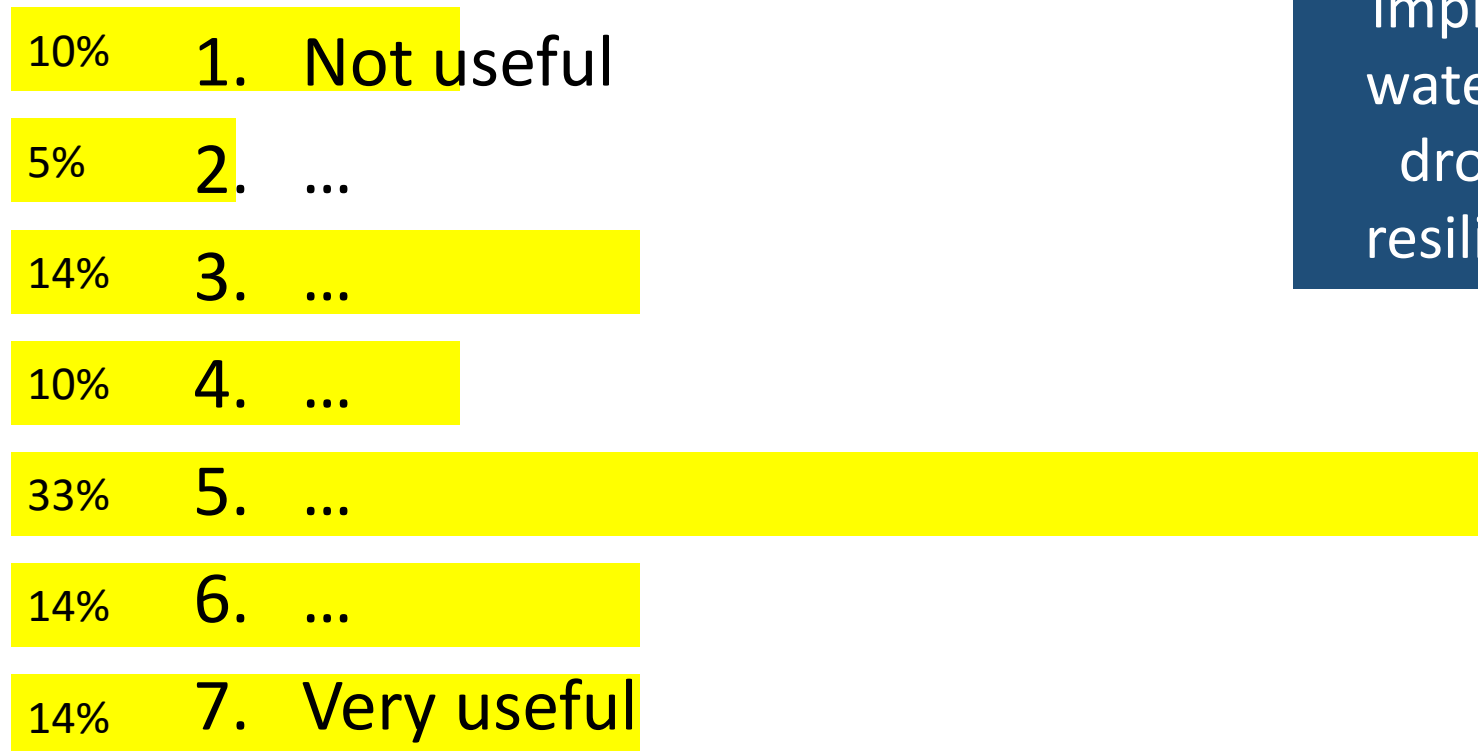
How useful is this action to improving watershed drought resiliency?



