Oregon
Kate Brown, Governor

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MEMORANDUM

TO: Water Resources Commission

FROM: Alyssa Mucken, IWRS Coordinator

SUBJECT: Agenda Item E, August 18, 2016
Water Resources Commission Meeting

2017 Update to Oregon's Integrated Water Resources Strategy (IWRS)

I. Introduction

This staff report summarizes recent activities relating to the update of the Integrated Water Resources Strategy, due in 2017. During this agenda item, Department staff will provide a recap of the open houses recently held around the state, online survey responses received this summer, and other public input gathered thus far. Department staff will also share a summary of the discussion and outcomes resulting from the first two meetings of the Policy Advisory Group.

II. Open House Events & Online Survey

The Department, with its partner agencies, hosted seven open house events during June 2016. These events were held to share implementation efforts under the 2012 Integrated Water Resources Strategy and to gather input on what should be considered in the IWRS update.

The events were advertised through the Department's IWRS mailing list, which currently reaches 1,380 subscribers. Press releases were issued to local newspapers. Field staff and state agency partners also helped advertise the events, and staff responded to media requests from the Medford Mail Tribune and the Bend Bulletin. Several stakeholder organizations and local partners sent notices and reminders to their networks and members. Attachment 1 contains a copy of the open house flyer that was distributed through the mailing list and partner networks.

Reporters from the East Oregonian, the Argus Observer, and the Bend Bulletin also attended open houses. Refer to Attachment 2 for a copy of the articles featured in these papers.

Altogether, nearly 200 people attended these events. Events were held at the following locations:

Event	Date	Venue	Attendees
Pendleton	Mon, June 13	Pendleton Convention Center	38
Ontario	Tues, June 14	Clarion Inn	14
Salem	Thu, June 16	Oregon Dept. of Fish and Wildlife Office	22
Newport	Mon, June 20	Best Western Agate Beach Inn	14
Medford	Wed, June 23	Medford Public Library	30
Bend	Thu, June 24	Riverbend Community Room	51
Beaverton	Thu, June 30	Beaverton Community Center	27

To accommodate both those working in the water industry and members of the general public, the Department schedule open houses for early evening hours, from 5:30 – 7:00 pm. The public was invited to come early to meet agency staff and visit display posters featuring key accomplishments under the 2012 Integrated Water Resources Strategy. The Department's region managers and watermasters also attended the open houses. Project staff from Oregon Department of Fish and Wildlife, Oregon Department of Environmental Quality, and Oregon Department of Agriculture helped in a number of ways, providing meeting space, taking notes during the meeting, and being available to answer audience questions.

Following a short presentation, agency staff made approximately 45-60 minutes available for questions and public input. The following questions were posed to attendees:

- How has the recent drought affected you?
- In what ways did the drought affect your community?
- How did you respond to drought? Please share any successes or strategies.
- What actions should be pursued to better prepare for future droughts?
- What most concerns you about the future with regard to water?
- Any other thoughts or comments you would like to share with the IWRS Project Team?

Staff chose to focus the discussion on drought-related themes knowing that building drought resiliency is a key focus area for the 2017 IWRS. However, staff also encouraged audience members to also think more broadly about water issues, fully recognizing that drought often exacerbates existing water resources issues in various communities across the state.

Chair John Roberts, Commissioner Baumgartner, and former chair John Jackson participated in the Medford and Beaverton open houses, offering opening remarks and helping answer audience questions. Staff from the Oregon Association of Water Utilities assisted with the events, helping with set up and logistics, and welcoming guests as they arrived. The Deschutes River Conservancy also assisted, facilitating the public discussion portion of the meeting held in Bend. Several local partners donated activity books, stickers, pencils, and other outreach items for the kid's activity table, which were put to good use by little ones at the Pendleton, Salem, Medford, and Bend events.

A summary of comments made at the open house events is included in Attachment 3.

The Department also created an online survey posing the same discussion questions used during the open houses. The survey was open from Monday, June 13 through Friday, July 15. The Department received survey responses from 66 individuals. Refer to Attachment 4 for survey results.

The Department also received comments sent directly to the IWRS email account. Attachment 5 contains additional comments submitted by individuals or organizations through this method.

III. General Themes

Some general themes emerged from the input gathered from the open houses, online survey, individuals, and stakeholder organizations.

- Groundwater – Concerns were raised regarding declining aquifers in northeastern Oregon. There was a general sense that resources should be dedicated to better understand the groundwater system, including domestic wells, across the state, and the effects of cumulative impacts from several years of drought.

- Place-Based Planning – Interest was expressed in several locations about fostering place-based approaches to integrated water resources planning. This included requests for continued funding and expansion of place-based planning efforts to additional geographic areas.

- Monitoring – Agencies were encouraged to improve water use measurement and collaborate with local partners on monitoring priorities. For drought monitoring, there is a need for more mid-elevation SNOTEL sites and, generally, more monitoring sites in higher areas of the watershed.

- Education – Generally, there is a lack of understanding about water in our state. The state should focus on stronger messaging and outreach, and consider providing funding for local organizations to host community forums or discussions around water issues.

- Conservation – Audience members highlighted that piping and lining projects in recent years have really helped buffer the effects of drought. The state needs to address any disincentives to conservation, such as the "use it or lose it" principle in state water law.

- Instream Demands – Several audience members noted the Department's most recent demand forecast did not address instream uses, highlighting this as a key data gap for the IWRS. Participants at the Bend and Newport events expressed the importance of instream flows to the recreation and fishing industries, a significant economic driver in these communities.

IV. Policy Advisory Group Meeting Update

The Policy Advisory Group (PAG) met in Salem for its second meeting on June 28, 2016. All eighteen members were in attendance for the full-day meeting. Commissioner Baumgartner also joined agency staff for the meeting.

Building upon the brainstorming exercise generated during the PAG's first meeting in late March, staff developed a "workspace document" for members to further expound on new issues or existing actions that need more attention in the 2017 Integrated Water Resources Strategy.

The PAG began the meeting by discussing each issue on the workspace document, discussing whether the issue should be elevated to a new recommended action, involve a modified recommended action, or should be handled in another venue. No final decisions were made; however, PAG members drew closer to a prioritized list, which they will continue to refine in future meetings.

Some of the issues discussed during the meeting included the need to ensure adequate field staff and permitting staff, the need for data and monitoring, and a discussion of public safety and infrastructure funding. There were a handful of topic areas that were not discussed due to time constraints. Those items will be picked up at the group's next meeting.

An online library of resources has been created for Policy Advisory Group members. These resources include articles, papers, and other publications shared by members or requested of agency staff. The library is accessible online:
http://www.oregon.gov/owrd/Pages/law/Library_of_Resources.aspx

V. Conclusion and Next Steps

The next meeting of the Policy Advisory Group has been set for Wednesday, September 14, in Salem. A fourth meeting has also been scheduled for Wednesday, December 7.

Staff will share the input gathered through the open houses, online survey, individuals, and Policy Advisory Group meetings with the public, posting results to the IWRS website.

The Department also plans to convene the IWRS Agency Advisory Group in mid-to-late September.

Attachment 1: Open House Flyer
Attachment 2: Media Coverage
Attachment 3: Open House Comments
Attachment 4: Online Survey Responses
Attachment 5: Individual Comments

Alyssa Mucken
503-986-0911

OPEN HOUSE EVENTS

OREGON'S INTEGRATED WATER RESOURCES STRATEGY

The Water Resources Department and its partner agencies—the Department of Environmental Quality, Department of Fish and Wildlife, and Department of Agriculture—are hosting seven open houses throughout the state in order to hear from you. The information gathered at these events will inform the 2017 update to the Integrated Water Resources Strategy.

These public meetings will begin with a brief overview of progress made under the 2012 Strategy. Agency partners will ask the public for ideas, issues, or actions that should be considered for the 2017 Strategy.

- **Attend to share your concerns and priorities for Oregon's water future.**
- **Come learn about new initiatives and programs, including:**
  - Place-based planning
  - Drought preparedness
  - Instream protections
  - Funding for projects
  - Long-term water demands
  - Monitoring-related activities
  - Pesticide stewardship partnerships
- **These evening events are family friendly. Spend time at the kid's activity table.**

Open House	Date & Time	Location
Pendleton	Monday, June 13 5:30 - 7:00 pm	Pendleton Convention Center 1601 Westgate Ave. Pendleton, Oregon 97801
Ontario	Tuesday, June 14 5:30 - 7:00 pm	Clarion Inn 1249 Tapadera Ave. Ontario, Oregon 97914
Salem	Thursday, June 16 5:30 - 7:00 pm	ODFW Headquarters 4034 Fairview Industrial Dr. SE Salem, Oregon 97302
Newport	Monday, June 20 5:30 - 7:00 pm	Best Western Agate Beach Inn 3019 N. Coast Hwy. Newport, Oregon 97365
Medford	Wednesday, June 22 5:30 - 7:00 pm	Medford Public Library 205 S Central Ave. Medford, Oregon 97501
Bend	Thursday, June 23 5:30 - 7:00 pm	Riverbend Community Room 799 SW Columbia St. Bend, Oregon 97702
Beaverton	Thursday, June 30 5:30 - 7:00 pm	Beaverton Community Center 12350 SW Fifth St. Beaverton, Oregon 97076

For more information, contact: Alyssa Mucken, alyssa.m.mucken@state.or.us, 503-986-0911

EAST OREGONIAN

Groundwater dominates talk at Pendleton resource strategy meeting

George Plaven • East Oregonian
Published on June 15, 2016 7:56PM

The Oregon Water Resources Department kicked off a series of public meetings on the state's water strategy Monday in Pendleton, with questions mostly centered on how drought has affected the community.

If the conversation was any indication, drought isn't the only reason to be concerned about water shortages.

Groundwater in particular dominated the discussion during Monday's open house at the Pendleton Convention Center, where about 40 people gathered to provide feedback on future water needs for farms and cities.

The Integrated Water Resources Strategy, or IWRS, is essentially the road map that identifies goals, objectives and solutions for in-stream and out-of-stream water use statewide. It was created by the legislature in 2009, adopted in 2012 and is due for a five-year update by late summer or fall of 2017.

While the IWRS is adopted by the Oregon Water Resources Commission, it is done in collaboration with the state Department of Fish & Wildlife, Department of Environmental Quality and Department of Agriculture. All four agencies are represented at the open house meetings, which will run through the end of the month.

By an executive order from Gov. Kate Brown, the 2017 IWRS update will need to address drought resiliency. In 2015, the governor declared a drought emergency in 25 of 36 counties, which was the most ever for a single summer.

Alyssa Mucken, program coordinator with the Water Resources Department, said last year's historically low snowpack resulted in stream flows at half or less than half of average.

"We're very concerned with how we prepare for future droughts," Mucken said.

But once the floor was opened for Q-and-A, talks began to shift. Gary Rhinhart, vice chairman of the Umatilla County Planning Commission, said the overallocation of groundwater in the lower Birch Creek drainage has caused some surface springs to disappear.

In 2014 and 2015, Rhinhart said Birch Creek dried up completely through his property for the first time.

"We cannot blame it on the drought," Rhinhart said. "Somebody is going to have to start keeping an eye on those springs."

Beverly Bridgewater, manager of the West Extension Irrigation District, said the state needs to take a more comprehensive approach to conserving water supplies, and that includes studying the connectivity of ground and surface water.

"It's so much bigger than what we have in front of us," Bridgewater said.

Ray Kopacz, who manages the Stanfield Irrigation District, suggested replacing deep water wells with more surface water out of the Columbia River, which would give aquifers the chance to recharge. That's one component of a major proposal from the Northeast Oregon Water Association, which continues to make its way through negotiations in Salem.

Tom Byler, director of the Water Resources Department, said bucket-for-bucket mitigation is still required on the Columbia to account for endangered salmon and steelhead, which is a federal issue. But he agreed that the state's water issues go beyond drought.

"We're all trying to make use of this resource," Byler said. "For the greater good, we need to look at how to make this resource stretch as far as we can."

Mucken did point to strides made under the current IWRS, including a new Water Resources Development Program funded by the legislature to provide grants and loans for water projects. Two Eastern Oregon projects, including fish passage at Beaver Creek Dam and conservation work along the Lostine River, have received funding from the program.

"This (IWRS) adoption in 2012 really led to some key successes at the legislative level," Mucken said.

There are 40 recommended actions within the IWRS, and Mucken said they are taking a phased-in approach to implementation. The 2017 update will build upon the same basic framework, while integrating drought resiliency into long-term planning.

Byler said people in the past used water like it was an endless resource.

"It's tough to untangle things and start over," he said. "We need to be looking at holistic solutions."

Contact George Plaven at gplaven@eastoregonian.com or 541-966-0825.

http://www.argusobserver.com/news/water-resources-strategy-addresses-long-term-demand/article_a675f338-331a-11e6-8627-4b896ec8534d.html

Water resources strategy addresses long-term demand

Larry Meyer The Argus Observer Jun 15, 2016

ONTARIO — Staff members from the Oregon Water Resources Department were in Ontario Tuesda to get input on updating Oregon's Integrated Water Resources Strategy. They wanted to find out what is working locally and what can be improved.

The meeting at the Clarion Inn was one of several open houses the Water Resources Department hosting as it prepares to complete a five-year update by 2017, ahead of the comprehensive 10-yea update in 2022.

The water resources strategy address surface water, groundwater, habitat, water quality, public health and invasive species, said Alyssa Mucken, water resources strategy coordinator.

The strategy addresses the long-term water demand, which Mucken said was forecast to increase by 1.3 million acre-feet for agriculture across the state by 2050.

The strategy has included 20 new stream gauges for monitoring purposes, Mucken said, as well a provided money for feasibility studies on proposed projects and developed new projects.

Included in the first round of funding was money for one of the piping projects in the Willow-cre area, which puts in irrigation through pipes instead of open ditches.

Dan Fulwyler, manager of the Vale Oregon Irrigation District, said funding those type of projects helped prepare for drought, as conservation measures helped the district's water last longer through the growing season. Without it, the water would not have lasted much past the end of June or first of July the last few years, Fulwyler said, so funding those conservation projects is crucial.

Jay Chamberlin, manager of the Owyhee Irrigation District, addressed questions raised by Mucke about how drought affected the local area.

"Drought is a slow process," Chamberlin said.

It is going to take the agricultural community years to recover, he said. He said the loss of crop revenue within Malheur County irrigation projects at about $93 million in one year, using estimates of the Bureau of Reclamation, including land within Idaho that is also under the Owyhee Project.

Chamberlin said more information needs to be put out about what tools are available to produce to deal with drought situations. He said the rules about how those tools can be used need to be more flexible.

Agriculture needs to be more vocal about what it done for conservation out of its own pocket, he added. That includes adopting more efficient irrigation methods, such as drip and sprinklers, an lining or piping ditches to curtail water loss, he said.

Dams and reservoirs have proved their worth, Chamberlin said. They captured and held early runoff, which otherwise would have been lost, to be used for irrigation.

"Dams are what got us through," he said.

Living in a desert region, there is a consensus that the area is never far from a drought, Chamberlin said.

ENVIRONMENT

Planning for Rogue Basin drought resiliency

Wednesday open house in Medford takes a look a water planning

If you go

What: Oregon Water Resources Department open house

Topic: Update of the state's 2012 Integrated Water Resources Strategy

When: 5:30 to 7 p.m....

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By Mark Freeman
Mail Tribune Follow

Posted Jun. 21, 2016 at 4:19 PM
Updated Jun 21, 2016 at 4:59 PM

State water resources managers are coming to Medford Wednesday to hear how Rogue River Basin residents want to see the basin's drought resiliency improved amid upcoming land-use changes here and expected changes to the climate.

The Oregon Water Resources Department is in the midst of its first update to 2012's inaugural Integrated Water Resources Strategy, which outlines goals for managing surface water and groundwater, and seeks out projects that could improve and protect water volume and access.

Oregon Water Resources Department is holding open houses around the state, looking for public input as it updates the 2012 plan. The Medford meeting will be held at the Medford library, 205 S. Central Ave., from 5:30 to 7 p.m.

The strategy is due to be updated in late 2017, and it comes after Gov. Kate Brown's order last July directing state agencies to work on building drought-resilience with a nod to climate change.

"It's about, 'How do we move from today forward with more people and the same amount of water in a changing landscape?' " Jackson County Watermaster Travis Kelly says.

The Medford meeting is the fifth of seven open houses planned around Oregon. Attendees will hear information about the 2012 strategy, what has been developed since then and where the state is heading.

The update is required by 2009 state legislation that created the strategy. Other participants are the Oregon agencies overseeing fish and wildlife, environmental quality and agriculture.

The update comes after three years of drought, during which the state has expanded efforts to improve the monitoring of groundwater and surface water, says Elyssa Mucken, the strategy's coordinator at OWRD.

"Population growth is a big issue area for us, as are changing climate and land use," Mucken says.

The strategy also looks at doable projects to improve things such as water-delivery efficiency.

"We're thinking long-term, but we are taking a phased-in approach to implementation," Mucken says.

The strategy is different than the locally led WISE Project, which stands for Water for Irrigation, Streams and the Economy. However, WISE's collaborative effort among local stakeholders ranging from farmers and ranchers to water- and fish-conservation interests parallels the state strategy, Mucken says.

"WISE is locally led, and it certainly complements many of the recommendations of the Integrated Water Resources Strategy," Mucken says.

Reach Mail Tribune reporter Mark Freeman at 541-776-4470 or mfreeman@mailtribune.com. Follow him on Twitter at www.twitter.com/MTwriterFreeman.

LATEST LOCAL VIDEOS: "TOPSIDES" WHOSE CONSTRUCTION DATES BACK 90 YEARS WAS HOME TO ALFRED AND HELEN CARPENTER BEFORE MIKE AND MATILDA STEPOVICH BOUGHT THE HOUSE 4 DECADES AGO. AN ESTATE SALE WILL TAKE PLACE FRIDAY THROUGH SUNDAY AT 1677 OLD STAGE ROAD.

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Input sought on managing the state's water

By Hilary CorriganThe Bulletin Published Jun 22, 2016 at 12:02AM / Updated Jun 22, 2016 at 10:44AM

Oregon wants your ideas in planning how to manage the state's water.

The Oregon Water Resources Department will host a public meeting Thursday in Bend to collect input on a planned 2017 update to a state water strategy that includes dealing with drought and climate change. It could also address ways to ensure water for fish and recreation and money for irrigation canal piping projects.

In 2012, the state crafted its first Integrated Water Resources Strategy, a blueprint meant to ultimately achieve "healthy waters" that can sustain a healthy economy, environment and culture throughout the state. The plan aims to better understand and plan for current and future water needs, both out-of-stream — where water gets diverted for use — and in-stream. Among other actions, it called for improving water resource data collection and monitoring, updating long-term water demand forecasts, improving water-use reporting, analyzing the effect on water from energy development projects, improving water-use efficiency and conservation, improving watershed health and natural storage, preventing invasive species and restoring habitat. The plan required an update in five years.

It helps direct state priorities, staff and resources, including budgets of natural resource agencies, said Kimberley Priestley, senior policy analyst at WaterWatch of Oregon.

"It's not just sitting on the shelf, let's put it that way," Priestley said.

Among other actions, WaterWatch wants the updated plan to help ensure better measurement of the water that gets diverted from rivers for different uses. Priestley suggested the 2017 update could set deadlines and commit funds and personnel to those measurement efforts.

The group also wants to see state agencies apply for in-stream water rights for the benefit of fish and recreation uses, in the same way that farms and cities can apply for water rights for their uses. The 2012 plan allowed for the state to take such action, but the state has done little on that topic, Priestley said, and such a move would help protect water for those uses in case of other future use appropriations.

The group suggested the updated plan could also call for enforcing wasteful water use in agriculture; for studies that could determine the flow levels needed for fish; and for setting minimum flow levels for water quality, recreation uses and fish and wildlife, especially during droughts. Priestley added that existing drought rules "do very little to protect rivers and fish" and noted the fish kills after the 2015 drought.

Tumalo Irrigation District Manager Kenneth Rieck wants to see the updated plan continue the original plan's funding opportunities for costly canal piping projects that make irrigation districts' water use more efficient and help restore rivers and streams. The original plan helped ensure a grant process and state funds that could then be matched with federal money for such projects.

"We have a 100-year-old plumbing system" that the district wants to upgrade to the 21st century, Rieck said. "Restoring the rivers and the creeks and stuff like that is kind of a matter of political will."

The public can comment at the Thursday meeting and through an online form at http://bit.ly/iwrsdroughtcomments (http://bit.ly/iwrsdroughtcomments) by July 15.

After an ongoing series of public comment meetings around the state, Water Resources Department staff will issue a draft of the updated plan, possibly by the end of the year or early in 2017. The department's commission could approve a final updated plan in summer 2017.

For more information, visit www.oregon.gov/owrd/Pages/law/integrated_water_supply_strategy.aspx (http://www.oregon.gov/owrd/Pages/law/integrated_water_supply_strategy.aspx)

— Reporter: 541-617-7812,

hcorrigan@bendbulletin.com (mailto:hcorrigan@bendbulletin.com)

Andy Tullis / The Bulletin North Unit Irrigation District Watermaster Gary Calhoun opens the gate allowing 200 cubic feet of water every second to flow from the Deschutes River into an irrigation canal, beginning a process of priming the system, at the irrigation district's diversion facility in Bend in April. The district's canals are 64 miles long and use the river's water to irrigate farm land in Jefferson County.

Summary of Open House Comments

Oregon's Integrated Water Resources Strategy
July 2016

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Pendleton Open House
Pendleton Convention Center
June 13, 2016
Meeting Notes

Q1 & Q2: How has the recent drought affected you? In what ways did the drought affect your community?