Mean = 3.13

# Price water differently

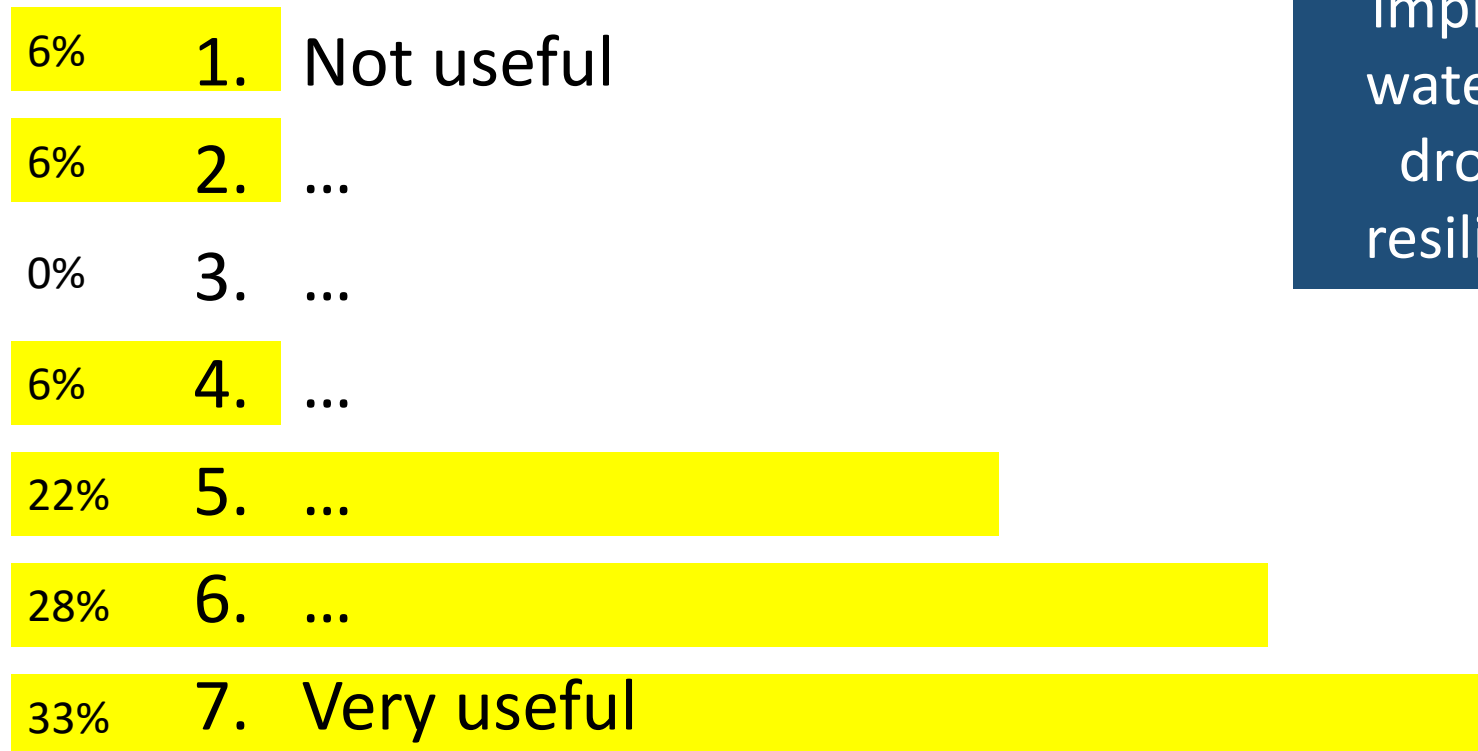
How useful is  
this action to  
improving  
watershed  
drought  
resiliency?



Mean = 4.52

# Invest in monitoring improvements

How useful is this action to improving watershed drought resiliency?



Mean = 5.50

What are some limiting factors and potential incentives for improving watershed resiliency?

# BREAK



# Planning Outcomes Group Discussion

What outcomes from the planning process will be most useful to your organization?

# Next Steps

## Now-December

Workgroups develop recommendations for:

- Drought monitoring
- Vulnerability Assessment
- Response and Mitigation Actions
- Operational Framework and plan Update

Public Outreach / North Santiam Watershed Council

## March 2017

Draft Plan issued

Annual Basin Summit

## May 2017

Drought Contingency Plan



# Adjourn—Thank You!



## Don't forget to take the survey!