- Management of Lower Birch Creek drainage. It's a 303d listed stream with endangered steelhead. Used to have artesian wells operating at 125 psi of artesian pressure, but in the last few years, we've seen losses of 10-12 psi of pressure. In the last 2 years, we've lost all artesian pressure. Had 2 artesian springs in family for 150 years. 2014-2015 was the first time Birch Creek dried out on my property. In previous droughts, we still had water in creek. My neighbor's spring fed domestic well has dried up. Two irrigation wells started up two years ago, on either side of us. They were drilled 900 feet deep. Most people used to get water from springs that drained into the creek. Some springs drained into ponds that benefited wildlife, pond has now dried up. Pilot Rock is spring dependent. Spent thousands of dollars on riparian habitat, now losing plantings because of water level declines. Wants fee on water use. He has been an irrigator and understands what that would mean to irrigators.
- This highlights that it is not a few years of drought at issue, but cumulative impacts.
- I live in Umapine. Used to have artesian wells, but now, wells are dropping with a 3-4 feet decrease in water table every year, discovered by OWRD study. OWRD needs to help us stabilize the groundwater levels. Studying this issue for 10 years will not help us.
- NRCS Snotel sites showed good snowpack at 5,000 feet this year, but lower elevations didn't have snowpack. The water supply projections were based on high elevation snowpack sites, however, low elevations melted early. This resulted in inaccurate streamflow forecasts.
- Drop in the water table here is not just a drought problem. WRD continues to issue groundwater permits while not knowing how much water is actually available.
- Mountains were dry for last few years. This year when they got snow, the mountains sucked it up.

Q3: How did you respond to drought? Please share any successes or strategies.

- Pendleton initiated rate increases to pay for aquifer storage and recovery. This began 13 years ago, expanded efforts in 2011. Groundwater is still declining, but it's because we are hydraulically connected to basin downstream from Pendleton. It was a significant cost, but Pendleton is now a very drought resistant community.

Q4: What actions should be pursued to better prepare for future droughts?

- OWRD should be looking into aquifer recharge projects.
- Our area needs more monitoring of wells in the Blue Mountains, especially at higher elevations. It would tell us about background recharge of our source waters. It's very difficult to install measuring devices in existing wells. How far up the mountain is recharge occurring? High in the Blues, Meacham area, and Poverty Flats, and Walla Walla area in basalts.
- Better data for recharge projects. Water availability is based on an old period of record, but we shouldn't just use the last 10 years of streamflow data to determine actual water availability to know how to plan a reservoir or more aquifer storage.

- Tracer studies could help you determine the degree of groundwater and surface water interaction, and help WRD determine when regulation is necessary. In the Walla Walla Basin, there is a link between surface water and groundwater.
- We can't depend on the state to provide all of the funding. At some point, users are going to have to provide some of the funding, like a fee-based system. That money should get put back in to enhance the system.
- Access to Columbia River water, in exchange for well water in my community.
- We need a systemic approach to the issue. Conservation, storage and reuse projects are Band-Aids. The issue is so much bigger than a local study can handle. It's critical that we learn to manage in a way that is comprehensive.

Q5: What most concerns you about the future with regard to water?

- If you move river users to wells, they will use more water. They are no longer cut off when flows are not available.
- We have tried to build incentives to be more efficient with their use, such as through the Conserved Water Allocation program. WRD sees this program being used more often. WRD welcomes more ideas for incentives.
- Oregon is a conjunctive management state. We can regulate off junior water users. But it's not easy to prove. We need significant data. These community conversations help us prioritize our activities/studies across the state.
- I worry that WRD doesn't consider the effect of groundwater on surface water, except for in the Deschutes basin. Mining groundwater can cause a much bigger problem down the road.
- How do we deal with limited water supply and increasing demands? Those pressures and demands will be growing, especially in a changing climate. How do we provide adequate resources to meet needs?
- New water needs due to changing crops will be challenged to get water.
- Senior water users often don't conserve because they don't need to. They have water certainty.

Q6: Any other thoughts or comments you would like to share with the IWRS Project Team?

- We have to move quickly or we'll go past the time that we can do anything about it.
- Thanks for coming out to listen to us. Montana lost a major case with Trout Unlimited, forced state to put onus on applicant to prove that the groundwater use did not impact surface water supplies.
- Is it legal to transfer water rights from Ontario to Umatilla Basin? I don't know about Ontario, but we talked a lot about Wallowa Lake because it flows to the Columbia and could be used for mitigation.
- What about taking it out of the ground and selling it to the Umatilla Basin? Would need conversations and rule-making to do that. Water in the Snake or Columbia has additional considerations because it is shared with Washington/Idaho.
- Will ban be removed from Oregon to appropriate Columbia water? Oregon has restrictions on development of water from Columbia mainstem. It requires bucket-for-bucket mitigation. The driver is federal listings for endangered species. Washington and Idaho are facing the same issues. The development we see happening in Washington got in the door before federal listings.

Ontario Open House
Clarion Inn
June 14, 2016
Meeting Notes

Q1 & Q2: How has the recent drought affected you? In what ways did the drought affect your community?

- Drought is a slow process, certainly not like a flood event. Even though we had enough water this year, it'll take many years to get back to normal due to rotation, idling, and aquifer declines.
- Water allocation is very rigid. Need flexibility in our tools and more tools. Dams are our ace in the hole. Help us even when snowmelt happens early like this year. Dams keep recreation, fisheries, etc. alive.
- Agriculture has spent millions of dollars out of their own pocket on their own farms to conserve water. We need to document and get credit for that.
- We saw $93 million is lost crop revenue in 2015. We've been operating off the bottom of the Owyhee Reservoir for the last 4 years. That leaves us with uncertainty from year to year. Owyhee is supposed to store 2 years' worth of water in normal years.
- The piping we put down in the last four years enables us to stretch our water supply longer in the irrigation season.
- We joke that we are always 10 days away from a drought. We have the water, but there's a distribution problem. Individual growers have modern technology, but the distribution system is 100 years old.
- You can't predict when you're going to have a drought. Don't take our water rights away; that will not help us in a drought.
- Let's not get too focused on a hotter drier future climate. In my lifetime, scientists predicted expanding ice caps and were planning changing crops to deal with that. 150 years ago the whole western region was flush with water. You never know what the future holds.
- We need to plan effectively to be resilient and adapt.
- Wetland and riparian areas may suffer by piping canals and laterals. We've noticed domestic wells 80 feet deep have started to decline.

Q3: How did you respond to drought? Please share any successes or strategies.

- Districts are competitive, they compete for same funding resources, but drought brought us all together, now we're working together in new ways.
- Our watermaster was very helpful during the drought. Ron Jacobs participated in public meetings and let us know what tools people can use. Irrigation districts can often be seen as the enemy because we enforce the allocations.
- Putting pipe in the ground in good year, before the drought hits.
- I hate to think where we would have been last year without the piping and center pivots we recently put in. These technology tools give water managers more options. We have people calling us weekly for piping and center pivot tools. We need to coordinate with OWRD, ODA, NRCS, and SWCDs to target funding for these technological tools. Current climate cycle makes this even more essential.
- Drought transfers were used quite a lot during the drought. The drought situation also drove the community to better understand their water rights. Can we lose our water rights?

Q4: What actions should be pursued to better prepare for future droughts?

- More staff at OWRD. Are secondary water rights and drought emergency wells being used in good water years when they are not supposed to be?
- Funding.
- We need to emphasize the multi-use benefit of storage to encourage construction of storage. Storage structures allow for instream flows for fish and wildlife. We need to get away from contention with environmental community and agree that storage benefits all interests. Better water quality equals more water.
- The concept of place-based planning is huge. There isn't a better source of wisdom or needs than the local community. I see place-based planning as a real opportunity.
- Place-based planning has only been funding for a limited time-frame, from 2015-2017. Expanding this program would need legislative approval and support from Oregon communities.
- Increase storage.
- We need to define conservation. To us, it means recapturing and reusing water 4 or 5 times.
- Bully Creek reservoir was built for flood control in Vale. Remember when Vale was flooded out before Bully Creek reservoir was built. Storage is needed to ensure safety of our communities in high water years.
- We put in 5-6 miles of pipeline every year. But we've picked the low hanging fruit. We got funding for LiDAR and now use LiDAR every day. We want to do an efficiency inventory to see where we flood and where we sprinkle to strategically target upgrades.

Q5: What most concerns you about the future with regard to water?

- Concerned about protecting our existing water rights.

Q6: Any other thoughts or comments you would like to share with the IWRS Project Team?

- Water quality is nipping at our heels. We're very focused on supply. New food safety standards prevent us from using some water that's delivered.
- State of Oregon does not have a compact with Nevada. Duck Valley Indian reservation has money and wants to revamp its irrigation system. We want a study to see how that will affect us. BIA and DOI settled out of court. We had to get a FOIA to find out the settlement.
- Nevada is also thinking about using water from Owyhee system to be sent to Reno.
- IWRS is not about altering water rights. It will keep system intact.
- 2010 open houses brought a lot of people because of the Klamath crisis. But we are different here, in that most of our water rights are adjudicated.
- How to get more people to the open houses? Free meals. Target the November through January timeframe.

Salem Open House
Oregon Department of Fish and Wildlife Commission Room
June 16, 2016
Meeting Notes

Q1 & Q2: How has the recent drought affected you? In what ways did the drought affect your community?

- Soil cracking.
- The process for issuing a drought declaration took too long. Declaring a drought is influenced by politics.
- Marion County declared too late, which meant that water users didn't have time to benefit through water right tools.
- Farmers had to buy water from cities.
- Domestic well issues.
- Drought is a really slow moving disaster and people simply lose interest.
- Drought declaration leads to environmental justice issues. Funds are not always open for the less advantaged.

Q3: How did you respond to drought? Please share any successes or strategies.

- Response was lacking. Citizens weren't being told to conserve water.
- Partners in the North Santiam watershed are currently developing a drought contingency plan for the watershed. It's being funded by the Bureau of Reclamation and it the first one funded in Oregon. The state should think about how to expand efforts, such as these, as well as how to message drought to the general public. Messaging is key, and often a conflicting issue.

Q4: What actions should be pursued to better prepare for future droughts?

- Must use a watershed approach for dealing with drought.
- Need to have a conversation about "what is drought?" What drought means varies among geopolitical levels; agriculture; cities, county, and state.
- Advocate for new perspectives and approaches to creating new water supply storage.
- Moderating storage (landscape) capacity improvements.
- Assess components of hydrologic cycle for opportunities to meet societal and environmental needs.
- Look at all sources of water in the cycle: atmospheric, groundwater, and surface water. In other words, employ knowledge/understanding of precipitation patterns (when and quantity - for capturing and storing water). Consider layers of site design by using orders of magnitude, starting with raindrop, rill, runnel, sheet/stream and then moving to creek, river, ocean, and aquifer.
- Store water high in basin, hold onto for as long as possible; providing multiple opportunities to re-use before it returns back to the river (or infiltrates).
- Use storage opportunities in landscape—avoid piping across the valley because it causes dehydration of

the landscape, which in turn influences feedback at the boundary layer between the atmosphere and soil surface.

- Look at any collaboration with other studies, other entities to coordinate investigations and leverage funds; go after more funding.
- Importance of groundwater monitoring in understanding the hydrology. Citizens could help with monitoring.
- Could conservation plans become more stringent? For example, not all communities have water management and conservation plans.
- Opportunities to increases robustness of water management plans.
- Move toward conservation so that we are not reacting to droughts.
- Develop a culture of conservation, so we're better prepared and resilient. It'll lead to a quicker recovery.
- Minimize the impact and time in "emergency mode."
- The Corps of Engineers makes water supply determinations based on forecasts. There should be broader advertising of what operational decisions are being made.

Q5: What most concerns you about the future with regard to water?

- Public needs to know about the gaps and not assume they are being taken care of.
- The scientific and local land use dialogue is plagued by distrust. Trust is hard to create in this arena and easy to ruin. Discussions early on are important.
- Every drop of water is already spoken for.
- Climate migration.
- Cascadian subduction zone earthquake.

Q6: Any other thoughts or comments you would like to share with the IWRS Project Team?

- The state needs to define how many wells it would need in order to have a credible network that measures water levels statewide.
- Concerned about domestic wells, and what methods or procedures are used to truly understand the impact of drought on domestic wells, and conversely, the use of domestic wells on the resource.
- Need to really understand the groundwater system.
- Water illiteracy is high in Yamhill County, and across the state.
- Our county sees place based planning (PBP) as government over reach.
- Most folks are unprepared in a practical manner; they see preparedness as keeping weapons handy.
- IWRS should allocate some resources to messaging.
- Very complementary of place-based planning. It'll be extremely helpful in establishing trust.

Newport Open House
Best Western Agate Beach Inn
June 20, 2016
Meeting Notes

Q1 & Q2: How has the recent drought affected you? In what ways did the drought affect your community?

- Patterns of sport fisherman catching fish changed last year from previous year, assuming the change resulted from temperature.

Q3: How did you respond to drought? Please share any successes or strategies.

- *[note: no comments provided]*

Q4: What actions should be pursued to better prepare for future droughts?

- California has been dealing with drought for very long time, and as citizens, they use a third less water than Oregonians do. We need to focus on efficiency, not more infrastructure or more diversions. Increase costs to the ratepayers to incentivize conservation.
- Beaver recovery and habitat restoration. Recognize that beavers are a keystone species. They can help with water storage retention and offer habitat refuge for salmon and other native species. Recognition of beavers as a water resources strategy is long overdue.
- How do we prepare for a future with less glacial snow melt?
- The state needs to be able to understand how climate change will affect different water systems (snow driven vs. rain dominated systems).
- Build resilience through water sharing agreements.

Q5: What most concerns you about the future with regard to water?

- We are very much concerned about fish in this region. In particular, the lack of funding and staff to complete instream flow studies.
- Largest concern for water into the future, as our economy can't grow due to lack of water availability.
- There should be better mechanisms in place for strategic financing, especially for targeting water loss and aging infrastructure.
- Water loss is pretty common in the smaller water districts. Working on incentives to create less loss and greater conservation from the users.
- Concerned about the emphasis on out-of-stream needs.

Q6: Any other thoughts or comments you would like to share with the IWRS Project Team?

- The Project Team needs to clearly communicate to other state officials that Newport deeply cares about fish and wildlife needs. There are no excuses that can justify not taking greater action on this.

- State must complete a study of water demands in the future for the fish and wildlife needs. The economy on the coast is very fish dependent.
- Issue of amount of water loss, water loss is not a non-compliance issue, financing issues to fund infrastructure repairs. Typically in small monetarily stressed areas. Recognizing that your strategy extends beyond our region, please consider making the Fort Rock/Christmas Valley area a high priority for future groundwater studies. In the 1970's, it was mostly sagebrush, but today, there are 1000's of acres under irrigation, using groundwater. Please study how the aquifer feeds the Ana River, a tributary to Summer Lake.
- At future events like this one, bring in a panel of agency directors to discuss these types of issues with us.

Medford Open House
Medford Public library
June 22, 2016
Meeting Notes

Q1 & Q2: How has the recent drought affected you? In what ways did the drought affect your community?

- The 2015 drought had a positive impact in our community. It brought our community together and led to greater community involvement. It resulted in the drought summit in the Rogue Basin, which lead to the development of a feasibility study. Due to the increased rainfall this year, people will naturally become complacent. Last year's drought was good in that community leaders came together. Request that the IWRS continue to fund studies and monitoring on a long-term basis.
- Community involvement was incredible at the City of Ashland. The community came together and rose to the occasion by voluntarily reducing water consumption by 30 percent. It was made possible by being transparent with the community. A consistent message was shared through the media, social websites, presentations, newsletters, etc. The community feels a sense of accomplishment by coming together to reach a community goal (an online gauge was used as a visual). The water shortage started in 2014 and the city started outreach at that time and by 2015, the Use Water Wisely campaign was widely accepted.

Q3: How did you respond to drought? Please share any successes or strategies.

- Our area has a success story, from a 3-year period of drought that culminated with absolutely no snow in 2015. Medford Water Commission has worked with the Eagle Point Irrigation District to manage water and the district was able to deliver water without a shortage. Medford Water Commission was able to take less water upstream, treated more downstream. By working collaboratively, both organizations were able to meet their needs.
- In the Rogue Basin, stored water is available that is not allocated. We need to plan ahead of time, looking how to best use and share the water.
- The 2015 drought provided the community with an opportunity to plan by crisis and to bring water managers together.

Q4: What actions should be pursued to better prepare for future droughts?

- State should address data quality management and equipment problems. Monitoring equipment is not effective if the selected meters are not appropriate for the use. Water users have good intentions, invest money, but if it is not installed right or read correctly, they are of no use. In my experience, monitoring wells are not constructed per rules and there are errors in water resources database.
- Need to implement laws on the book (example: DEQ's Outstanding Resource Waters).
- Would like the state to validate groundwater data through the well permitting process by gathering water quality and quantity information.
- Funding for community forums & training. It costs money to host community events and it would be nice if the state could provide grants to host community meetings. Would like to see more community related events.
- More urban types of funding for community outreach and education. Community wide projects for storm water management, low impact development, etc.

- Funding for outreach and education.
- Future – changes in water law. Water banking and sharing. Example – apply a portion of irrigation water to instream.
- Flexibility of regulation, allow flexibility to use the water wisely and judiciously.
- Stored water is available but Lost Creek Reservoir was too low for recreation, even though there is unallocated water. If stored water is used for irrigation, new infrastructure will be needed to pump uphill. Example: Tried to obtain stored water for use in a rural area but was not feasible due to the cost of delivery infrastructure. Need funding for infrastructure.
- Address temperature issues. Important to look at ecological requirement of water. Water temperature the most important value for fish. Water affects every aspect of life. Need to maintain adequate flows to protect temperature. Water quality data should be made accessible online. The Watermaster maintains real-time flow and temperature sensors and the data is available online to the public.
- Need studies for gaining and losing reaches. Cannot find the information for the Rogue Basin.
- Regarding conservation, the cities are in a catch-22. We want conservation, but lose money.
- Has a study been done to show instream benefits of conservation? Is there a way to incentivize flood to sprinkler irrigation? Example: Sell back the water right that a farmer is no longer using. Can the state provide a benefit for unused water, example: conservation easement.
- Relationship between demand and shortage – conservation actions will help with shortages.
- Statewide water bank – trying to keep permeant crops alive by fallowing fields. California example: state would audit reservoir and pay based on consumptive savings.
- All of the right topics and dialogue but need a state plan that identifies the barriers. A lot of low hanging fruit projects have already been addressed. Need a statewide plan for addressing place based planning and really address the beneficial use issue. Don't see place-based planning alone as a way to meet the state's goals. We need a more comprehensive look at water law, with strategic investments that are used in a targeted way.
- WRD needs state goals (planning goals), so smaller jurisdictions can use the information.
- Water conservation should be an underlying theme when engaging the public. Graywater use is now legal; however the permitting process may be overly burdensome. Retrofitting is very difficult and complicated. Streamline the graywater process.
- Put pressure/incentives on builders (schools, commercial, etc.) to install graywater systems during construction.
- Happy to see the Department is trying to maintain water in headwaters. Climate change may be an issue. Pumped storage does not make sense. Capture and store water at the headwaters.
- How would a municipality quantify water savings? Where is the low hanging fruit to start directing the funds? The state needs to provide the big picture perspective for actions.
- The Jackson SWCD has worked hard to move folks from flood to pressure systems. However, there are benefits to flood irrigation, such as subsurface flows that occur with flood irrigation that provide cool subsurface flows to streams. Money should be spent to improve flood irrigation and to improve operation, may not require pressurized systems.
- Irrigation efficiency depends on the right system on the right crop. Surface irrigation (flood irrigation) is not necessarily inefficient, but must be used properly. Sprinklers use energy.
- We need some type of a tax rebate for water, just like we have for energy industry.

Q5: What most concerns you about the future with regard to water?

- Water rights are too rigid to effectively manage water resources.
- Have the feeling OWRD is not reservoir friendly. Reservoirs should be encouraged if they are safe (downstream communities). Expand storage to try and keep water in the headwaters as long as possible.

Q6: Any other thoughts or comments you would like to share with the IWRS Project Team?

- Jackson Soil and Water Conservation District would like to coordinate with the installation of any new monitoring wells.
- Interstate coordination is important for managing water resources. Interested to learn more about how Oregon is coordinating with other states.
- Addressing water challenges – barriers in processing timelines. Appreciate the efforts of OWRD to improve the timeline to process permits.

Bend Open House
Riverbend Community Room, Bend Parks and Recreation District
June 23, 2016
Meeting Notes

Q1 & Q2: How has the recent drought affected you? In what ways did the drought affect your community?

- Concerned about drought's impact on Oregon's saline system,in particular, Lake Abert. Drought in a saline environment will create diseases you haven't even heard of. The question is, will we have a Mono Lake situation here in Oregon? When you have salt and wind you get dust in the air that's harmful to humans. How do you take care of humans that are sick, due to salt dust particles because you haven't created enough water?
- State should assume that drought is a feature of our state, not a rare occurrence. It's a given, not a perhaps. Conditions will be very volatile. Catching rain instead of snow is very difficult.
- I'll stick my hand up for wildlife out here. We need to make sure there is enough water for habitat. Not just think about human uses.
- Wickiup Reservoir does not authorize water releases for fish, but Prineville recently authorized. More water was flowing down the Crooked River. Last year it was 240 cfs or above. The reservoir was really drawn down, lowest since it was built. Because of mismanagement of releases since that legislation. They quickly stepped it down to 35 cfs after the irrigation season. It left a great number of macro-invertebrates high and dry. You lost 50 percent of the food base. The winter winds churned up the silt at the bottom of reservoir, it covered up all of rocks, creating a sterile situation for fish. Every year, ODFW does a survey to estimate fish and last year, found 88 percent mortality of redband trout. Its poor decisions on how the water is released. It had a disastrous effect on the trout.

Q3: How did you respond to drought? Please share any successes or strategies.

- I want to speak on behalf of agriculture. We hear that agriculture is bad, that we are the largest user of the Deschutes, but we are doing our best to conserve that water. I served on LCDC for eight years, and we set aside high value agricultural land. Through conservation projects, we are doing all sorts of things to conserve water. With 40 recommended actions in the strategy, I want to stress that rules need to be flexible. Why do we lock up all of the water, making it so we can't be innovative to move water around? If I do a project, do I always have to give water back? I don't want to see all of the water go to the Pacific Ocean go unused. Jefferson County is producing so much food. We raise a lot of carrot seed.
- There has to be more collaboration between the state and federal Bureau of Reclamation on river management. ODFW doesn't have any voice in this process. They were never consulted in the legislation, and they are cut out now. ODFW should have more voice in the water coming out of Bowman Dam. There has to be better conservation. The state should be more involved in the Crooked River legislation. The intent was to better help with fish, but maybe that didn't happen. There is no autonomous decision making when it comes to flows.
- Recreation in our economy (paddle sports, and fishing) is a huge economic driver here. It probably outstrips everything else we do here. Protecting instream flows are really important.
- We all have to live with the water situation. If it weren't for farmers, we wouldn't even have a town here. Need better solutions for all uses.

Q4: What actions should be pursued to better prepare for future droughts?

- Fish have been an indicator of whether the river is still alive or not. If you look at the Upper Deschutes, where I live, I have watched that river die. I've talked to bird people, they don't see half of the bird life they used to see. The river dropped 22 inches in 17 hours, which froze the macroinvertebrates. I pulled bucket loads. There hasn't been any in the reeds. The macroinvertebrates have to be stepped up. It's not just the river and the fish, it's the whole ecosystem. It's been treated as a drainage ditch, an irrigation ditch. Like to see some macro-invertebrate studies.
- I'd like to see more metering. The public shouldn't pay for it, especially since they see it as their water. They need to pay for it.
- If everyone manages their water like North Unit, it would be a different situation.
- Most of the scenic waterways were passed by voters, so I would support more initiative actions that would change water law.
- In basins with over-appropriated water, there needs to be some feedback mechanism for the water rights holders to pay a cost when they use water inefficiently. The system rewards use. If I don't use the water, I lose it. If you used it, and it cost something, you would conserve it. Build economic incentives into the system.
- Need to consider carrying capacity.
- Research the use of graywater. I tend to favor the carrot over the stick. What are the barriers to graywater, for example, is it economically feasible?
- We need a systemic change. Since the Oregon legislature won't support that, then let's use the existing knowledge on minimum flows, then give them the most senior water rights. This could help.

Q5: What most concerns you about the future with regard to water?

- I'm not so confident we can get it done. I've been doing this my entire life. Been looking at population growth. A lot of the issues you are talking about were outlined in the 1970's. I know that the land use and water nexus is stacked against you. 20 year land supply forces communities to expand more land. The legislature prohibited the cities to vote on annexation. Real estate mafia. Housing subsidies going directly to developers. The cost of growth, the land supply law. We should allow a periodic vote at the city level, do you want to control population growth?
- People are moving here to live near the waterways. It's a concern to see how our recreational values are not being taken into consideration. Recreation is a huge economic driver for central Oregon. Make sure recreation is included in these future projections. It's both a lifestyle and economic driver.
- Local population growth, what does it mean in ten or fifteen years? I think the water resources strategy needs to look at what the population growth really means.
- The definition of beneficial use is a core problem and it needs to be examined.
- Segmented land planning is a problem. We need to look at water as sustaining life. We need to look at the basic use of water. It's Ag, and it's the least productive crop area in the state. Concerned about wildfire, and we not going to have the water. We need to look at the whole community, the whole watershed. How are we going to sustain the resource here?

Q6: Any other thoughts or comments you would like to share with the IWRS Project Team?

- Instream rights and unmet demand is not reflected anywhere. You do a disservice to yourselves when you leave out the unmet instream demand. When it's not even included, you lose credibility. We need to believe we are being heard.
- Want to echo the instream comment. We don't see it in your presentation, you don't measure it, and you don't track it. The strategy should focus more on system inefficiencies for water rights, on a basin by basin basis. Institute some efficiency rules that would drive water for some other uses.
- This is not my first meeting. What is lacking in the IWRS: any kind of look at the allocation system. Instead we get caught up in the minutia of how to make the resource better. The low hanging fruit has been picked. The stakeholders have met and agreed on as much as they can. We have to treat water as a resource, and not a commodity. We need a system that focuses on restoration, not mitigation. We are just keeping these species on life support. The Deschutes River Conservancy and others have done great work, but we have to move beyond that. The water rights appropriation system is broken. The Deschutes was over appropriated in 1913. Most of our efforts go to conserve water that then gets shifted to junior water rights. Systemic change is needed.

Beaverton Open House
Beaverton Community Center
June 30, 2016
Meeting Notes

Q1 & Q2: How has the recent drought affected you? In what ways did the drought affect your community?

- Many municipal customers used a lot of water irrigating gardens and were surprised when receiving their September water bills, didn't believe they had used so much. This involved a lot of education, will be interesting to see if customers use less this coming summer.
- Some trees died.
- Worried about the sockeye.
- From the amphibian and turtle surveys I've conducted over the years, our watersheds are in bad shape.
- Stream temperature concerns this year and in past years, due to low streamflows – instream flow is important.
- There is a relationship between temperature and water chemistry for drinking water. Temperature affects almost every element of water quality concerns (even lead release). Early warm temperature spikes affect treatment. Addressing temperature pollution is really a holistic approach.

Q3: How did you respond to drought? Please share any successes or strategies.

- Reduced outdoor water use.
- Stream temperature monitoring is important during droughts. Many groups are monitoring, but there are still many places where it would be valuable to have more monitoring. Many USGS gages have almost real time temperature, and other water quality parameters.

Q4: What actions should be pursued to better prepare for future droughts?

- Water efficiency needs to be a stronger component of the conversation. There has to be a better way to make more efficient use of water in agriculture (referenced irrigation guns).
- More emphasis on urban strategies – there hasn't been enough discussion in IWRS on urban water use. Not much urban representation on policy advisory group. The issues and strategies in urban areas will be very different in than in rural areas. The strategy has been heavily focused on agriculture.
- Need more focus on water, wastewater, stormwater, and drinking water challenges in small municipalities around the state. The IWRS can incorporate those issues – the "One Water Concept" is one way that communities across the country have been considering and incorporating these issues.
- Promote water reuse. California rules accommodate direct potable reuse, but nobody in Oregon is doing it. Clean Water Service customers spend a lot of money for water treatment, but then it's discharged, not reused. Promote reuse, particularly in irrigation.
- In the urban environment, look at local municipal codes and laws that serve as barriers for water conservation and reuse innovation.
- Composting toilets.
- Rainwater capture.

- Look at college campuses as places to save water. Inefficient use of water for irrigating lawns and water-intensive plants
- Consider conservation for lawns and golf courses. It's a large part of municipal use.
- Because of significant population growth in Portland Metro areas, we need to incentivize reuse, efficiency.
- Price water appropriately. Water should be charged for – it's a valuable resource – if there was a price on it, conservation would make economic sense.
- Take advantage of existing tools. Need to start implementing other plans and strategies – water measurement and monitoring strategies – should take advantage of other tools that have been developed but haven't been able to be funded, etc.
- Put continuous recorders in all of your monitoring wells. Seems like a very cost-effective measure.
- Appropriate and adequate funding and staffing of natural resource agencies. Especially for water quality and instream flow. Compared to California, Oregon has poor staffing for water issues. ODFW, DEQ, WRD do not have enough staff to deal with water quality and instream flow. No staff will mean continuing to struggle.
- Need for more peer-to-peer education in agriculture about innovative water efficiency for irrigation. Farmers will listen to farmers. Pesticide Stewardship Program (IWRS funding helped to fund new partnerships). Helps farmers reduce impacts of pesticide use on streams. Possible model for water efficiency? Model for fertilizer application to prevent groundwater and surface water contamination.
- Cooperation/urban communities helping agricultural communities. We do need to think about how we use water in our homes. The urban population needs to help the agricultural community adopt more efficient uses because urban conservation/efficiency alone won't solve the problem. It involves cooperation and education.
- Highlight the work done by local agencies to manage water – share stories and experience.

Q5: What most concerns you about the future with regard to water?

- Missing the recreational fishing industry voice in this process. It contributes $1.5 billion a year to Oregon's economy.
- Prescription and illegal drug contamination in water. Salmon with trace elements of cocaine, estrogen, etc. "Emergent contaminants" – don't know much about impacts on human health yet.
- Groundwater drinking water quality. In Jackson County, well water testing at the Master Gardner spring fair found that 23 percent of wells tested had high or moderate levels of nitrate. One of the families in attendance had a child experiencing blue baby syndrome. Nitrate issues are a public health concern. Agriculture and failing septic systems are a contributing problem. People need protection and knowledge about contamination. This is both an urban and rural issue.
- Extreme events, like the Cascadia Subduction Zone Event – will have huge impacts on water infrastructure. Some places may not have water or electricity for over 2 years after event.
- The amount of irrigation in Eastern Oregon with more hot and dry conditions in the future. Concern regarding the growth of water on inefficient crops in Eastern Oregon. Example, a lot of hay grown in Eastern Oregon, which has high water demands. It's a pattern all across the western United States. Look at growing more efficient crops that still provide income for farmers. Can there be partnerships with the Oregon Department of Agriculture? ODA needs to look at water demand issues, rather than water supply issues.

Q6: Any other thoughts or comments you would like to share with the IWRS Project Team?

- Need better outreach for public involvement to really get Portland perspectives and recreation perspectives – through Next Adventure and other recreation mailing list. Think about location next time, for example, have a meeting in downtown Portland and start it later in the evening.
- Disappointed not to see the Oregon Department of Agriculture at this meeting. IWRS development should involve input from all state agencies. Every agency in the state touches water. For example, even the Department of Education plays a role with lead issues in school drinking water.
- Reach out to environmental justice communities. The IWRS policy advisory group has one environmental justice representative and one tribal representative.
- The OWRD Statewide Demand Forecast should include instream flows, and we need to define instream demands for both water quality and fish.
- There are many ways to integrate issues (most of the comments discussed a singular issue). Vertically – from locally to state level, socially (across interests and user types), and horizontally (across the landscape). Place-based planning allows us to consider these interconnections, and not just focus on singular issues.
- Oregon Lands at Work – Goal to take the temperature statewide about water use in agriculture, partnering with other organizations to find out what water use projects agricultural interests are involved in related to water use monitoring, streamflow/habitat restoration, increasing efficiency of/updating irrigation systems. Works to find stories at the local level and share them via local media, newsletters, and collaborative meetings within the community. Many communities feel like there's not as much collaboration as there is head-butting, but the state could really play a role here to help highlight successes.
- For newly funded projects that increase water use, what is the impact on water quality? At what level are those considerations taken into account?
- Oregon is way ahead of the curve on aquifer storage and recovery. There is a lot of innovation here in our state. Regulations in Oregon are very cooperative – conducive for making ASR projects work.
- Place-based planning is a good approach. This program and other related efforts need popular support to get funding from the legislature.
- How to elevate the water discussion in the State Legislature and public eye, to ensure funding? How do you deal with water issues that need money when you have schools, law enforcement, crime and other very important social issues? How do we get public and legislators to fully understand the gravity of water issues? A possible solution – water education, people think that Oregon is rich in water – but richness is cyclical (need to understand Mediterranean climate), use of PSA's (e.g. TV commercials) - Forestry people get state money to do TV advertisements, for example.

About this Document

The Water Resources Department (Department) held seven open house events throughout the state in June 2016. The IWRS Project Team posed six discussion questions to stimulate conversation and solicit public feedback on water-related issues, particularly drought.

The IWRS Project Team also used an online form to solicit input, posing the same set of discussion questions. Comments were accepted from Monday, June 13 through Friday, July 15, 2016. This comment opportunity was shared through the IWRS mailing list, with follow up reminders. Staff also asked the subscribers to help advertise the open houses and online survey through their individual networks and organizations.

Survey Results

The Department received responses from 66 individuals through the online form, although respondents did not provide comment on all of the questions posed. Response counts for each question are shown below:

How has the recent drought affected you?	54 responses
In what ways did the drought affect your community?	51 responses
How did you respond to drought? Please share any successes or strategies.	47 responses
What actions should be pursued to better prepare for future droughts?	59 responses
What most concerns you about the future with regard to water?	62 responses
Any other thoughts or comments you would like to share with the IWRS Project Team?	47 responses

Although individual responses were solicited anonymously, 57 individuals provided the county they resided in. Twenty-five survey respondents resided in Deschutes County.

The following tables contain responses received through this online form. Comments are shown as submitted by the commenter. Department staff made some slight editing to fix spelling errors or punctuation.

Q1: How has the recent drought affected you?

1. Yes
2. Yes
3. Yes
4. Increased costs and reduced production.
5. Not at all. Surprisingly, my water well's lowest static level last year (September, 2015) reading) was 9' 10" below top of well casing. In "normal" years, the static level drops to around 15'-16' below top of casing.
6. The reduction of instream flows has reduced recreational opportunities. Specifically, fishing opportunities have been reduced as fish populations have been harmed by poor conditions in the river.
7. It has not really affected us. Here in our system we have been able to meet demands.
8. The drought has reduced the public water available for use in recreation, stream flow, irrigation, etc. This results in much lower than optimal flows in the upper Deschutes River during the winter "reservoir" storage season. This is a detriment to people, fish, frogs and other wildlife. Personally my use of the upper Deschutes has been restricted due to the effects of a limited water supply (fishing season has been shortened significantly to protect fish and frogs).
9. Mostly in recreation, shocked by the low water levels. Also my family's house in rural Lane County -- running out of well water every summer now.
10. Curtailed my ski season. Made me think more about xeriscaping.
11. Made me realize how tenuous water supplies are, and encouraged me to conserve at home.
12. Limited my ability to enjoy our rivers.
13. Having experienced drought in Iowa, I rigged up graywater system (bathwater and washing machine water) to the outside for watering garden. Did not experience drought here as I moved in last August.
14. Not that much because my water use is quite low already due to efficient irrigation.
15. Water bill has gone up. So I water my lawn less. Not a big deal.
16. Wildfire is the biggest impact in Southern Oregon; Extremely hazardous air conditions for extended periods of the summer.
17. My low producing well goes dry for summer months and we have to buy water.
18. We are a family of outdoor enthusiasts and many of our favorite streams, rivers and lake level have fallen well below normal levels. This has had a negative impact to the native fish and wildlife that use the ecosystem.
19. It has contributed to reduced streamflows in the upper Deschutes River
20. Replaced inefficient sprinkles, installed water timers, take shorter showers, reduced watering hours, no hosing off driveways, leave grass longer, et al.

Q1: How has the recent drought affected you?

21. Impacted the vitality of our outdoors water activity
22. I am an active hiker, camper hunter and fisherman... the drought curtailed my activities in the lakes and streams in and around Bend OR....access to lakes and streams for shore line fishing was a serious issue given the retreats of shorelines ..and the threat of fire was always a concern as I ventured into remote areas for hiking and camping...
23. Not affected directly. Disappointed with the Hoodoo and Willamette Pass ski operations due to lack of snow.
24. Higher danger of wildfires.
25. Low CFS flow below Wickiup dam last winter...25 CFS.
26. We are seeing an increased burden on both our surface and ground water resources. This is combined with ever increasing demands from water users and constant increases in the amount of water rights issued by the State. The cumulative effect is that we do not have enough water available to meet our needs, especially during summer months. The negative impact is most harshly felt in ecological water needs where streams are drying up and fish and aquatic species are being killed.
27. More hornets/wasps. Fewer mosquitoes. More time to recreate in the high country. Can't have campfires. more hikes in dry reservoirs
28. Aside from turning my once green lawn in Ashland brown it has made it hard for me in my professional career because I endeavor to restore riparian habitat in the Rogue and Klamath Basins and the lack of water availability has impacted my access to temporary irrigation licenses in some stream systems. In addition drought conditions have reduced the native plantings ability to establish.
29. Loss of vegetation on and near my property. This year weeds replace native vegetation that died.
30. The citizens I work for have become more focused on water issues and I have had more calls and projects because of the interest on water.
31. It has made it more difficult to negotiate higher Upper Deschutes Winter flows with Irrigation Districts, even when they are willing.
32. Well, as a rafter, I find that access to some of my favorite rivers is more limited. ... But on a personal level, I have enough for my daily needs.
33. Did not allow for the head water resources to fully fill before they were dumped for irrigation
34. Over draining of the upper Deschutes river in the summer, resulting in very low water levels in the winter.
35. As a Fish and Wildlife Habitat Restoration Biologist, the drought has affected all of us, including our efforts to conserve and recover ecosystems. Lower flows mean shrinking habitat and undesirable conditions such as increased water temperatures. We use irrigation on newly planted native trees and shrubs to restore riparian forests so we have to consider our impacts and possible impacts to us if water availability becomes an issue.
36. We just conserved water.
37. I have had trees I planted for reforestation die (they were in some cases decade old western red cedar - so even well-established trees are affected as of last summer). I use a well and am always concerned

Q1: How has the recent drought affected you?

about ground water levels, so far no problem but rural dwellers need to be concerned.

38. My pastures are gone. Feed is so expensive. I am selling my livestock

39. Many fish died including salmon and steelhead. The John Day, Deschutes, Columbia and other rivers had temperatures that were lethal to fish. Fishing was closed for part of the season and should have been closed longer. Fish that didn't die were severely stressed, vulnerable to disease and emaciated as their metabolism slowed they didn't eat well as they had no energy to acquire food. Large fires in Eastern Oregon caused damage and will continue to damage river ecosystems.

40. I am much, much more aware of how and when I am using water.

41. Stopped watering the yard, shorter showers, less frequent dishwashing and clothes washing.

42. Increased risk of wildfire and increased summer smoke, voluntary water shortage.

43. I've cut back on water usage ... brown lawns, etc...

44. Not personally affected (other than the loss of several arborvitae trees).

45. The drought impact on rivers and fish has impaired the ecological, recreational and economic value of healthy streams to Oregonians. At the same time wasteful uses were rampant in basins where there were declared drought (i.e. Deschutes). The state should institute minimum flows on ecologically important streams that the state will protect during times of drought, enforce against waste and mandate conservation/curtailment.

46. Mildly, yes. For us it has been an inconvenience not an economic hardship.

47. The drought exacerbated existing issues related to water scarcity; put increased pressure on natural and human systems dependent upon stream flow and groundwater recharge; and made the community more aware of water resource issues.

48. It has focused my attention on the inadequacy of Oregon Water Resources planning. During a 30-year involvement with river water conservation, I have observed that all the planning efforts, (State, Federal and Local) I have participated in, try to manage the resource for public benefit, rather than adjust current policy to sustain the resource. This strategy is environmentally bankrupt and will lead to the eventual collapse of the resource, leaving people and farms with inadequate supply as well as fish, frogs, and wild rivers.

49. Minimal flows in the upper Deschutes during winter have ruined fishing and adversely impacted stream species.

Q1: How has the recent drought affected you?

50. Oregon, like many other Western states, was deeply impacted by the drought of 2015, with varying levels of extreme to severe drought across the state, and formal drought declarations in twenty-five of Oregon's thirty-six counties. While 2016 is shaping up to be a much better year in terms of snowpack and related available water supplies, recovery from drought takes more than one year and there is a great need for assistance to better plan for and mitigate drought impacts. Furthermore, the most severe impacts of the 2015 drought were linked to high temperatures, which exacerbated the lack of water and led to decreased yields and in some instances failed crops. Unfortunately, Oregon is still facing higher than normal temperatures, which will cause existing snowpack to melt quicker, soil moisture to decrease, and other related impacts which can be detrimental to crops along with to the environment we all share.
51. It has decreased water flow in winter on the upper Deschutes, impacting fishing and property values.
52. The negative impact on wildlife, fisheries and recreation.
53. Reduced production of hay due to less water less often, forcing purchase of much more than usual.
54. Dropping well water levels.

Q2: In what ways did the drought affect your community?

1. Concern for current and future availability of enough and quality water resources in Oregon.
2. Significant reduction in water available for irrigation primarily due to reallocation of irrigation water for other purposes.
3. I live in the county, where a very large number of people ended up having to purchase water, delivered by tank trucks. Many more problems than ever before, according to these delivery companies.
4. Our community depends on recreation - floating and fishing - as core parts of its tourism economy. Also, a healthy river is an important part of the community's identity. When instream flows are reduced, these suffer.
5. With publicity about other places our system demand has decreased naturally.
6. See above. Everyone who uses the rivers, reservoirs and other water-centric facilities has been impacted. From farmers to frogs everyone has felt the negative effects.
7. Some reduced recreation income because of less snow, although Mt. Bachelor did relatively well.
8. Reduced water for residential irrigation.
9. Limited all of our ability to enjoy our rivers.
10. In visiting Bend while drought was in place, I was amazed at the sprinkler systems working away on what are community property in the various Estate systems... River Rim, River Canyon etc.
11. Created opportunities for news stories but no real changes in behaviors in the town of Madras at least.
12. We have poisoned the well. Rather than prioritize in-stream flows for habitat protection, we draw down river flow and warm up the water, all to the detriment of fish, birds, and insects dependent on the river systems. In the end the resources and values that make central Oregon popular are destroyed. We end up with too many people, damaged ecosystems, and irrigated specialty crops.
13. Ashland ran low on water from our watershed and added water from the irrigation district; this is low quality water and additionally, some folks lost their irrigation water because there wasn't enough to go around. Wildfire caused a lot of damage to our tourist industry, crops and health. Emigrant Lake, where many go for recreation was completely empty down to a small stream in the middle.
14. Trees died, several neighbors also have to purchase water due to wells nor producing enough water, etc.
15. With Detroit Reservoir at an all-time low last year, a tremendous amount of recreational use shifted to Suttle Lake and surrounding waters pushing usage over the top.
16. Fishing and recreation have been impacted by lower streamflows. The fishing season on the upper Deschutes has been shortened by a month.
17. Not sure.
18. Lost revenue for tourism.
19. Bend so far has been fortunate with adequate water supplies although the debate continues is this at

Q2: In what ways did the drought affect your community?

this expense of water for lakes and streams and support for fish and other wildlife

20. Some economic in lower visitor counts, particularly in the winter months.
21. Less water instream for fish and other water dependent animals.
22. It is a shame to see the dead fish that were stranded because of the low CFS.
23. Hurt income levels.
24. Almost every irrigator was forced to end their season months early due to lack of water availability. This created significant financial losses to our Ag industry and the small businesses it supports.
25. Government and media over-reacting to wildfire, stoking fear of natural processes.
26. Reduced water use, increase water rates, smoke from wildfires and a major infrastructure project to get water to Ashland from Medford to supplement Reeder res. supply.
27. Low flows threatened salmon populations.
28. The flows out of Wickiup were 23 cfs most of the Winter. Per ODFW, that level kills 85% of the River's macroinvertebrates, seriously undermining both the essential biomass and restoration of native Redband Trout, Steelhead, and Chinook and Sockeye Salmon.
29. This community, Portland metro, is clueless. People in general are implementing water reduction measures, but I think that is based on wanting to lower their water bill more than thinking about the big picture.
30. Dangerously lowered water levels.
31. Very low river level in the winter months with adverse effects on our natural habitat.
32. Decreases in water availability among in-stream minimum flow needs and water users such as irrigation districts and municipalities; lower water quality; increased fire risks; recreational opportunities.
33. I live near the city of Molalla and know they were concerned last summer about the low level of the Molalla River where they get their drinking water. They dispose of wastewater into the Molalla River in the late fall but can only do so if water in the river is high enough so there are worries about that.
34. Fires.
35. The recreation industry was harmed as many people chose to go elsewhere.
36. I'm not sure many people in my community are concerned or feel affected. The local rivers and reservoirs are much lower and have affected recreation.
37. Trees are stressed.
38. See above plus water shortage for irrigation, forest losses, OSF and Britt cancelations, reduced tourism.
39. More brown lawns, less car washing.

Q2: In what ways did the drought affect your community?

40. As a lakeside tourist community - and no water in the lake - businesses suffered major loss.
41. Again, my interest is rivers and fish. Rivers went dry and fish went belly up (literally) across the state. Drought statutes and rules designed to provide flexibility to water users do little to nothing to protect rivers and fish during times of drought.
42. More thoughtful use of water and hopefully changing habits for future droughts.
43. Reduction in water quantity for aquatic systems is also damaging to water quality through concentration of pollutants, increased stream temperatures, and negative impacts and reduction of aquatic habitat which harms native fish populations.
44. I live in a desert. Drought is just a more severe version of the status quo. Because I live in a desert, water conservation and in-stream water to meet the most basic needs of the resource, is a function of who can pay and how much? Twenty years ago the estimate for maintaining 300 cfs year round minimum stream flow in the Upper Deschutes River was about $5 million. Today, that estimate is now around $500 million. In reality, there are strategies today that can achieve those minimums and more that are revenue neutral or revenue positive, but it will take an overhaul of current policy, not another study of how we can more effectively squeeze the resource so we can continue our wasteful ways.
45. Minimal flows in the upper Deschutes during winter have ruined fishing and adversely impacted stream species.
46. The Ashland watershed was on the edge last summer, better this with some snow, but this will continue to be problematic.
47. Water is critical to Oregon's agriculture, industries, cities, fish and wildlife. Unfortunately, Oregon is facing increasing water demand and a dwindling, uncertain water supply inadequate to meet the myriad of statewide water needs. To adequately supply Oregon's diverse water needs now and into the future we need to use our water wisely and efficiently. That means instituting innovative conservation and reuse programs and planning smart, environmentally sound storage projects that capture available water so it can be put to good use when needed. Our neighboring states have recognized the need to invest in future water supply, including the State of Washington's allocation of $220 million to address water supply issues in the Columbia Basin, but Oregon has yet to make a similar commitment. Ensuring adequate water supplies is essential to the continued production of numerous high-value agricultural commodities supporting a 4,553.5 million dollar economy in Oregon, as well as growing municipal populations, successful industries, recreational amenities, and diverse aquatic habitats. Evaluating and implementing innovative water supply projects is a wise investment that will pay dividends and benefit Oregonians for many years to come.
48. It impacts property values and recreational activities.
49. Stream flow and warming waters hurt our fisheries and other wildlife.
50. Low river levels damaging the fisheries and reducing desirability of the river and surrounding areas.
51. Reduced incomes due to smaller crops. Increased expenses to pump water from deeper depths. More users turning on wells earlier in the year as surface water disappears.

Q3: How did you respond to drought? Please share any successes or strategies.

1. Track personal use of water usage. Decreased irrigation in home gardens.
2. Utilized ground water resources.
3. We reduced the frequency of water on established landscape plants.
4. I, personally, focused on my own water conservation (in my home and landscaping).
5. We respond to customer questions and concerns with information about our system.
6. I reduced my fishing time on the upper Deschutes and got much more active in regional water conservation activities.
7. I didn't make significant changes.
8. I renovated and extended our residential drip irrigation system.
9. Was not able to enjoy our rivers.
10. I advocate for appropriate farm practices. In areas with low rainfall, grow dryland crops and switch to low water consumption practices.
11. As a gardener I cut back water use and used a lot of mulch. In fact there was a shortage of straw availability in town because everyone was mulching. Ashland citizens voluntarily cut back water usage to such an extent that no further restrictions were required. As stated above, the City added irrigation water to our water supply. I added a couple of rain barrels, but these are insignificant in addressing my water needs.
12. Installed xeriscaping, planted drought tolerant plants in yard and only water food plants,
13. We have a ground well and do the best we can to limit our use.
14. By contacting legislators, conservation groups and attending public meetings.
15. See above.
16. Reduced lawn watering.
17. Used a "Xeriscape" strategy for my yard with draught tolerant plants.
18. n/a.
19. Left out some ground and bought more hay to feed.
20. We encouraged conservation and efficiency improvements.
21. Planned more hikes in dry reservoirs. Brought more water on hikes.
22. We lowered our water use to the bare minimum, applied thicker mulch to plantings, irrigate more in early spring then fade off early so plants shut down sooner and just hold through the hot dry fall.

Q3: How did you respond to drought? Please share any successes or strategies.

23. Advocated for fisheries restrictions.
24. Reduced water use. Mainly through reduced outdoor watering, shorter showers and collecting shower water for outdoor plants. Whenever possible did not waste any water.
25. I focused on irrigation water management, pond development and water distribution upgrades at work.
26. I continue to work in the Upper D Basin Study and with Irrigation Districts to find more water sooner.
27. I never water my lawn. I reuse water from every tap - hand wash water is used to flush the toilet, water used to wash vegetables goes to water plants. It's just drops of effort, but it's the best I can do.
28. Can't, it is out our hands. The priorities are not balanced.
29. Water conservation and changes to habits on how I use water.
30. Cut back on outside watering.
31. We live off the grid and are conscious in all ways of consumption. We don't waste water ever. I am an ODFW wildlife habitat property on 20 acres and we only plant natives so they don't need watering in summer.
32. We are selling off our sheep and cattle.
33. I am no longer watering my lawn. I've installed soaker hoses to water vegetables and other bushes and flowers. I collect water in a bucket in the shower while the water is warming up and use it to water bushes and flowers. I make sure not to water any concrete when I am watering plants. If I fill a water bottle and do not finish drinking it, I use it to water plants. When I fill my dog's water bowl with fresh water, I use the old to water plants.
34. stopped watering the yard , see above question
35. Voluntary water use reduction and educating the public about climate trends and projections and the inevitability of this water shortage continuing. However, amazing numbers of agency personnel (USNRCS / USFS) seem to focus still on historic averages as though we are likely to return to them.
36. Brown lawns- using soaker hoses instead of sprinkler system for garden. Bucket to capture warm-up shower water.
37. Local business owners were inventive with organizing a couple of unique events to celebrate the empty lakebed and bring tourists in
38. Changing times of water use to minimize evaporation and optimize the water we did use. Reusing water many times not one time and then having it flow away. Gray water from baths for the garden etc.
39. The Rogue Riverkeeper does not respond to drought directly, however, our water quality monitoring program will capture increased incidents of pollution in the basin, if the drought persists and leads to a concentration of pollutants.
40. As a long time water user, who NEVER uses his full allocation, I lease nearly half of my water back to the river. For that privilege I pay a penalty in the form of additional WRD fees to secure an in-stream lease. The window for application is short and must be renewed (and paid for) annually. This option is

Q3: How did you respond to drought? Please share any successes or strategies.

neither promoted nor encouraged by my irrigation district and I receive no verification that the water actually remains in the river. A simple strategy would be to maximize the value of in-stream leasing, and monetize it, similar to a conservation easement. Long term leases, open enrollment periods, incentive payments, and requirements for irrigation districts to incorporate in-stream leases into their conservation plans would be a good start. I have also had success with individual landowners in changing the point of diversion on their land to take better advantage of the energy in gravity fed irrigation systems. The same or better results can be achieved with significant reductions and savings of both water and power. Consider the value of this strategy if it was adopted on a basin or district-wide scale.

41. Followed government attempts to address the issue and forge compromises among the stakeholders.
42. You can check in with Julie Smitherman, but the Ashland conservation efforts last summer were quite effective. Can they be sustained over the long term?
43. Our District members have been active in conserving water for some time now. They have invested time and money in conservation and efficiency projects including, piping and lining of canals and encouraging their patrons to move away from flood irrigation when possible. These prior investments paid off during the 2015 drought and continue to pay off today. The districts that have had the resources and support to implement conservation projects see the return every irrigation season. During last year's drought, however, no amount of conservation was going to make the water last to the end of the irrigation season, there simply was not enough natural storage in snowpack to meet the demand. The districts handled the drought in different ways, some districts reduced allocations to their patrons/water users for the whole season; others reduced allocations using rotations and scheduling of water users; others chose to provide their farms full allotment, but shut down the season earlier. No matter how the districts approached the water delivery during the 2015 drought, all districts had a shortened irrigation season. Finally, most districts increased their communication with patrons/water users and the community to educate them about water efficiency and conservation and making sure no one was using more water than allowable.
44. I watch water consumption and took out the lawn for a more natural landscaping
45. Used water more carefully
46. Use less. Plant drought tolerant species.
47. Had to irrigate more than normal

Q4: What actions should be pursued to better prepare for future droughts?

1. State adopts 3-5 year transition to the following: Seasonal muni water rates, acre-inch pricing for irrigation districts, and pulse flows of stored water to ensure adequate water for in-stream and irrigated water rights holders.
2. We need more conservation efforts in agricultural and urban communities, and we need tools that the public can use to be better stewards and monitor their usage.
3. Store more water when available during years with abundant precipitation.
4. We need stop subdividing land, which creates ever increasing demands on aquifers. The exception could be land close enough to Grants Pass to connect to Grants Pass's water system in the event of well failure. Grants Pass has a seemingly bullet proof water supply (Oldest water rights on Rogue River/Lost Creek Reservoir) Eliminating lawns would help, obviously!
5. More progressive conservation measures should be taken, particularly in the agricultural communities where the vast majority of water is used and there are tremendous opportunities to reduce losses and waste.
6. It might be possible to create cross system connections to help other systems
7. The irrigation districts that use most of the Deschutes water need to modernize and become much more efficient. I think the state should provide low-cost loans to the districts and/or farmers to upgrade their irrigation systems. Serious water metering needs to be done at every logical point, water wasters need to be cut-off from supplies, water should ONLY be allocated for verified agricultural uses...not watering lawns and the like. The rivers MUST have first priority in terms of water rights. It is ridiculous to "over-allocate" stream flows to the extent that the rivers could actually be sucked dry!
8. Right now I'm driving through California, and it's an object lesson in water mismanagement. 1) we need better control of how Ag uses water! Including Big Ag and Big Pot. Wasteful water practices, poisoning creeks with pesticides, and raising water-intensive crops (in California's case, really stupid things like almonds) are a matter of public concern, not just private corporate or family farm interest. (I grew up on a family farm and ranch. Not dissing farmers or ranchers. Just saying we need to be smarter and coordinate better among everyone.) 2) levy a serious luxury-water tax on wasteful, decadent water-slurping uses such as lawns, golf courses, giant fountains in desert housing developments, etc. You can't stop rich people from wasting our natural resources to the detriment of everyone else -- but you can make them pay. 3) incentivize individuals, landlords, businesses, landscapers, and HOA/housing developments to encourage ecologically sound practices such as replacing lawns with drought-tolerant xeriscaping, encouraging tenants and residents to hang-dry laundry, using leaves productively in landscape management instead of blaring leaf blowers, etc. Align water awareness with being local, being cool, saving money and the environment -- don't isolate water, make it part of a larger campaign that includes energy use and pollution in general! 4) public education component - hire a sophisticated branding company (local, duh!! Like Weiden + Kennedy or Plazm, someone really top notch who's been in Oregon a long time) to go well beyond the typical public interest style ad campaign, and instead align water and other sustainability choices as sexy, cool lifestyle branding (different campaigns for different geographical areas and demographics). Plan on a several-year, multi-layer campaign with social media, advertising, and content aspects, not just some one-off posters. Coordinate efforts with Travel Oregon and other stakeholders in Oregon's water future but also Oregon's brand. 5) team with universities to create long term solutions and experiments. What if U of O architecture school had an eco and water sustainability wing, and the

Q4: What actions should be pursued to better prepare for future droughts?

State helped get them permission to build outside of Code? This could have additional benefits, such as for Oregon's many patients who have mold allergies, Multiple Chemical Sensitivities, and other illnesses that are made worse by current Code requirements and typical building practices. Let every home have a self-composting toilet. Re-educate designers and builders!

9. We need to guarantee better instream flows during all seasons to better protect fish and wildlife, and associated aquatic ecosystems. Until archaic water laws are overhauled, pass legislation to make ODFW-recommended minimum instream flows the most senior water right. The State needs to do a much better job of defining and enforcing water waste. Most flood irrigation may need to be defined as waste. Landowners should be allowed to lease water back to the stream for many years.
10. Increase conservation through regulation and incentives. Is conservation truly accounted for in the forecast of increased demand? In other words, with climate change and reduced snowpack, we will have to conserve and change how and when we use water. I think we underestimate the capacity to save water through conservation. If we had to, or even voluntarily with incentives and prudent foresight, we could cut back on wasteful irrigation practices in particular, both agricultural and urban. Another way to conserve water would be through increased re-use of treated wastewater. There is no good reason, other than misinformed public perception, that adequately treated wastewater cannot be used to irrigate crops, in particular crops like orchards and vineyards, i.e., crops that don't come in direct contact with the irrigation water.
11. We have a hundred year old water distribution system ...any relational future plan should start with the year's snow pack then divide the pie proportionally to all water right owners
12. We need more water in our rivers.
13. Having visited Australia regularly over the past 6 years, the rainwater collection system is well established. Although 500 gal tanks in the back yard are unsightly, with new construction they are neatly hidden from most vantage points. And everyone that I can see has at least one of these tanks if not two--so all share in the "eyesore" to the point that no one notices (except me as an outlier). Retrofitting homes to collect gray water and placement of "rain barrels" as holding tanks for watering gardens/lawns would be a step forward. And would show that urban folks are sharing in responsibility along with the Irrigation Districts who are trying (I gather) to retrofit their leaky canals to be efficient as well as actual farmers.
14. Put genuine effort into defining a 'carrying capacity' process - it is a process... not a number - at the state, regional and community levels. This will require reform in state land use law to revise the current policies which promote population growth and discourage honest planning at the local level. For example, the 20-yr. land supply mandate that requires communities to forecast population growth and provide a 20-yr. supply of land for jobs and housing inside urban growth boundaries needs to be repealed. The law should be that a local jurisdiction can have NO MORE THAN a 20 yr. supply. Another needed reform is to allow local jurisdictions to collect the full costs of providing infrastructure for new population growth. Very few jurisdictions come even close to collecting the full costs of population growth, but the situation is made worse because the state prohibits collecting Systems Development Charges (SDC's) for police, fire, libraries and schools. Developer interests will howl and cry that allowing full cost SDC's will increase the cost of housing. This is a lie. What these public subsidies do is prop up the speculative value of bare land. And what does that do? Discourages good planning. Why? Because developing modern urban settlement is a very complicated and usually requires larger sections of land, especially lands that follow natural features (such as rivers) as

Q4: What actions should be pursued to better prepare for future droughts?

opposed to parcel boundaries. To plan properly for these larger areas often requires cooperation. Why should any landowner cooperate when the government is helping him pull a 'gotcha'? I suggest a carrying capacity process that gives citizens a chance to vote - say every six to ten years - on whether they want to continue these subsidies or not.

15. Charge for irrigation water. Let the market decide what is a beneficial use. If the farmers can afford to put appropriately priced water on irrigated crops, then go ahead and use the water. If not, leave the water in the river. But charge what the water is worth. Stop giving it away.

16. I am writing to advocate for two drought strategies. 1) In town, rain gardens and other ways of harvesting water off impervious surfaces and storing it in the ground (tanks are just too expensive to be widely used). While this won't replace the need for irrigation across the whole dry season, it can extend the season when irrigation is not needed by a couple of months depending on where you live. That's a lot of water saved. Also replacing lawns with native plantings and lots of mulch will vastly reduce water demand. 2) More innovatively, we need to do water infiltration in the upper watersheds. When we slow, spread and sink water in the upper parts of the watershed, it rehydrates the forests and surfaces below as late season flows, restoring springs and seeps, and providing water in the hot season when it's needed by plants and fish. The best ways to do this are: -- decommissioning logging roads and turning them into water collection swales without culverts that speed the runoff. -- laying logs on the ground on contour; this can be done while thinning some of smaller trees improving the health of the remaining trees and reducing water demand; with ground contact to prevent fire ladders, water runoff and debris will collect on the uphill side of the logs and infiltrate into the ground -- imitating the actions of beavers with check dams spreading water horizontally away from main stream flows

17. Require medical marijuana grows to have legal water rights and not stress residential wells.

18. As we live in a ranch area, I do think a hard look at water rights and how the old "use it or lose it" mentality is deeply entrenched. That entire management and allocation should be revisited given our new environmental conditions.

19. The inherent needs of our rivers and streams need to be made the first priority for water allocation. Water rights for irrigation, municipal, and industrial use should come behind the basic needs and health of our rivers and the wildlife and natural systems that they support. Irrigators, in particular should be forced to update outmoded, inefficient water distribution systems. We should consider public funding (i.e. low cost loans) to facilitate this.

20. Motivation toward reducing consumption and increased recycling

21. Water should be allocated specifically for fish and wildlife.

22. manage the water to maintain the vitality of our fisheries at the same time balancing needs of others

23. Reduce ag demand through better watering practices: drip vs. spray.

24. Seek to improve irrigation systems and districts' use of our precious water resources so water can be conserved instream and reservoirs.

25. Higher winter CFS flows. It is not all about irrigation. Less water in the summer. Find some common ground.

Q4: What actions should be pursued to better prepare for future droughts?

26. More storage.
27. We need more storage and conveyance infrastructure. We need access to winter water rights out of the Columbia River.
28. Water conservation by agriculture. Replace prior appropriation with public-interest water management.
29. Increase water storage capacity in reservoirs through dredging and other management strategies, require all new development to have water saving features and onsite infiltration to landscape features. Big one here, work with or put regulatory pressure on irrigators to switch to more efficient delivery methods and to pipe canals!!!!!!
30. More instream rights, better planning to obtain public water supplies in less damaging ways, management of upper watershed catchments to improve retention.
31. Explore more water reuse projects and make it easier for people to use grey water. Explore the installation of more water storage projects for the replenishment of groundwater.
32. More education and flexibility regarding irrigation amounts and water usage to small/medium landowners. Specifically those in large irrigation districts. A better understanding of the basin wide efficiency of areas where multiple irrigation districts are located.
33. Higher instream flows, Irrigation system improvements, and a Water Management Agreement that codifies the rights and responsibilities of Instream, Ag, and Muni interests.
34. I think that there needs to be an awareness campaign that lets people in "water-safe" areas know that it's still a rare and shared resource. The price we pay for commodities should be a reflection of drought (do we really pay the actual cost of our manufactured goods?) I'd like to see people aware of water-intensive crops that are grown in deserts and encourage eating and supporting agriculture that grows what grows based on the climate of the place. We may have to forgo some things, but in the long run, not having those cheap strawberries or a new pair of jeans is better for the water world.
35. Lower summer water flows and raise winter flows.
36. Implement a plan for insuring more even and natural water flow of the upper Deschutes throughout the year. In particular in a drought situation do not open the damns completely in the summer months and drain out all of the water.
37. Large scale efforts to restore and conserve in-stream, riparian, and upland habitats to store, safely release, connect floodplains to raise water tables, and cool streams and rivers. Large scale efforts to improve infrastructures such as irrigation ditch piping projects, efficient irrigation equipment, reduce flood irrigation practices, educate and change habits by municipal water use to conserve.
38. Don't allow the water agencies to drain the watershed.
39. All water consumers should be made aware of actions they can take - whether homeowners converting lawns to landscape materials (hopefully native) that don't require a lot or any watering. Farms and nurseries should be required to do all and any conserving practices possible, like getting rid of overhead sprinklers and recycling any water possible. I oppose any new dams for irrigation - either the farms need to adapt to crops that use less or no irrigation or they won't survive. We need to leave plenty of water for fish and wildlife and can't risk impounding water for agriculture. We need better waste water plant practices so more waste water can be recycled for use in communities and on farms.

Q4: What actions should be pursued to better prepare for future droughts?

40. Better conservation of our water. More efficient irrigation and water usage.
41. Protect ecological flows or rivers, reduce waste by irrigators.
42. More education about the lack of water and how that will affect the community; how lowered river levels affect fish and plant life. Perhaps more education about what has happened in California; how people are losing their jobs and moving north; how more people in the area increases the demand on the availability of water. Institute an incentive program for people to reduce water consumption.
43. Educate people about what they can do, prepare cache gardens and rain gardens on public areas. Regulate agribusiness' use of water.
44. Encourage water conservation throughout Oregon.
45. Fines for people who waste water - if they need to learn the hard way, so be it.
46. Our community depends on the lake (reservoir) being full. Locals do not understand why protocol cannot be changed so that water is held back in early spring to assure a full lake during the summer season.
47. The state should work to better manage our state's water resources ahead of drought by mandating common sense management initiatives--i.e. measurement of ALL water diversions, enforcement against waste, setting irrigation efficiency standards by basin, etc. Additionally, during times of drought, the state should require mandatory conservation and curtailment that is directly tied to river flows and/or a conservation target, require that water management and conservation plans be updated to require meaningful curtailment/conservation actions to be triggered at certain stages of drought and/or set a conservation target, protect minimum flows on ecologically significant streams, establish emergency regulation temperature triggers for fishery closures during drought and establish a dry day fund to facilitate instream leasing during times of drought
48. Planning for a more frequent droughty future rather than delaying change and then reacting in alarmist ways.
49. Actions to be pursued to prepare and protect aquatic resources during drought include: increased monitoring, measurement, and documentation of water usage; increased enforcement of existing water laws; additional instream protections (including expansion of "Allocation of Conserved Water Program" to improve instream protection as well as encourage efficiency). It is important to establish instream water rights and provide for enforcement of water regulations to protect flows for fish, wildlife, and water quality as well as to include fish, wildlife, and water quality needs when planning and determining future water needs. These instream actions require funding, staff, resources, quantitative analysis, and a higher prioritization than currently given. The new strategy should require development of drought provisions to protect flows for fish and wildlife, and set minimum flows on ecologically significant streams.
50. Start treating the waters of the state as a resource rather than a commodity. The rights of individual water users, regardless of their priority or beneficial use are still junior to the rights of all the people of Oregon. Plan to create abundance rather than prepare for scarcity. These are not utopian platitudes, but pragmatic strategies with reachable goals and objectives.
51. Aggressively pursue compromises that would result in substantially increasing stream flow in the upper Deschutes River during winter months.

Q4: What actions should be pursued to better prepare for future droughts?

52. Obviously, continuing water conservation efforts. These are the "Low-hanging fruit" in any drought response program. We're not talking huge infrastructure changes and the public outreach efforts generally fall on receptive ears. As much as I hesitate to say it, looking at more water retention/storage structures/strategies, e.g., diversion of winter flashy stream runoff to (as appropriate/available) groundwater recharge zones, early irrigation fields (see some of the efforts in the southern Great Valley of California on this issue).
53. We cannot fully address drought and climate change without a discussion of the importance and need for increased water storage, particularly small, off-channel reservoirs. With increased precipitation and decreased snow-pack, it is essential that Oregon has storage options to prevent flooding and be able to release water later in the season when needed most for communities, crops, and fish. To better meet Oregon's diverse water needs, the new grant and loan fund for water storage, conservation and efficiency projects under SB 839 was created by the 2013 Legislature. The Water Projects Grant and Loan Fund recently committed $8.9 million to projects throughout the state, including funding a $3 million dollar project that will expand a reservoir in Hood River. The Oregon Water Resources Department has reserved approximately $5 million for a 2017 funding cycle. This program needs to receive more robust funding so that it can further impact our communities. In the first round alone, there were 37 project applications requesting $51 million dollars in funding. If the funded projects are successful, this program should continue to receive a multitude of worthwhile project applications from all over the state and we are doing the program a disservice by not increasing the funding pool. Additionally, we need to expedite the temporary instream transfer application process. There are many water users who would take advantage of this valuable tool, placing water instream for a season, if the process would be completed quickly.
54. Regional plans with strategies to achieve dramatic improvements in water conservation; innovative technologies in efficient irrigation; simplified process for safe graywater capture and reuse; widespread use of composting toilets where feasible, and waterless urinals; disincentives for permitting water-intensive land-uses in drought-prone areas; modification of water rights law so that unused water rights go directly towards conservation rather than transferred.
55. Help farmers transition to methods that decrease their water needs. Normalize water flow on the Deschutes to support fish, the spotted frog, and other wildlife to maintain quality of life and the integrity of this watershed
56. Require conservation by irrigators to allow more water to remain in the streams.
57. Start planning for additional water storage, preferably above the upstream limit of salmonids
58. Conservation!!
59. Put in local reservoirs to collect more winter water.

Q5: What most concerns you about the future with regard to water?

1. Lack of resources from State to conduct water law enforcement; lack of Fed resources to "up infrastructure" regional and nodal storage redundancy for drought and natural disasters.
2. Demand is going higher, but the climatic uncertainty is only making it more difficult to "have water whenever we want and as much we want." Unless efforts are made by public to be engaged in conservation efforts, policy efforts alone will not be very effective.
3. The application of the public trust doctrine to water allocation. Specifically reallocation of water previously permitted for irrigation to alleged environmental purposes.
4. Continuously expanding population, with finite water supply. Also, there's a huge number of illegal water withdrawals from steams, the number of which has presumably gone up since OWRD stopped their Stream-Walker program.
5. My concerns - a healthy river and healthy environment - seem to be lost behind industry concerns. There needs to be more emphasis on better sharing of water between uses.
6. The death of the Deschutes River.
7. More rain on snow may reduce available water for human uses and aquatic organisms. Continued human growth with excesses may further stress water availability. Reducing water loss is important, although some wells could go dry with increased piping of canals.
8. With the probable loss of snowpack, summertime supplies will be drastically reduced. How can we maintain a vibrant economy, strong agriculture, high quality of life for area residents, and a healthy environment, in particular, streams that support and nurture native fish and wildlife throughout the year.
9. Already the state has inventoried water aquifers...if an aquifer is depleted...the water board should limit all well users proportionally.
10. Wasteful use of water, especially by industry and agriculture.
11. Won't be enough of it to take care of all parties' needs --and the upper Deschutes clearly reveals what that means for a river.
12. Population growth will lead to stress; stress to excesses; excesses will beget more excesses; then people will start killing each other... and the whole gruesome cycle will continue again.
13. The condition of the upper Deschutes River and the impacts of irrigation withdrawal on the river. The IWRS Project Team needs to show they clearly understand this problem and what is needed to resolve this situation in the near future.
14. The costs associated with irrigation must be internalized. That is to say, there are costs associated with pumping rivers dry that are not reflected in what irrigators pay for the water. The fisheries are part of the public trust. Irrigated farming is private industry, not part of the public trust. Regulators fail to protect the public trust when they prioritize irrigation over fisheries and river ecosystems. Farms are important to the economy. Dryland farming is extensively practiced in north central Oregon and southern Washington. Dryland farming may not be as lucrative as irrigated specialty crops grown with Deschutes River water. But it's a good living that can be sustained alongside healthy fisheries. Regulators must protect the public trust before subsidizing irrigators with essentially free water. Water rights permitees need to step back and acknowledge that water is diverted with permission of those responsible for administering the public trust. That is what a permit is all about. Regulators should charge enough so that the market influences farm practices. In setting the price, consider the

Q5: What most concerns you about the future with regard to water?

lost fisheries resulting from drawing down stream flows and raising water temperatures. My concern is that after a generation of ignoring minimum stream flow requirements, which were paltry and would not support healthy fisheries to begin with, the regulators are used to giving in. The Deschutes River has died a death of a thousand cuts. If its dead, why not take the last of the water and grow some more high value carrot seeds with what is left.

15. The combination of changing climate with the damage we have done to our forests is extremely serious. We need to put regenerative practices to work in the forests in order to get the natural systems services we need.
16. The over use of water for marijuana grows.
17. Responding to politics and not a better balance of irrigation, environment and recreation.
18. That no governmental organization will have the courage to force water wasters to become more efficient and our rivers and streams will therefore further suffer.
19. I am very concerned that the river levels must be sustained to create a healthy environment for our fish.
20. That we don't include recreational uses in our overall watershed planning. Quality of life should not be ignored while addressing this issue.
21. Degradation of our environment when it is secondary to industry
22. Not a balanced approach - too much focus and priority to agriculture.
23. The value of recreation needs to be weighed in with agriculture.
24. If no requirements for efficiency are placed on high water demand agriculture, business, and industry, they will simply continue current wasteful patterns. Greed and sloth are limitless demands. Water just isn't limitless.
25. Year-round stream health. Too much water pushed through ("wasted?") in summer months. Not enough the rest of the year. Flows should be managed to be more consistent, and not allow reservoirs, particularly Wickiup, to be drawn down so much.
26. Wasteful water practices that leave streams dry and decimate fish populations.
27. How poorly the upper Deschutes is managed. The Deschutes needs to be managed as Wild & Scenic river not an irrigation canal.
28. Everyone wants it to either play in it or look at it and doesn't respect the needs of agriculture.
29. Oregon's outdated water right laws, lack of planning, lack of monitoring, lack of local knowledge in the State's processes and programs.
30. How will changing water supply (timing and quantity) affect ecosystems?
31. I am concerned that water, particularly water claimed and used by irrigation districts is not being used or valued in the best way. There is still a use it or loose it mentality that is killing us. I'm concerned about clean drinking water and aquifer health, but here in the Rogue the real issue centers on Ag use and miss use as I see it.

Q5: What most concerns you about the future with regard to water?

32. Connection between quantity and quality, effects of public withdrawals on quality.
33. Water quality is of greater concern than quantity (although they affect each other). Concerned about the impacts of climate change on wildlife habitat and changing environments that are no longer suitable for some species.
34. The Great Plains region and the Ogallala aquifer. The effects of running out of water in that region may affect the country as farmers look to claim new water from new locations.
35. The need to keep food/livestock production front and center in all discussions and for the Agency to acknowledge the Oregon Department of Agriculture as the leader in that conversation through a MOU.
36. Lawsuits interfering with our ability to work collaboratively with water rights holders. Concerns about the veracity of District commitments given the lack of an Agreement.
37. That people have little respect for it. It is taken for granted. I think that without a change of attitude and awareness, we will find ourselves in dire straits. Selfishly speaking, Western Oregon is blessed with rain, so it may become a refuge for people fleeing the southwest. More people will mean a greater strain on the resources. And the snowpack doesn't hold all summer....
38. Lower summer water flows and raise winter flows.
39. Protection and preservation of natural species, such as the Oregon Spotted frog.
40. Quantity and quality.
41. We live on the upper Deschutes River (Wild River La Pine) not to have a historic water flow in the non-growing season is environmentally reprehensible. It's now classified as a dead River. This is unacceptable and fraudulent as a new homeowner I bought this house under false pretenses will seek legal counsel as home value on a dead river is a tough sale.
42. That we won't have enough and that we will continue to pollute what we have. Waste water plants are not keeping up with the need to clean the water - we could have more water if we had better municipal waste water plants.
43. Growing food for the people and wildfires.
44. I think we have gotten complacent. I am most concerned about people not really believing or understanding that water across the globe is becoming more and more scarce; that only about 3% of the water on the planet is fresh water; that water is essential for life.
45. That we will not have enough.
46. Loss of potable water, loss of wildlife; the fact that this is merely a symptom of the greater global warming / climate change crisis and that many individuals in the agencies still deny that reality or fail to respond to it appropriately.
47. A future without water ... what do you think?
48. That no water or little water in the lake may become the norm. Our community would not be able to survive.
49. 1. Lack of protection of instream flow for fish, wildlife, recreation and clean water purposes: The state

should move forward on adopting instream water rights on stream that are currently not protected and should resolve the 60+ applications that have been protested. New instream water rights should protect the full suite of flows necessary for stream/fish health. We need continued progress on scenic waterway flows as well. 2. Lack of data: Good data is key to good water management and planning. The state should invest in data needed to better manage the state's water resources, including USGS basin investigations across the state, more stream gauges, instream flow studies (including peak/ecological flows) across the state, etc. As is, permanent decisions are being made (i.e. issuing of groundwater rights) without the benefit of data to ensure the state's decisions are sustainable. 3. Inadequate water management: Water management in this state continues to need to be improved, including measuring and reporting of water use. The state should set a 2020 deadline for the implementation of stage I of the 2000 Water Resources Commission Water Measurement Strategy, and then commit to measurement of all diversions w/i a decade of that. 4. Lack of enforcement of permit conditions and/or existing rules/laws: For instance permit conditions/rules/statutes require that water be used beneficially without waste, yet the state does little to ensure that irrigation and/or municipal users are efficiently using water without waste. The state should move forward with setting basin specific efficiency standards as contemplated in the Division 410 rules. 5. Equal attention to implementations and funding to instream portions of the Integrated Water Resources Strategy: The state is putting a lot of effort and money into implementing the development side of the equation of the IWRS. Fulfilling the instream portions should be a priority, including equal funding. 6. Accountability of water development funding: the state should institute a transparent and robust accounting of all projects that receive state funds to ensure that they are consistent with statutory directions and also that the projects move forward as committed to in grant applications. Moreover, if state funds are used for conservation projects, the state should require that the conservation project go through the Conserved Water Act.

50. A lack of planning for the future, one that may be water restricted. If we plan for drought in infrastructure and cultural habits when it occurs we are prepared and do not have to take "emergency" measures.

51. Oregon water usage has already outpaced the ability for the natural system to withstand withdrawals under current practices and regulations. An increase in demand and usage of water without a change in regulations and usage will render aquatic systems the losers in the state unless given a higher priority. Since the bulk of current and projected future water demand is expected to be agricultural, it makes sense to target conservation and efficiency in this sector. Agricultural producers need to be given financial and technical support to improve efficiency which will benefit water resources, fish, wildlife, and the state's residents. The state needs to regulate and enforce existing water law and usage regulations including enforcement against waste and develop and implement basin-specific efficiency standards for agriculture. Our state's water resources will benefit from OWRD collaborating with partners including other agencies such as DEQ to develop additional instream protections including setting standards to reduce the use and exposure of water resources to toxics and other pollutants and assist/support jurisdictions to implement and enforce water quality control plans and other action to protect water quality.

52. Climate change is slow death and my greatest concern is that government will fail to act with any decisiveness until the resource is depleted beyond repair. There are global indicators of the expansion of drought, which leads to famine and then to war. The bloodiest example we currently have is the drought in the Middle East that led directly to the civil war now raging in Syria.

Q5: What most concerns you about the future with regard to water?

53. Over-use of water from the Deschutes River will irreparably damage the ecology of the river.
54. In addition to population pressures, the transition from snow to rain, more intense rainfall patterns, and flashier stream behavior during the winter and early spring. The ramifications for late summer and early fall are frightening on a host of fronts: nature of fire season, irrigation, municipal water supplies....
55. Oregon is not prepared for our water future. Oregonians do not understand where their water and their food comes from, despite the increased popularity of farm to fork, community supported agriculture, etc. There is a basic misunderstanding about what it takes to get the water to where it is needed. It may take a crisis before Oregon wakes up and realizes our lack of preparedness. A large portion of Oregon's water infrastructure is long overdue for an upgrade, but there is an absence of funds to do the work. Oregonians do not understand the long standing impacts of drought and climate change, or the need for new water storage. Finally Oregon needs to champion policies that incentivize water users to participate in collaborative conservation efforts and partnerships between entities to meet the large water demand with little supply.
56. Low water levels changing the dynamics of the ecosystem of the upper Deschutes.
57. Increasing issues with water quality AND water quantity. The integrated water resources strategy needs to fully address the range of water issues. If important water-related challenges are not mentioned in the strategy, it will be difficult for residents, agencies, non-profits, and funders to see these issues as a priority. The intent of the integrated water resources strategy was to address "integrated" water issues. Drinking water availability and quality, and overall aquatic habitat and water quality are not adequately addressed.
58. Thinking only if water use for humans and not the environment. Lie water flow on the Deschutes in winter. With it too high in the summer
59. Irrigators will take all the water without adequate regard to other needs.
60. The possibility that even more groundwater may become contaminated.
61. Lack of responsible stewardship with regards to the Upper Deschutes River.
62. Wells are going deeper and deeper to get water. We are not protecting this resource long term especially for basalt wells.

Q6: Any other thoughts or comments you would like to share with the IWRS Project Team?

1. No
2. No
3. The most obvious and effective drought preparedness actions are to store more water during years with abundant precipitation and to use more surface water in lieu of groundwater where possible during years of abundance. Both of these actions would of serve to conserve water for drought years. OWRD must recognize that the concept of maintenance of seasonal varying flows is purposefully designed to first eliminate any potential for future enhancement of water storage and second to regulate current storage facilities out of useful existence for the irrigator community.
4. As a former member of Josephine County Rural Planning Commission, I (Malcolm Drake) was very disturbed to see at least one proposed subdivision's well flow tests that blatantly violated the rules, which are clearly stated in the Rural Land Development Code. Example: one well, when tested at full capacity of around 40 gpm, caused excessive drawdown in the observation well. The well was allowed to be retested, at only 5 gpm, and at that pumping rate, the observation well was only minimally drawn down. This totally violates the rules, and clearly does not protect neighbors' well's, since the new LARGE (40-50 lots; I don't remember the exact number) subdivision would presumably pump at a rate greater than 5 gpm. I don't know if this mishandling of pump tests is a continuing problem or not, but suspect it likely is. Unfortunately, OWRD quit providing expertise regarding water issues, when Ivan Gall transferred out of the area. That enabled planners to plead ignorance of RLDC'S water laws
5. Please focus in on developing real strategies to better balance water uses among the entire community....water is not just for those who "were here first" but, instead, should be for all values and uses in the community.
6. It's time to push the water consumers (especially irrigators) into SERIOUS action to make consumption more efficient and to restore normal stream flows in the upper Deschutes River (Wickiup Reservoir to Bend).
7. Need to move quicker with on-the-ground action and legislation changes, and less with continued studies unless they really tell us something we don't know.
8. If we need additional water, according to the IWRS forecasts, where will the extra water come from in the summertime if we're fully appropriated? I understand why total water use could increase in municipalities with increasing population, but why is there a predicted +1.5 gallons per day increase per capita? It seems with more efficient industrial processes, better residential irrigation systems and practices, and perhaps shorter showers, M&I use could go down or at least remain at 150 gal/day. Certainly with rationing it would go down.
9. The most senior water right holders in Oregon should be fish and wildlife. It is completely unacceptable for WRD to attempt to plan our water future without considering instream needs. In fact, instream needs should be given the highest rights. Decades ago, ODFW determined minimum instream needs for most rivers in Oregon and was granted junior water rights. Few if any rivers meet those minimum needs. ODFW water rights should be given the highest seniority.
10. I was impressed with the presentation, the commentary from the audience, and the ability of the chair people to keep on track and not be to offensive to those who wanted 10 minutes.

Q6: Any other thoughts or comments you would like to share with the IWRS Project Team?

11. If you don't put together a viable carrying capacity process your work is useless; indeed, dangerous because it just postpones the day of reckoning and makes intelligent planning more difficult with fewer reasonable options - Kinda like starting up the motor on a vehicle with no brakes (and lousy steering). I will not be alive to see the crash... but my children will.
12. Publicly acknowledge that minimum stream flows were established before most of the current staff of the WRD and ODF&W were born, and that minimum stream flows are routinely ignored. The beneficiary of ignoring minimum stream flows is farmers who want to grow specialty crops instead of using sustainable farm practices that thrive in the counties north of Deschutes County and along the Columbia River.
13. Thanks for letting the public comment. I would hope all of us either simple household consumers, ranchers and farmers and recreational users can find a better balance than there is today. Way too much at stake!
14. Minimum water flows in the upper Deschutes River need to be set at 300+ CFS...and this should be enforced! Un-used water rights should routinely be permanently returned to the river. Water wasters (i.e. lawn waterers, field flooders, etc.) should have their water rights cancelled. The public owns the water...not the irrigation districts!
15. Please consider the fish population in our state as you manipulate water levels for other interests!
16. Our environment, especially regarding our rivers, is more important than ANYTHING else.
17. 1) The cost of attempting to fix environmental damage is vastly higher than not breaking it in the first place. 2) A significant portion of Oregon's economy is recreation and environmentally based. Water needs for fish and maintaining the life of many of our rivers are being treated negligently.
18. Accelerate ag change to more efficient use of water.
19. I would like to see the state pursue water conserving policies and practices that encourage irrigation districts, developers and other high water use entities to conserve water and allow the increase of instream water flows.
20. Come up to Pringle falls in the winter and see the damage caused by low flows.
21. The map doesn't reflect that good farmable ground in North Unit ID could be developed and how little water NUID gets to raise crops.
22. Stop giving in to special interest groups and do what is right for the people and economy of Oregon!
23. As a restoration professional working in the Rogue and a fisheries biologist I think we need to establish base instream flows for all our major streams and regulate water use so that our streams don't go dry. It sickens me to see Bear Creek nearly dry, salmon stranded in hot pools, and mean while that water is just spilling off peoples poorly managed flood irrigated pastures and running down road ditches. We need to tighten up on water used by Ag. And start putting an appropriate price tag on that water. Also like to request that when it comes to access to water for use on restoration projects that the department consider establishing a protocol that prioritizes or at least outlines a way for access to that water to be prioritized over other less beneficial (to the ecological river system) uses.

Q6: Any other thoughts or comments you would like to share with the IWRS Project Team?

24. Pay more attention to instream needs.
25. Agriculture/Livestock production is not only necessary for feeding Oregonians, but it is a necessary element of the State's economic structure.
26. I attended and spoke at the OWRD Integrated Water Resources Strategy Open House. Dave Dunahay (COF), myself, and other environmental stakeholders emphasized that the 2015 Statewide Long-Term Water Demand Forecast does not include increased instream demands at all, and that the oversight invalidates the Forecast and sends the wrong message to instream interests. For example, 500 cfs Winter flows (the likely long-term flows needed to fully address Oregon Spotted Frog recovery) demand 155,000 acre feet of water. That is a 13% increase in the total statewide demand forecast, and it does not even consider instream demand increases in all of the other Oregon Basins. Clearly, the forecast info needs to include increased instream demands in order to be useful. Just as clearly, for the forecast and planning to be credible with instream interests, instream demands need to be considered up-front and on equal footing with Agricultural and Municipal demands. At the meeting, we also had private conversations with OWRD Regional Manager Kyle Gorman, Deschutes Basin Watermaster Jeremy Giffin, OWRD Place Based Planner Harmony Burright, and OWRD IWRS Manager Alyssa Mucken. I agreed to submit my remarks in writing and there they are.
27. I'm glad you're on the job. Good luck.
28. Lower summer water flows and raise winter flows.
29. You need to look at the bigger picture and not just how much water is available for irrigation.
30. If we just help change people's habits and practices, we will be well on our way to solving many issues surrounding droughts.
31. Remember one world. All of gods creatures have to live in it...
32. You need to do extensive outreach if your project is going to succeed.
33. Water rights must be respected but all the new marijuana growers.
34. Our system of establishing instream water rights (IWR) is broken. Only 10% of the state's water has instream water rights and most of them don't meet those goals in the summer. State Parks only applies for IWR's only when mandated by the initiative process or told to by the Governor. DEQ hasn't applied for an IWR in over 20 years and ODFW has 69 rights that are contested since the late 1980's and has been sitting on 400 applications since 2012. They have no money to properly study the state's needs to protect the public's interest. When determining future water demands the department needs to consider not just the IWR's but our rivers (all of them) ecological needs including water quality. The ELOHA modeling system might be appropriate for determining the ecological needs. The current demand model only has consumptive use projections. How will the instream needs change as the climate warms?
35. Thank you for your efforts.
36. The trend or decreasing snow water equivalent in mid to high elevation snowpack is clear. The projection for this to decrease substantially under the 'business as usual' emissions scenario tells us

Q6: Any other thoughts or comments you would like to share with the IWRS Project Team?

	we are only experiencing so far a minor inconvenience compared to what future Oregonians will experience. Addressing water shortage demands reducing the emissions of greenhouse gases regionally and globally. This means all state and federal agency personnel must recognize the root of the problem and promote addressing it.
37.	No, but, thanks for trying and good luck to us all.
38.	I think that the planning boards in cities and counties need to work to reduce the amount of hard/non-permeable surfaces in urban residential areas. This will allow more precipitation to penetrate into the ground having a positive effect on water tables and when we do have rain events capture stormwater in the ground instead of having it runoff overloading water treatment systems. This will lower infrastructure costs and reduce pollutants in surface waters.
39.	Convey to the Governor that situation is critical, and the current antiquated system of allocation is untenable in the face of climate change. We can no longer support a system that not only encourages, but exploits waste for financial gain.
40.	Thanks for your efforts at pro-actively staying in front of an emerging issue. Don't be hesitant to engage others in the water resource community as you deal with legislators and the legislative process; as you know, the more voices speaking to a common issue...
41.	Water is AWESOME!!!!
42.	The upper Deschutes used to be a prime Rainbow Trout fishery. It is becoming a Brown Trout fishery. This is not right.
43.	In addition to soliciting comments from the general public, it is very important for OWRD to involve the full array of partner agencies in developing strategies.
44.	Please normalize the water flow on the upper Deschutes River especially in winter to protect the wildlife and quality of life.
45.	The draft update to the Integrated Water Resources Strategy does not consider the needs of fish, wildlife, or recreation. These are major economic drivers for Oregon. Your strategy must include protections that address the needs of fish, wildlife, and recreation.
46.	Recently moved to an area near the upper Deschutes river. I'm shocked by the fluctuations in river flows and reservoir levels. Currently there is no way a healthy ecosystem can be maintained with the extreme variations in flow and water level.
47.	Please address the dropping well water levels soon as studies show that we are over using basalt wells to compensate for other reduced water sources.

Contents

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Comments and Reports provided by Cyndi Karp

From: Cyndi Karp
Sent: Saturday, June 25, 2016 12:31 AM
To: MUCKEN Alyssa M
Subject: Public Record OWRD/IWRS Beaver & Climate Change for National Forest

Hi Alyssa,

I have tried several times to put the attached document in the body of an email. But, all it does is crash my computer. Could you please print the Attached Document and put it in the Public Comments Record for the OWRD/IWRS review process.

I think that all of you will find this document an interesting read. Please pass it around. It attaches to an email very well and opens. Doesn't like to be copied, I guess. It will most likely happen again several times. Do you have any issue printing attached documents? It is far easier for many people. Just to provide you the document attached.

I am in the process of collecting documentation for the IWRS review.
Thanks for your help. I hope your other meetings went well.

Cyndi Karp

[Note: Cyndi provided a report titled, Beaver and Climate Change Adaptation in North America. A simple cost-effective strategy for the National Forest System. February 2011. Wild Earth Guardians, Grand Canyon Trust, and The Lands Council. 58 pgs. Department staff can provide a copy of the report, upon request]

From: Cyndi Karp [mailto:cyndikarp@peak.org]
Sent: Saturday, June 25, 2016 4:57 AM
To: MUCKEN Alyssa M
Subject: IWRS Public Record 5 keystone species crucial to balance of the ecosystem

http://www.wildlifeextra.com/go/world/keystone-species.html#cr

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From: Cyndi Karp
Sent: Sunday, June 26, 2016 3:26 AM
To: MUCKEN Alyssa M
Subject: Joe Wheaton -- Beaver: Restoration liaison between riparian and upland systems - YouTube

Hi Alyssa,

Please include this Utah State University science video on Beaver in the IWRS record. Has a very good presentation and information about Beaver restoration and importance to the restoration of ground water.

https://www.youtube.com/watch?v=62A3RqL7Xp8

Thanks
Cyndi Karp

From: Cyndi Karp
Sent: Sunday, June 26, 2016 4:18 AM
To: MUCKEN Alyssa M
Subject: WEBINAR: Cheap and Cheerful Stream Riparian Restoration with Beaver - YouTube

Hi Alyssa,

For the OWRD/IWRS public comment.

This is a scientific video presentation by Joe Wheaton.
Cheap and Cheerful Stream Riparian Restoration with Beaver

1:50:25 minutes
https://www.youtube.com/watch?v=m1uysDrOI_w

This video includes Beaver restoration in Bridge Creek Oregon incised waterway. Joe Wheaton of Utah State University. Best Management Practices with Science in Action. The video gives good common sense approach.

But, you cannot just dump Beaver off in a river. They just die. There needs to be Beaver restoration planning process at local Watershed Councils to work with their partners to restore Beavers, habitat & food sources. Watershed Councils are most familiar of their territories.

OWRD/IWRS should support grants to Watershed Councils and Soil & Water Conservation Districts to partnership recovery & restoration of Beaver, a Critical Keystone Species.

Thank you for including this Beaver scientific video document.

Cyndi Karp

From: Cyndi Karp
Sent: Tuesday, June 28, 2016 4:59 AM
To: Director
Cc: MUCKEN Alyssa M
Subject: OWRD IWRS Deadline Date to 08.15.2016

OWRD/IWRS Director Phillip Ward,

Oregon Watershed Councils would like to work together with the OWRD/IWRS process. Watershed Councils are complex organizations within themselves Watershed Council are consensus organizations. WC have Science Based Tech Team meetings, Board meetings and

Special events. I went to one in Lincoln City last night. The Salmon Drift Creek Watershed Council did a presentation by Dr. Dan Bottom and Dr. Kim Jones. About the Salmon River most recent Scientific Research Released: **"Is Salmon Population Decline Reversible?** http://www.salmondrift.org/ Email: Paul Katen 541-994-9682 SDCWC can get you more information on the just released science. Give Paul a call.

One of our WC mission goals is for Public Outreach. WC invites the General Public to ask us questions. They ask us for help. Every day people give WC information & ideas. Many WC provide monthly Science in Action Public Outreach Presentations. Big words for meetings and get together. We like to do "Science on Tap" We support our local economy by holding our Fun with Science meetings at the Pubs that support Oregon Micro Brews. We draw great crowds and have a lot of Science Fun. My Watershed Council is working towards getting a camera to put Educational Videos on You Tube. This will provide Current Science Based Best Management Practices available to all of our partners. We are providing Lincoln County School Dist. Science Teachers access to Watershed Ecosystem knowledge from the Best Leading Scientist.

But, Watershed Councils is not always a simple process. Your current extremely short time period of July 15, 2016 is going to be very difficult to complete the OWRD/IWRS review that you want. Watershed Councils want to give the IWRS our proper attention of working together in Consensus toward Common Sense Working Goals in the Watershed. This is a very complex issue for all of us, you included. Please consider the amount of good recommendations provided by Watershed Councils. WC can help OWRD/IWRS to face mandated issues. But, you must give them enough time to do their best work. It is not a Watershed way to just throw something to get. We want to agree together our WC ways to seek consensus on IWRS.

Oregon Watershed Councils consist of Volunteer Board Members with a few Staff, most part-time and volunteers. We are Non-Profits scraping for $$ to stay alive to fix the wrongs. As you well know, Science isn't always Right. For instance, Taking all of the Woody Debris Out of the Waterway. The is still a Travesty Currently Happening. A Critical Keystone Species and Oregon's Mammal, the Beaver. Attached are documents of a Beaver Study. I would like for you to enter them into the Public Record, please. Watershed Councils are the Best thing for Watershed Ecosystems. It is too bad that so many times Watershed Councils are ignored. WC are the experts that Oregon pays to help heal the Ecosystems. We work together with many partnerships from Environmentalist to Timber Reps, Local, State & Federal Government Agencies, Tribal, Private Restoration Contractors, Private Land Owners, USFS Stewardship Group, Joint Partnerships with other Watershed Councils. We have Partnership in other states, universities, world top of the line Science in Action.

I understand the importance of the timely manner in which you need to get your job done for the OWRC. Would you please give all of the Watershed Council the opportunity to do a good job of helping you? Would OWRD you please delay for 30 days, the **OWRD/IWRS Open Public Comment period until August 15, 2016?** This would provide proper ample time for Watershed Councils all over the state to provide information of their water-wise councils. All of your mandates to address, Watershed Councils have been working on these exact multiple OWRD/IWRS for years. You have asked for help with Multiple Complex Difficult Issues that WC have brought to the table. OWRD/IWRS is in need of the most Current Scientific

knowledge to date. That is going to take us just a little longer. We need to consult with each other to know what to tell you.

Drought mitigation best partner is Beaver, a keystone species. Beaver help to restore ground water, while keeping surface ponds available for multitudinous of species. Many endangered. WC understand or are doing the scientific research on every issue that you are mandated to address. Complex issues. WC work with all of their partners to find the Best Management Practice. WC job is to work with all partners for common goals. OWRD is included in that list. I would hope that Watershed Council would be included in your priority lists. Watershed Council are the Science in Action with their feet on the Ground. Doing the restorations for endangered species. Working to bring Beaver, a critical keystone species back to do Beaver work restoring great Wild Fish Habitat. But, you have to give them time to work together through their process to get you the answers you need.

Watershed Council should be more involved in the OWRD on a regular daily activities bases. WC know their territories very well. OWRD should use WC local knowledge to help Oregon. Changing the date would better serve all, in consideration of all Partnerships involved in the OWRD/IWRS process. Watershed Council should be included. Watershed Councils are at a busy time. They need more time to be able to send it through their Science Tech Teams and then present to the Watershed Council Board for action approval. It is not appropriate to short change your partners. This notice was to short for many of the WC to take the proper actions to your request of Watershed Councils, in Partnerships helping the IWRS process.

WC just need more time to help you the way that you need help. To better understand the processes of Drought, Climate Change, Endangered & Threatened Species,the Keystone Species, Beaver, Water Temps, Ground water Depletion and Restoration, Invasive species, Water quality, Comprehensive water testing for Chemicals, Pharmaceuticals, Pathogens, Pollution, Acidity of Oregon Nearshores and Estuaries, Oregon waterways both Fish & Non Fish bearing waterway setbacks Restoration, Clear cutting effects on Water quality and resources, forest road dust contamination for listed Wild Fish, Lead sources in OR water resources (Lead Sinkers), Best Current Scientific based Management Practices, Outreach building support for Place Based Water Resources (Beaver, Man & Mother Nature), Large Ecosystems Restoration projects of Incised and Bull Dozer straightened Oregon waterways, Sale of property with No Water Rights & No Available Water source for Expensive Scenic Building sites with No Water, New owner just stuck, Fish Passage issues, Road Dikes breached with Bridges or current no bottom culverts,

Big Rock Addition to OR waterways for wild fish habitat, OHRC study document #1 fish habitat choice, Zero Harvest and Preservation of all Old Growth Habitat for endangered and threatened species, Timber cultivation techniques that Increase Water quality, ODF regulations that don't protect upper reaches watershed waterway habitats and contaminate the lower listed fish bearing streams with pesticides, Invasive species threats to Oregon resources, Native Oyster Recovery in Oregon Estuaries that are resistant to acidity issues, **Native Oysters are another keystone species**, review Oregon Water being sold to big international corporations, Keep Oregon Public Water Public, Water quality contaminated with Micro beads, Wildlife Endangered Species should have protected Water rights, OWRD to build better communications skills

with Media News releases for Public Outreach on Public Education for Water Conservation and Contamination of Public water with Household use of micro beads, chemical products, We Drink what we flush down our drains, more Watershed and Citizen Scientist programs for Outreach of Watershed Ecosystem water quality and current science. This is not even close to a complete list of why you need Watershed Councils help in the IWRS process. They do all this stuff, plus lots more. You should seek out their opinions. WC can help.

I want to make it clear that this is my observation of the OWRD/IWRS process. I act on my own accord, independent of any Watershed Councils permission. I am attempting to help the process work better. I hope that you take everything into consideration. Watershed Councils want to help with the IWRS process. But, WC's need more time to get OWRD/IWRS the expert advice that you need for free. I hope that they Mandated $$ to do this the right way. I would say that if they didn't. Please let me know. I will be glad to go to bat for the OWRD/IWRS program using current Best Management Practices. I would like to personally Thank Alyssa for all the hard work she does.

2016 Integrated Water Resource Strategy Must Include:

1. Mother Nature's Best Water Resource is a Critical Keystone Species, Beavers. Please think about the hydrology resources that Beaver provide. Restoration of Ground Water and Habitat for many species. Most Important is Beaver will provide habitat for Endangered and Threatened Species. Beavers are OWRD/IWRS keystone species resource answer. Beaver were designed to solve every mandated issue facing the IWRS review. But, Oregon must stop killing a Keystone species. Beaver as a critical keystone species, must be mitigated. Beaver can be lived trapped, rescued, and relocated to restoration habitats. Support for the Beaver Family Unit is a must for beaver to survive. They are Social animals like humans. The family comes First for Beaver.

There is an Oregon Beaver movement building because Beavers are a Critical keystone species. Beaver should be at the top of the list of keystone species. Beaver provide a multifarious organizations of multiple functions.

2. Watershed Councils are Oregon's Best Water Resource for Restoration Partnership of Many! Understand the vast amount of Water Resources of knowledge that Oregon Watershed Councils bring to the table.

3. Native Oyster Recovery, Restoration of Estuary & Coastal Economics. Convert cultured invasive species oyster over to Pacific Native Oysters for acidity remediation to prevent economic hardships to Coastal Communities.

4. OWRD/IWRS Territory should include the Nearshore. OWRD should oversee all Oregon agency to protect Oregon's Nearshore Water Resources. Oregon 3 mile Nearshore Water should fall under OWRD/IWRS.

I have a whole list of talking points that OWRD staff documented at the Newport meeting. It keeps getting longer, the more I read of the 2012 IWRS review. Beaver, Watershed Councils, Native Oysters, & Nearshore water quality.

Please change OWRD/IWRS comments deadline to August 15, 2016. It really is the best thing for everybody. I hope that we can come to consensus with these challenges made into solutions Together.

Thank you for your consideration of these important issues to all Oregon Communities. I appreciate the cooperation of OWRD with the IWRS process. This document is considered Public Record. Please Redact personal information.

Cyndi Karp
Waldport, OR 97394

From: Cyndi Karp [mailto:cyndikarp@peak.org]
Sent: Wednesday, June 29, 2016 2:21 AM
To: MUCKEN Alyssa M
Subject: Beaver Restoration Document

Hi Alyssa,

A friend shared this Beaver document to send to OWRD/IWRS review.
Please include this Beaver Restoration document as Public Record.

Thanks
Cyndi

[Note: Cyndi provided a copy of "The Beaver Restoration Guidebook: Working with Beaver to Restore Streams, Wetlands, and Floodplains." Version 1.0, June 30, 2015. Prepared by the US Fish and Wildlife Service, National Oceanic Atmospheric Administration, Portland State University, and the US Forest Service. 199 pgs. Available upon request.]

From: Cyndi Karp
Sent: Friday, July 01, 2016 9:22 AM
To: MUCKEN Alyssa M
Subject: Seeing the Forest - USFS Stewardship

USFS Stewardship Groups Excellent video
https://vimeo.com/125160364

[Note: video from the Forest Service Employees for Environmental Ethics, April 16, 2015]

From: Cyndi Karp
Sent: Sunday, July 10, 2016 11:58 AM
To: MUCKEN Alyssa M
Cc: MCWC Evan Hayduk
Subject: Big Rocks in Stream Restoration Project 13mins - YouTube

Stream Restoration Project 13 mins.
S. Raritan River in Hunterdon County, NJ.
Big Rock in Streams Restoration Project
Excellent presentation.

Published on Aug 20, 2013 13 min

Documentation of a stream restoration project conducted on the Raritan Inn Stretch of the South Branch of the Raritan River in Hunterdon County, NJ.

https://www.youtube.com/watch?v=irKwfyuSNV8

From: Cyndi Karp
Sent: Friday, July 15, 2016 12:52 PM
To: waterstrategy
Cc: OR Rep. David Gomberg; MUCKEN Alyssa M
Subject: Fw: Mandate Comprehensive Water Testing, Track Chemicals, No Kill Only Rescue Beavers to Rescue Wild Fish

Please include this letter in the Oregon Water Resources Dept. review of the 2012 Integrated Water Resources Strategy.
With Attached Document Mid Coast Watershed Council regarding Beaver Conservation.

Thank you

Cyndi Karp

[Note: Cyndi provided a report titled, Beavers and Conservation in Oregon Coastal Watersheds by Dr. Wayne Hoffman, Mid Coast Watersheds Council, and Fran Recht, Pacific States Marine Fisheries Commission. 19 pgs. Staff can provide a copy of the report upon request]

From: Cyndi Karp [mailto:cyndikarp@peak.org]
Sent: Friday, July 15, 2016 10:11 PM
To: Director; Meta Loftsgaarden; INFO Odfw; ODEQ Director Pete Shepard; PAUL Jim; ODA Director Katy Coba
Cc: waterstrategy; MUCKEN Alyssa M; COTTAM Douglas F; OR Rep. David Gomberg; OR US Senator Ron Wyden; OR US Senator Jeff Merkley; OR US Rep. Kurt Schrader
Subject: OWRD/IWRS Beaver as a Rescue Mega keystone species for Oregon

Oregon Water Resource Director Tom Byler
Oregon Dept of Fish & Wildlife Director Curt Melcher

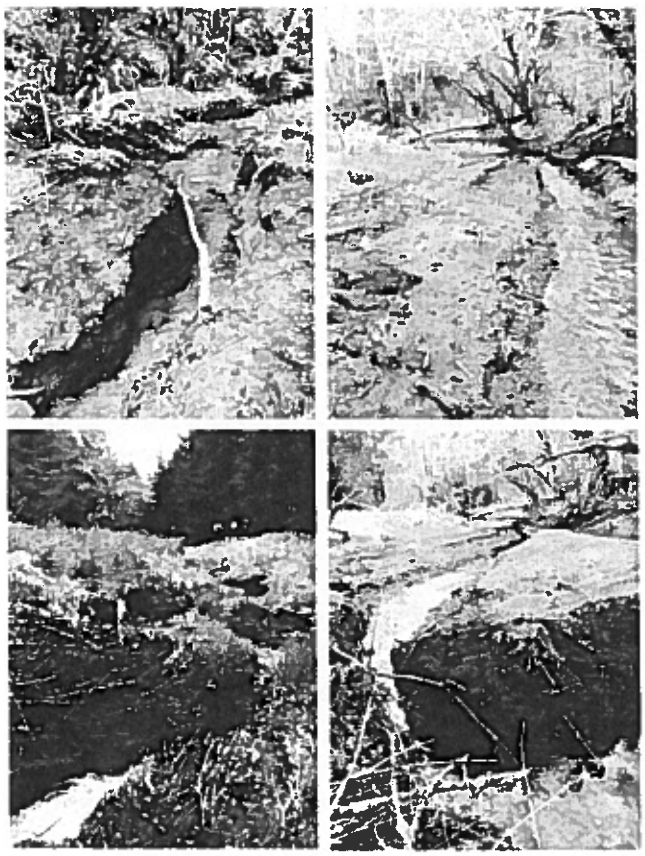
Oregon Dept of Environmental Quality Interim Pete Shepard
Oregon Dept of Agriculture Director Katy Coba
Oregon Dept of State Lands Director Jim Paul
Oregon Watershed Enhancement Board Director Meta Loftsgaarden

Thank you for having great staff to help us through the Oregon Water Resource Dept reviewing the Integrated Water Resource Strategy process. I am concerned with the lack of contacting more IWRS partnerships like Watershed Councils and Oregon Watershed Enhancement Board OWEB. Why would OWRD Not Invite OWEB or Watershed Councils to the Table of the review of IWRS? Or, the Legislators. When Oregon is reviewing a Water Resources Document. Watershed Councils and OWEB are Oregon's source of Water Resource Restoration. They are the tools needed to get Oregon Restoration done. Oregon Agencies are asking about Collaboration with Partnerships toward Common Goals. OWEB & Watershed's should be included in this OWRD/IWRS review process from the beginning. I should not have had to email all of the Watershed Councils to let them know. WC only had 1 weeks notice. OWEB &WC not Invited.

So on that note. Let's Begin this journey together. We can do this the easy way or the long Journey way. They both come back around full circle.

The easy way is for **Oregon to Protect Beaver as No-Take mega keystone species.** Follow Utah's No Take of Beavers (since **1890's).** Utah recognized the importance of Beavers to the Ecosystems.

Protect Critical Keystone Species, Salmon, Beaver, Lamprey and Native Oysters to restore Estuaries and the Ecosystems of Oregon. Please Stop the Killing of Beavers, Mitigate, Rescue, Restore Habitats, and Relocate. Stop indiscriminate killing of Oregon Beaver. Please Mandate the Protection of Beavers for an Oregon Water Resources Values. Help Beavers Restore Drought Prevention and Endangered Wild Fish runs.



Thank you for all of your hard work. Attached is a document by ODFW that provides information on Beaver as being a keystone species.
And, pictures of Curl Creek on the Salmon River *[Note: see photo insert on the right].* Where a well established long term Scientific Paired Study of Native Fish and Beavers was Destroyed with intent to disrupt Beaver/Native Fish Study. The Beaver are gone. The Native Fish Run is Dead.

The summer Drought Water Resource for Endangered Native Fish Gone. I have sent as many Beavers Document I could find.

The long standing health and water resources of Curl Creek on the Salmon River destroyed by illegal Beavers Kills.

Dr Dan Bottom and Dr Kim Jones lost years of native keystone species of interaction with Beavers and Coho.

I could see the look of hurt, disgust, disappointment and some anger in those Scientist eyes and faces.
Oregon should have a No Take No Kill process for Beaver.

It is the Best Management Practice for listed Wild Fish, Drought Prevention and Restoration of Above and Underground Water Storage.
No Beaver Kills, Mitigate, Rescue and check health, Habitats Restorations, then Relocation of Beaver. Just Do It Now.

Beaver: Back to the Future Bridge Creek *****
Published on Sep 23, 2015 **13 mins.**
https://www.youtube.com/watch?v= 23vuRU2Ews

Or the long Journey way. The Answer at the bottom is the same as the easy way. But, lets get to some Nuts and Bolts or better Beaver Dam Stick and Stones

ODFW has not addressed the issue of Beavers, as a No Take Keystone species. ODFW has done a No Take on a keystone species Native Oysters in the Estuaries. OWRD/IWRS should address the complete system of Beaver No Take, Mitigation, Recovery & Restoration. The reason that No Take is important, it affects on the IWRS. Beaver are a keystone species that provide Habitat for Endangered and Threatened Species. Beaver provide an intrinsic value to the OWRD for water storage. Drought prevention and recharging of ground water. Beavers provide rearing habitat for listed Fish to Survive. Growing stronger to face migration to the sea and survive to come back and start life again. But, the Endangered and Threatened Species need a place to live. Beaver Ponds are Historical Fish Habitat. Beavers are the Key. The key to turn the locked out Ecosystem of Wild Endangered Fish Habitat. Salmons are Best Friend with Beavers.

Beaver need reintroduced to the Ecosystem in full Beaver Families Force. Beavers are a social species What other species does Beavers work providing all species Water Habitat? Zero. Human dams that block Fish Passage are not providing Ecosystems Balanced Habitats. Dams are a Road Block for Native Species that has not been solved. Dams fish passages should mimic Mother Nature Better. Wandering streams with places to get out of the strong flows. Small short artificial dams with small beaver like dams, the water flows through. Beaver Dams have a lot of leaks. The Beavers doesn't like a certain sound of running water. If they hear the running water Just like WC and their many partners have discovered that bottomless culverts can provide the best passage for all species. Not just endangered fish passage, but the little critters that Salmon eat can get through. Lampreys have passage. Works much better.

Attached are picture of the removal of a Beaver Dam Step system. This was a Native Fish wonderland, until somebody killed the Beaver and cut the series of Beaver dams out with a chainsaw. No more Native Fish or Beaver habitat. The creek is incising and there is No Fish passage. The creek runs fast down the slope, now. I talked to OWRD, Cindy at the Newport meeting about this problem. The creek has eroded causing the culvert to fail. Homeowners have created illegal No Fish Passage with waterfalls. A Watershed Council (WC) is attempting to mitigate the loss of Native Fish Passage. Property owners don't have to cooperate. How is the WC going to mitigate the loss of the Beaver at this location is yet unknown? Spend lots of money to Helicopter in Logs to put in the creek. Maybe, reintroduce Beaver would be cheaper. But, WC have no power to Stop or Force the Historically Correct Solution. "Restore Beaver and Salmon Habitat First. Then, Bring Back the Beaver." As of yet, not one State agencies has done what needs to be done. **No Take of Beaver without Permits. Take permits should be very limited.** If take permits are allowed in special case, only a limited numbers of Beaver should be removed. As not to destroy Beaver stock Mitigation of all Beaver in a watershed ecosystem. No Killing of Beaver. Only Mitigate. Here is link to the PBS video of

OWRC needs to fully understand the importance of Beaver to the whole Ecosystem. By OWRD/IWRS declaring Beaver as a Critical Keystone Species with No Take & Mitigation system, all other agencies must follow suit. Because, OWRC has been mandated to address the 40 critical issues facing Oregon. Once that happens, all other agencies must follow the course of OWRD/IWRS. Beaver is a Good Solution. I am have provided documentation for the IWRS process. You all surely have hydrologist on staff. Have them calculate the water volume of an average Beaver pond. Then, multiple by the millions of Beaver dams that should exists in Oregon with their habitats intact. That might give everybody a clue as to the importance of Beavers to the whole Ecosystems of Oregon to prevent Drought, help mitigate Climate change, Restore Oregon Water Resources about and below ground, provide Critical habit for listed Endangered and Threatened Species like Salmon and Frogs. Oregon having Beaver a critical Keystone species, back into the Ecosystem in large number provides exponential Water Resources. The Beaver Water Resources will be around for all of the needed uses by multiple species. Beaver and Coho are Brother Together. Coho need Beavers.

What Can Beaver Teach Us About Adapting to Climate Change and Building More Resilient Systems?
https://www.youtube.com/watch?v=nWEtbIxgBbA Published on Feb 11, 2015 **1 hr 19 mins**

Cheap and Cheerful Stream Riparian Restoration with Beaver - YouTube
Published on Oct 14, 2013 **1 hr 50 mins. Staff training tool**
https://www.youtube.com/watch?v=m1uvsDrOI_w WEBINAR:

Leave it to Beavers OPB Published on Jul 6, 2015 **48 mins.**
https://www.youtube.com/watch?v=PLvBZ1mdg2c

National Geographic Article about Global Warming article
"Yes, Mr. President, We Remade Our Atlas to Reflect Shrinking Ice"
http://news.nationalgeographic.com/2015/08/150803-arctic-ice-obama-climate-nation-science/

Just think what Oregon was like before Europeans showed up to Kill most of the Beavers. But, we have not gotten any smarter about Beaver. We Must Stop Killing Beaver. Utah has stopped killing Beaver since 1893. Utah long ago recognized the importance of Beaver as Utah Natures Best Keystone Species for Water Resources. Best good Beaver Science presentation a must watch for Beaver Recovery. This is a 2 hr Beaver Seminar on Utah St University Pair Study in OR.

Oregon should follow suit. Beavers are Oregon's State Mammal. Beaver should be treated with much more respect, than the poor things get now. Trappers continue to wipe out Beavers. I was at a meeting the other night on a Scientific presentation about Salmon recovery in the Salmon River. The Scientist had a long duration twin location study on Beaver. Comparable Habitats scientific research, one with Beaver, the other without Beaver. The were do proper science work to prove the value of Beavers. Their Scientific experiment abruptly end. Somebody illegally came into the property and Trapped every single Beaver in the isolated Watershed system. The Beaver twin study ended. The Native fish numbers plummeted. It was sad to see the Scientists face. You could tell they were devastated. Years of Studies destroyed. The Salmon Drift Creek Watershed Council is attempting to restore Curl Creek. Pictures Attached

Beaver Habitat Restoration is needed first. We cannot just throw Beavers in any waterways. Beavers need Ecosystems of Waterway Habitats have been mostly destroyed by Human activities. Pesticides being one of them. Mono-species planting of timber, then the use of pesticides to kill Native Species Food and Habitat. The Timber Tree Farming has convinced Oregon State Agencies that what the Timber Industry does above in Non-Fish Bearing streams doesn't effect Native Keystone Species like Salmon and Beaver. The Timber Industry is Wrong. Everything Timber Industry does effects list Fish. They cut all of the Non Fish Bearing Streams trees. Then, spray pesticides to kill everything but conifers. When, it rains the chemicals travel to Fish Bearing Streams. Riparian Set Backs are supposed to solve the aerial sprayed pesticides from entering the waterways and ground water for wells and springs are contaminated. This does not work. Oregonians and Native species have suffered the consequences. This is all a process of Big Timber Clear Cutting, Oregon's Carbon storage species. To just Keep Mowing Down Oregon Trees to Send Over Seas. Sustainable Forestry a must. Oregon should adopt USFS Stewardship Groups system of Forestry Restoration. They manage for multiple species. No Mono-cultures. Mixed Species of Trees for Multiple Species.

Timber and Agriculture should have to Prove that they are not harming Oregon Waters. Agriculture &Timber harvesters that use pesticides should be mandated to do independent contractors water quality testing. Local waters should be tested before Timber is cut. Immediately during and after cutting, before pesticide use, should be water quality tested, especially for sediments in water after rain fall. Then, testing immediately after pesticide spraying for over spray checking. Then, during the first rainstorms in the Fall. Checked again in monthly testing for a designated period of time, depending of the surrounding critical keystone species habitat. Water Quality is much higher in Oregon in forests like the USFS NF Siuslaw. They only use pesticides as an invasive species control when there are no other options left. Last options is chemicals. USFS Stewardship is a good example of Community Cooperation to Common Goals.

Seeing the Forest https://vimeo.com/125160364 This is a 30 min Video about Oregon USFS Siuslaw NF Stewardship Group Collaboration. Have you seen "Behind the Emerald Curtain"? Seeing the Forest is an interesting compare.

The Governor, Legislators and OWRC has given OWRD staff through IWRS mandated process, the responsibility to help Oregon with Drought, Climate Change, Ground Water restoration, Endangered Threatened Species, a list of 40 actions. Beavers help with most of these Oregon Challenges for Water Resources Restoration and Recovery of Oregon Ecosystems. Recovery can only happen, when we all work together to bring the Ecosystem back into Balance. The Full Recovery of Beaver back to numbers before European invasion would be a very lofty goal. How about Oregon set goals for a high percentage mark of Beaver Recovery in all of Oregon's Ecosystem?

Please understand the full scope of Beavers being removed from the Ecosystem. Beaver is a Complex Critical Mega Keystone Species. Remember, when there are Healthy Beavers Numbers there is an Exponential increase in Water Resources and Native Listed Wild Life. Beavers must return for Wild Fish to be more abundant in the Ecosystem. But, you can't just dump them in a river for Cougars fodder. There must be a plan to rescue and relocate.

Protect Critical Keystone Species, Salmon, Beaver, Lamprey and Native Oysters to restore Estuaries and the Ecosystems of Oregon. Please Stop the Killing of Beavers, Mitigate, Rescue, Restore Habitats, and Relocate. Stop indiscriminate killing of Oregon Beaver. Please Mandate the Protection of Beavers for an Oregon Water Resources Values. Help Beavers Restore Drought Prevention and Endangered Wild Fish runs.

When, will the OWRD/IWRS draft document be released for Public review and comments?

Thank you for your time and consideration of these critical issues to Oregon.
Sincerely,

Cyndi Karp
Waldport, OR

[Note: Cyndi provided a copy of a report titled, Oregon Coast Coho Conservation Plan for the State of Oregon, Appendix 4. Description of Research Topics Identified in the Oregon Coho Conservation Plan for the State of Oregon. Prepared by the Oregon Department of Fish and Wildlife in partnership with state and federal natural resource agencies. 5 pgs. Staff can provide a copy of the report, upon request.]

From: Cyndi Karp
Sent: Friday, July 15, 2016 10:51 PM
To: waterstrategy
Subject: Fw: Mid Klamath Watershed Council (MKWC) Karuk and Yurok tribes Leave it to Beavers NRDC

Pleas enter into the OWRD/IWRS Public Comments

----- Original Message -----
From: Cyndi Karp
Sent: Friday, July 01, 2016 2:37 AM
Subject: Mid Klamath Watershed Council (MKWC) Karuk and Yurok tribes Leave it to Beavers NRDC

"Beavers are the single most important factor in determining whether Coho salmon persist in California,"

https://www.nrdc.org/onearth/leave-it-beavers

Leave it to Beavers

Once considered a pesky rodent, the animals are busy saving California's salmon populations.

February 16, 2015, Maria Finn

This story was produced by the Food and Environment Reporting Network, an independent, nonprofit news organization focusing on food, agriculture, and environmental health.

In an unexpected twist to California's drought saga, it turns out that beavers, once reviled as a nuisance, could help ease the water woes that sometimes pit the state's environmentalists and fishermen against its farmers.

In California, where commercial and recreational salmon fishing brings in $1.5 billion a year, and agriculture earns $42.6 billion annually, farmers and fishermen have long warred over freshwater from the Klamath and Sacramento rivers. Dams built for reservoirs on these rivers have cut off many salmon from their breeding areas, which has severely depleted the populations. Typically, up to 80 percent of the diverted water is used by agriculture, much of it sent to the arid Central Valley region where moisture-demanding crops like almonds are now being intensively farmed.

In the ongoing drought, however, both sides of this conflict are suffering. Authorities have cut water supplies to agriculture, forcing farmers to abandon crops or drill wells and buy surplus water at ever-steeper prices. Meanwhile, fishery experts predict the worst for Chinook and Coho salmon.

Only 5 percent of the Sacramento River winter-run Chinook salmon survived this year, according to a recent report from the California Department of Fish and Wildlife. This would

mean very few wild adult Chinook salmon would return to the rivers in three to four years, making hatchery fish the species' only hope. In 2008 and 2009, California officials shut down Chinook salmon-fishing entirely, leaving not just fishermen adrift, but chefs and consumers without a favorite summer food.

While Coho salmon runs are healthy in places like Alaska, California does not allow commercial or sportfishing of the species due to its critically low numbers. It's believed that only 1 percent of the historical population still exists in the state. Some fear the drought may push California's endangered Coho salmon all the way to extinction.

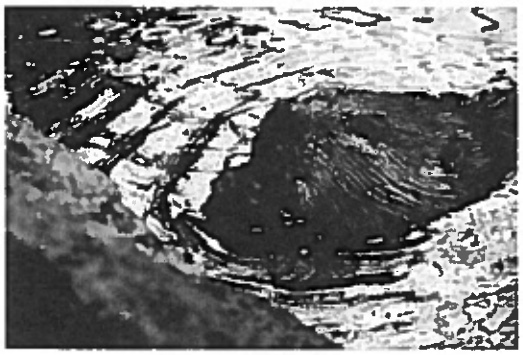


Photo: Márcio Cabral de Moura

Salmon spend their first one to two years in freshwater before heading to the sea. They return as adults to lay eggs. During these times, they require cold, slow water and protective covering, which coastal rainforests in California once provided. Heavy logging in the late 19th century destroyed much of this habitat, which was then converted into farms, vineyards, and residential areas.

Beavers, which were almost hunted to extinction in California during the 1800s, can help restore this watery habitat, especially in drought conditions. Fishery experts once believed the animals' dams blocked salmon from returning to their streams, so it was common practice to rip them out. But, consistent with previous studies, research led by Michael M. Pollock, an ecosystems analyst with the National Oceanic and Atmospheric Administration, shows the opposite: Wild salmon are adept at crossing the beavers' blockages.

In addition, the dams often reduce the downstream transport of egg-suffocating silt to the gravel where salmon spawn, and create deeper, cooler water for juvenile fish and adult salmon and steelhead. The resulting wetlands also attract more insects for salmon to eat. In ongoing research that covered six years, Pollock and his colleagues showed that river restoration projects that featured beaver dams more than doubled their production of salmon.

Can the animals help bring back the Coho salmon? "Absolutely," Pollock says. "They may be the only thing that can."

Not far from the Oregon border, the Mid Klamath Watershed Council (MKWC) is collaborating with the Karuk and Yurok tribes to create a beaver-centered river restoration plan on tribal and public lands. "Beavers are the single most important factor in determining whether Coho salmon persist in California," MKWC executive director Will Harling says. "They work night and day, don't need to be paid, and are incredible engineers."

What's more, Pollock's work shows that by slowing a river's flow and allowing water to soak into the ground, beaver dams can raise the water table under the land. "So they don't just help fishermen," he says, "but can help ranchers and farmers save on water pumping and irrigation costs."

Because of water shortages, the Scott River Watershed Council (part of the Klamath River system) has been working with U.S. Fish and Wildlife Services and the California Department of Fish and Wildlife to encourage beavers to do their thing. Early findings show that wells behind beaver dams have recharged significantly faster than those on land without them.

Garreth Plank, a cattle rancher on the Scott River, has always welcomed the animals to his land. As a result, he has found that the beavers save the ranch significant amounts of money each year. "One of our largest expenses is electricity for pumping water," Plank says. "With beavers on the land, the water tables are higher, and we've had a 10 percent to 15 percent reduction in pumping costs." Along with saving money, Plank now boasts 76,000 Coho fingerling (very young fish) and 35,000 Chinook fingerling in his property's rivers.

Jim Morris, a Scott Valley rancher at Bryan-Morris Ranch, says he tried to get rid of beavers for years. "But they do slow the water from leaving the valley and enhance water tables," he says. "Due to their benefits, we started planting more trees, and instead of calling it riparian and shade plantings, we call it 'beaver food.' "

But California Department of Fish and Wildlife environmental scientist Matthew Meshriy says North America's largest rodent is still often unwelcome in the state's agricultural areas, particularly the Central Valley, where their dams can interfere with the complicated water infrastructure vital to farms. "If we had a more natural system and grew things appropriate to the land and at an intensity level that was sustainable for the long term," says Meshriy, "then a beaver could be a powerful part of it. But that's not the case here."

Despite such resistance, beavers are enjoying a comeback in California, even building dams in downtown San Jose, Martinez, and Napa. And interest is increasing elsewhere: Pollock has been hosting standing-room-only workshops on the benefits of beavers in salmon watersheds all along the West Coast.

"Fishermen welcome beaver dams much more than the human-built dams on salmon streams," says Zeke Grader, executive director of the Pacific Coast Federation of Fishermen's Associations. "If beavers are allowed to do their jobs, they'll help the fishermen keep salmon on the plates."

From: Cyndi Karp
Sent: Friday, July 15, 2016 10:55 PM
To: waterstrategy
Subject: Clearcutting Practices Challenged in Oregon

Please include in the OWRD/IWRS Public Record.

http://org2.salsalabs.com/o/5868/t/0/blastContent.jsp?email_blast_KEY=1367250

Cascadia WILDLANDS
we like it wild.

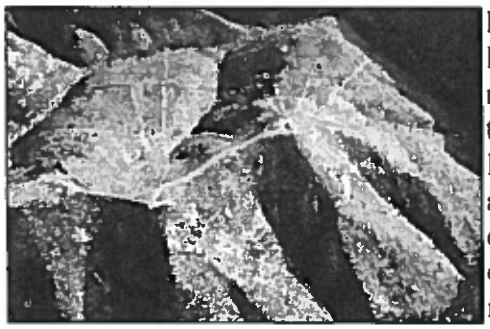
Clearcutting Practices Challenged in Oregon

Cascadia Wildlands and allies file two state petitions to further protect the imperiled marbled murrelet and its habitat.

DONATE TAKE ACTION

Hi Cascadia Wildlands Supporter,

Last week Cascadia Wildlands along with a growing coalition of conservation groups filed petitions with the Oregon Board of Forestry and the Oregon Department of Fish and Wildlife aimed at developing protections on state and private forest lands for the marbled murrelet, an imperiled seabird being pushed closer to extinction due to unchecked clearcutting. Read the Oregonian's coverage of the action here.



For over a century, clearcut logging on state and private lands has been conducted in Oregon without meaningful regulation or oversight. The law, or lack thereof, is generally referred to as the Oregon Forest Practices Act. The unsustainable and reckless logging authorized under the Act has devastated Oregon's forest ecosystems, our waterways, and gradually maneuvered our rural communities into financial and ecological ruin. Despite the cost endured by Oregonians, the profit-seeking industrial timber operators have worked to dismantle efforts at reform in the Oregon Legislature.

These petitions represent a new legal and administrative approach at reforming the outdated Oregon Forest Practices Act. Specifically, they are aimed at protecting the little remaining old-growth on state and private lands in Oregon's Coast Range, especially the contiguous older forests on the Tillamook, Clatsop and Elliott State Forests. While safeguarding marbled murrelet nesting habitat on state and private land is one small piece of a larger puzzle, these petitions are just a first step in a large and ever-expanding campaign to bring equity and reform to Oregon's most affected communities and ecosystems.

Stay tuned for developments as we are fired up to take on this issue which we know is so important to many of our supporters!

Thank you for helping us keep it wild!

Nick Cady
Legal Director

From: Cyndi Karp
Sent: Friday, July 15, 2016 10:57 PM
To: waterstrategy
Subject: Groups to Oregon: Marbled murrelets need endangered species protections | OregonLive.com

Please include in OWRD/IWRS Public comments.

http://www.oregonlive.com/environment/index.ssf/2016/06/groups_to_oregon_marbled_murre.html

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From: Cyndi Karp
Sent: Friday, July 15, 2016 11:37 PM
To: waterstrategy
Subject: OWRD/IWRS Public Comments Record

OWRD/IWRS needs to better understand the processes of all of these items. Find ways to Solve the Challenges with Collaborative Partners.

- Beavers can help OWRD/IWRS in many ways.
- Drought Build Water Resource Storage Beavers
- Climate Change Beavers can help
- Endangered & Threatened Species Beavers can help
- Keystone Species, Beavers, Lamprey, Coho, Olympia Oysters
- Water Temps Beavers help maintain water temps
- Ground water Depletion and Restoration Beavers
- Invasive species Oregon must take a stronger stand to eliminate.

- Water Quality is the Health of All Species
- Comprehensive Water Testing for Chemicals, Pharmaceuticals, Pathogens, Pollution, Acidity of Oregon Nearshores and Estuaries, Test Releasing Sewer Treatment Water
- Oregon waterways both Fish & Non Fish bearing waterway need Riparian Setbacks Restoration
- Clear Cutting Forest effects on Water quality and resources
- Forest Road Dust Contamination for Listed Wild Fish
- Lead sources in OR water resources (Lead Sinkers)
- Current Scientific based Best Management Practices
- Outreach building support for Place Based Water Resources (Beaver, Man & Mother Nature)
- Large Ecosystems Restoration projects of Incised and Bull Dozer straightened Oregon waterways
- Sale of property with No Water Rights & No Available Water source for Expensive Scenic Building sites with No Water, New owner just stuck
- Fish Passage issues
- Road Dikes breached with Bridges or no bottom culverts
- Big Rock Addition to OR waterways for wild fish habitat
- OHRC study document #1 fish habitat choice
- Zero Harvest and Preservation of all Old Growth Habitat for endangered and threatened species
- Timber cultivation techniques that Increase Water quality
- ODF regulations that don't protect upper reaches watershed waterway habitats and contaminate the lower listed fish bearing streams with pesticides
- Invasive species threats to Oregon resources
- Native Oyster Recovery in Oregon Estuaries that are resistant to acidity issues, **Native Oysters are another keystone species,**
- review Oregon Water being sold to big international corporations
- Keep Oregon Public Water Public
- **Water quality contaminated with Micro beads**
- Wildlife Endangered Species need protected Water rights
- OWRD to build better communications skills with Media News
- Releases for Public Outreach on Public Education for Water Conservation and Contamination of Public water with Household use of micro beads, chemical products, laundry, dishwasher.
- We Drink what we flush down our drains, more testing.
- Watershed and Citizen Scientist programs for Outreach of Watershed Ecosystem water quality and current science.
- There are many more. Only working together can we do this.
- Next Time give public notice and inform all of the Partners, including Watershed Councils and Media Releases.

Thank you for your time and consideration.
Please enter into the OWRD/IWRS Public Comments.

Cyndi Karp
Waldport, OR 97394

From: Cyndi Karp
Sent: Friday, July 15, 2016 11:41 PM
To: waterstrategy
Subject: Fw: OWRD IWRS Deadline Date to 08.15.2016

Please enter into OWRD/IWRS Public Comments Records.

----- Original Message -----
From: Cyndi Karp
To: OWRD Director, Tom Byler
Cc: OWRD/IWRS Alyssa Mucken
Sent: Tuesday, June 28, 2016 4:58 AM
Subject: OWRD IWRS Deadline Date to 08.15.2016

OWRD/IWRS Director Tom Byler,

Oregon Watershed Councils would like to work together with the OWRD/IWRS process. Watershed Councils are complex organizations within themselves Watershed Council are consensus organizations. WC have Science Based Tech Team meetings, Board meetings and Special events. I went to one in Lincoln City last night. The Salmon Drift Creek Watershed Council did a presentation by Dr. Dan Bottom and Dr. Kim Jones. About the Salmon River most recent Scientific Research Released: **"Is Salmon Population Decline Reversible?** http://www.salmondrift.org/ Email: Paul Katen 541-994-9682 SDCWC can get you more information on the just released science. Give Paul a call.

One of our WC mission goals is for Public Outreach. WC invites the General Public to ask us questions. They ask us for help. Every day people give WC information & ideas. Many WC provide monthly Science in Action Public Outreach Presentations. Big words for meetings and get together. We like to do "Science on Tap" We support our local economy by holding our Fun with Science meetings at the Pubs that support Oregon Micro Brews. We draw great crowds and have a lot of Science Fun. My Watershed Council is working towards getting a camera to put Educational Videos on You Tube. This will provide Current Science Based Best Management Practices available to all of our partners. We are providing Lincoln County School Dist. Science Teachers access to Watershed Ecosystem knowledge from the Best Leading Scientist.

But, Watershed Councils is not always a simple process. Your current extremely short time period of July 15, 2016 is going to be very difficult to complete the OWRD/IWRS review that you want. Watershed Councils want to give the IWRS our proper attention of working together in Consensus toward Common Sense Working Goals in the Watershed. This is a very complex issue for all of us, you included. Please consider the amount of good recommendations provided by Watershed Councils. WC can help OWRD/IWRS to face mandated issues. But, you must give them enough time to do their best work. It is not a Watershed way to just throw something to get. We want to agree together our WC ways to seek consensus on IWRS.

Oregon Watershed Councils consist of Volunteer Board Members with a few Staff, most part-time and volunteers. We are Non-Profits scraping for $$ to stay alive to fix the wrongs. As you well know, Science isn't always Right. For instance, Taking all of the Woody Debris Out of the

Waterway. The is still a Travesty Currently Happening. A Critical Keystone Species and Oregon's Mammal, the Beaver. Attached are documents of a Beaver Study. I would like for you to enter them into the Public Record, please. Watershed Councils are the Best thing for Watershed Ecosystems. It is too bad that so many times Watershed Councils are ignored. WC are the experts that Oregon pays to help heal the Ecosystems. We work together with many partnerships from Environmentalist to Timber Reps, Local, State & Federal Government Agencies, Tribal, Private Restoration Contractors, Private Land Owners, USFS Stewardship Group, Joint Partnerships with other Watershed Councils. We have Partnership in other states, universities, world top of the line Science in Action.

I understand the importance of the timely manner in which you need to get your job done for the OWRC. Would you please give all of the Watershed Council the opportunity to do a good job of helping you? Would OWRD you please delay for 30 days, the **OWRD/IWRS Open Public Comment period until August 15, 2016?** This would provide proper ample time for Watershed Councils all over the state to provide information of their water-wise councils. All of your mandates to address, Watershed Councils have been working on these exact multiple OWRD/IWRS for years. You have asked for help with Multiple Complex Difficult Issues that WC have brought to the table. OWRD/IWRS is in need of the most Current Scientific knowledge to date. That is going to take us just a little longer. We need to consult with each other to know what to tell you.

Drought mitigation best partner is Beaver, a keystone species. Beaver help to restore ground water, while keeping surface ponds available for multitudinous of species. Many endangered. WC understand or are doing the scientific research on every issue that you are mandated to address. Complex issues. WC work with all of their partners to find the Best Management Practice. WC job is to work with all partners for common goals. OWRD is included in that list. I would hope that Watershed Council would be included in your priority lists. Watershed Council are the Science in Action with their feet on the Ground. Doing the restorations for endangered species. Working to bring Beaver, a critical keystone species back to do Beaver work restoring great Wild Fish Habitat. But, you have to give them time to work together through their process to get you the answers you need.

Watershed Council should be more involved in the OWRD on a regular daily activities bases. WC know their territories very well. OWRD should use WC local knowledge to help Oregon. Changing the date would better serve all, in consideration of all Partnerships involved in the OWRD/IWRS process. Watershed Council should be included. Watershed Councils are at a busy time. They need more time to be able to send it through their Science Tech Teams and then present to the Watershed Council Board for action approval. It is not appropriate to short change your partners. This notice was to short for many of the WC to take the proper actions to your request of Watershed Councils, in Partnerships helping the IWRS process.

WC just need more time to help you the way that you need help. To better understand the processes of Drought, Climate Change, Endangered & Threatened
Species, the Keystone Species, Beaver, Water Temps, Ground water Depletion and Restoration, Invasive species, Water quality, Comprehensive water testing for Chemicals, Pharmaceuticals,

Pathogens, Pollution, Acidity of Oregon Nearshores and Estuaries, Oregon waterways both Fish & Non Fish bearing waterway setbacks Restoration, Clear cutting effects on Water quality and resources, forest road dust contamination for listed Wild Fish, Lead sources in OR water resources (Lead Sinkers), Best Current Scientific based Management Practices, Outreach building support for Place Based Water Resources (Beaver, Man & Mother Nature), Large Ecosystems Restoration projects of Incised and Bull Dozer straightened Oregon waterways, Sale of property with No Water Rights & No Available Water source for Expensive Scenic Building sites with No Water, New owner just stuck, Fish Passage issues, Road Dikes breached with Bridges or current no bottom culverts,

Big Rock Addition to OR waterways for wild fish habitat, OHRC study document #1 fish habitat choice, Zero Harvest and Preservation of all Old Growth Habitat for endangered and threatened species, Timber cultivation techniques that Increase Water quality, ODF regulations that don't protect upper reaches watershed waterway habitats and contaminate the lower listed fish bearing streams with pesticides, Invasive species threats to Oregon resources, Native Oyster Recovery in Oregon Estuaries that are resistant to acidity issues, **Native Oysters are another keystone species**, review Oregon Water being sold to big international corporations, Keep Oregon Public Water Public, Water quality contaminated with Micro beads, Wildlife Endangered Species should have protected Water rights, OWRD to build better communications skills with Media News releases for Public Outreach on Public Education for Water Conservation and Contamination of Public water with Household use of micro beads, chemical products, We Drink what we flush down our drains, more Watershed and Citizen Scientist programs for Outreach of Watershed Ecosystem water quality and current science. This is not even close to a complete list of why you need Watershed Councils help in the IWRS process. They do all this stuff, plus lots more. You should seek out their opinions. WC can help.

I want to make it clear that this is my observation of the OWRD/IWRS process. I act on my own accord, independent of any Watershed Councils permission. I am attempting to help the process work better. I hope that you take everything into consideration. Watershed Councils want to help with the IWRS process. But, WC's need more time to get OWRD/IWRS the expert advice that you need for free. I hope that they Mandated $$ to do this the right way. I would say that if they didn't. Please let me know. I will be glad to go to bat for the OWRD/IWRS program using current Best Management Practices. I would like to personally Thank Alyssa for all the hard work she does.

2016 Integrated Water Resource Strategy Must Include:

1. Mother Nature's Best Water Resource is a Critical Keystone Species, Beavers.
Please think about the hydrology resources that Beaver provide. Restoration of Ground Water and Habitat for many species. Most Important is Beaver will provide habitat for Endangered and Threatened Species. Beavers are OWRD/IWRS keystone species resource answer. Beaver were designed to solve every mandated issue facing the IWRS review. But, Oregon must stop killing a Keystone species. Beaver as a critical keystone species, must be mitigated. Beaver can be lived trapped, rescued, and relocated to restoration habitats. Support for the Beaver Family Unit is a must for beaver to survive. They are Social animals like humans. The family comes First for Beaver.

There is an Oregon Beaver movement building because Beavers are a Critical keystone species. Beaver should be at the top of the list of keystone species. Beaver provide a multifarious organizations of multiple functions.

2. Watershed Councils are Oregon's Best Water Resource for Restoration Partnership of Many! Understand the vast amount of Water Resources of knowledge that Oregon Watershed Councils bring to the table.

3. Native Oyster Recovery, Restoration of Estuary & Coastal Economics. Convert cultured invasive species oyster over to Pacific Native Oysters for acidity remediation to prevent economic hardships to Coastal Communities.

4. OWRD/IWRS Territory should include the Nearshore. OWRD should oversee all Oregon agency to protect Oregon's Nearshore Water Resources. Oregon 3 mile Nearshore Water should fall under OWRD/IWRS.

I have a whole list of talking points that OWRD staff documented at the Newport meeting. It keeps getting longer, the more I read of the 2012 IWRS review. Beaver, Watershed Councils, Native Oysters, & Nearshore water quality.
Please change OWRD/IWRS comments deadline to August 15, 2016. It really is the best thing for everybody. I hope that we can come to consensus with these challenges made into solutions Together.

Thank you for your consideration of these important issues to all Oregon Communities. I appreciate the cooperation of OWRD with the IWRS process. This document is considered Public Record. Please Redact personal information.

Cyndi Karp
Waldport, OR 97394

From: Fran Recht
Sent: Thursday, June 30, 2016 12:56 PM
To: waterstrategy
Subject: input into strategy

Hello. I came to the meeting in Newport, but wanted to follow up since I had to leave early.

First, I appreciate you and partners coming to share information on the integrated strategy. I think it's an excellent approach and hopefully this update will build on the progress made and take some additional steps, especially where it comes to fully integrating the needs for water quality and cool, clean and abundant water for fish and wildlife, including for endangered and threatened species.

I'm distressed that the lack of funding for ODFW staff has led to real weaknesses and only a bit of progress made in protecting new instream water rights. There needs to be funding and real progress made on this goal in each basin if this is to be truly an integrated strategy. Additionally, we need enough water masters to enforce diversions (and have a means of measuring water use at each diversion point) to make sure in-stream needs are met.

I don't know if this same issue of ODFW lack of funding or others was what lead to a glaring omission in the 2015 statewide long-term water demand forecast report. That report has no information on water needs for water quality or fish and wildlife. Without information and with the exclusive emphasis on agricultural, municipal and industrial water users by 2015, we will tend to ignore these needs. An aggressive timeline needs to be set to understand instream needs for these other uses and funding must be adequate to accomplish such a forecast study.

As noted in the Newport meeting, the past drought has affected stream temperatures, flows, fish passage and fish survival. In our area, an area with listed coho salmon, we expect we'll see more such droughts and extreme temperature events. The new strategy must have a drought resiliency plan with provisions to protect flows for fish and wildlife, including setting minimum flows in streams with listed and sensitive species.

With climate change, drought and other challenges to fish and wildlife, the strategy needs to acknowledge the importance of what is known as "cool water refugia," areas such as seeps, cold water tributaries, groundwater infiltration areas that allow fish and other wildlife to survive when otherwise conditions become too hostile. Work on identification and protection of cold water refugia is being done throughout the region now, and the integrated water resources strategy should incorporate existing and encourage such mapping elsewhere. Before new or expanded water rights or new diversions are allowed, new policy provisions should require that this information is provided to WRD in the affected stream system, to preserve flows from these important areas.

Beavers, or more specifically their active dams, which persist over time, as mentioned in the Newport meeting, are also a part of improving water storage and providing necessary havens to fish in times of drought and high temperatures. Their role in helping to rebuild downcut streams so as to reconnect streams to their riparian areas and floodplains is an efficient way of having more water stored in the system. Their activity should be encouraged; policies changes are

needed from a water resource standpoint to encourage this species' retention on the landscape and beaver conservation should be a part of any required water conservation planning document.

The biggest need I see is for the WRD to greatly improve water use efficiency and promote conservation to create "new water." The Water Project Grant and Loan grant should stress conservation and efficiency programs not water storage, until the water temperature issues of stored water can be addressed.

The state must allocate staff resources or get new staff to aggressively fight water waste, especially for agricultural water users. With many new marijuana operations coming on board, and new taxes on marijuana, there may be an opportunity to create efficient irrigation requirements for these new users and get older users to change to more efficient systems, stop leaks, and measure water levels in the soil. Also as I mentioned at the Newport meeting, municipal water users in Oregon are very wasteful as compared to California water users. Well designed, persistent, and effective (shown to cut use) public education campaigns are key (not only in drought times) as are strict pricing rules that value water for what its worth and increase sharply with water use over a baseline amount.

The connection between water flow and water quality (including cool water) for beneficial uses needs to be acknowledged and promoted more effectively in this integrated strategy update. It's not sufficient to rely on TMDL processes, which if Newport is the indication as been going on for years and years with no meaningful results. Toting TMDLs as an indicator of success for WRD's strategy is not adequate, unless and until such TMDLs have been shown to reduce water quality issues. Further, I do not believe that TMDLs address municipal issues such as failing septic systems, run-off from impervious surfaces or industrial discharges that may not be adequately measured and enforced (e.g. selenium from glass shards in water drains). Without such, it is even more critical that sufficient flows be maintained to assure water quality isn't further degraded, and in fact, improved.

Finally as part of addressing the likely more extreme flow events predicted with climate change and earthquake events, the storage and transportation of hazardous materials close to waterways must be addressed. This would be include mapping locations of such areas (not only large sources), encouraging their re-location out of flood plains and flood and geologically hazardous area and working with municipalities and industries on flood proof containment and contingency plans until such re-location can be effected.

Thanks for your attention.

Fran Recht
Depoe Bay, OR 97341

From: Mark Henjum
Sent: Thursday, June 30, 2016 9:21 AM
To: alyssa.m.mucken@state.or.us
Subject: Integrated Water Resources Strategy Comments

Dear Alyssa,

I am unable to attend the open house regarding input into the 2017 IWRS. The following are my comments and concerns:

Develop provisions to protect instream flows for fish and wildlife during drought. Set minimum flows on ecologically significant streams.

The agency has failed to fully implement Oregon's Water Resources Measurement Strategy. The 2017 Strategy should require full implementation to ensure all water diversions are regularly monitored.

Initiate significant progress toward establishing new instream water rights for fish, wildlife, water quality, and recreation within one year.

The 2017 Strategy should direct staff and funding to define statewide instream demands that include water needs for fish, wildlife, water quality, and recreation; should include peak and ecological flows.

Improve water use efficiency...we can't afford to waste water needlessly. Develop basin-specific efficiency standards for agriculture. Increase enforcement efforts to prevent waste.

Demands on water are increasing and we cannot afford foot-dragging when it comes to managing our water resources. Planning efforts become meaningless when agreed upon actions are ignored. The agency has been slow to initiate and follow through on past planning efforts (e.g. 2012 Strategy and Water Resources Measurement Strategy). Please don't continue this pattern but instead implement the actions needed to conserve water.

Mark Henjum
Silverton, OR 97381

From: Chris Hagerbaumer, Oregon Environmental Council
Sent: Friday, July 01, 2016 6:16 PM
To: waterstrategy
Subject: comments on update to IWRS from OEC

June 30, 2016

Hello, Alyssa and others --

I attended and commented at the Integrated Water Resources Strategy (IWRS) open house in Beaverton on June 29 and would like to share Oregon Environmental Council's written comments as well. Since these comments are lengthy and don't quite fit the format of your online submission form, I am sending them via email.

Oregon Environmental Council was founded in 1968 and is a nonprofit, nonpartisan, membership-based organization. We advance innovative, collaborative solutions to Oregon's environmental challenges for today and future generations. One of our strategic goals is clean and plentiful water. When the IWRS was first developed, our former water program director, Teresa Huntsinger, brought an environmental and human health perspective to bear in that process. We are currently in-between water program directors, but expect to have a new person on board by August. We look forward to introducing him or her to the IWRS staff then.

The IWRS strategy is huge and ambitious and contains lots of great recommendations that need to be implemented. While OEC supports many, we'd like to highlight a few and offer additional recommendations below.

Pollution Prevention

OEC recommends **aggressive strategies to reduce sources of water pollution**. It's far easier to keep water clean than to clean it up after it's been polluted (consider how expensive and complicated dealing with the Portland Superfund site is).

Water pollution comes from a variety of sources, including overuse of pesticides and fertilizers (in both rural and urban areas), failing septic systems, runoff from roads and parking lots, industrial effluent, and more. To that end, OEC encourages the IWRS to focus on:

- robust implementation of the state's Toxics Reduction Strategy and green chemistry executive order

- continued support for Pesticide Stewardship Partnerships, which emphasize Integrated Pest Management

- support for nutrient stewardship education: in other words helping farmers apply fertilizers with the 4Rs of nutrient stewardship in mind: right source, right rate, right time and right place

- drug take back programs

- greater use of green infrastructure to filter pollutants (OEC just completed a LID Guidance Template for Western Oregon)

- more groundwater quality monitoring, particularly where vulnerable populations live

The success of these and other water quality strategies is also highly dependent on enforcing our current water quality laws and ensuring adequate funding to implement pollution prevention strategies.

Of particular concern to human health is **contaminated drinking water**. At a Master Gardener Spring Fair this year in Jackson County free water testing was offered; 23% of the wells tested had moderate to high levels of nitrate. Some wells tested above 15 ppm (the *maximum* safe level is 10 ppm); one was a rental house, providing water to a young family with an infant. The family asked if the high nitrate could have contributed to the bluish tint of the baby's lips and fingertips. They knew the baby wasn't cold because he would refuse blankets. It's quite probable that the baby was suffering from "blue baby syndrome" (the scientific name is methemoglobinemia), which can be life-threatening and is caused by excessive nitrate in water. This is a terrifying anecdote that demonstrates that the state needs:

- more frequent testing of water quality of private drinking water wells

- a fund for low-interest loans to assist landlords and low-income property owners with repairing wells or installing water treatment systems

- better enforcement of the existing real estate transaction law (compliance is currently only 10-20%)

It seems self-evident that all landlords should maintain their rental units in a habitable condition, including providing a safe water supply. By making this issue an important part of the IWRS, we can demonstrate that the state takes it seriously.

Water Innovations

In putting together this update of the IWRS, it would be worth identifying the barriers that get in the way of water innovations. There's an Oregon NGO called Recode that is advancing truly innovative water and sanitation systems. Recode is looking at how codes need to be changed to ensure that builders can reuse graywater, install composting and urine diversion toilets, and more. These alternatives to conventional septic and sewer system can perform just as well, but help address a broad array of public concerns including affordability, water efficiency, and reduced pollutants.

Dramatic Improvements in Water Use Efficiency and Water Measurement

OEC's Board of Directors recently met in Boardman and had the opportunity to meet with the Northeast Oregon Water Association and to tour Madison Farms. This farming family and others in the Umatilla Basin are using precision farming, including some of the most efficient water management practices on the planet. As water becomes increasingly more scarce, due to climate change and increased demand, all Oregon water users (rural and urban) must maximize water efficiency and water conservation. Using water more efficiently is the cheapest, fastest, and most effective way to thrive with limited water supplies. The new IWRS strategy should promote the most efficient practices and develop basin-specific efficiency standards for agriculture.

Of course, if we don't know how much water we're using, there's no way to manage it wisely for all needs. The new IWRS strategy should require full and fast implementation of Oregon's Water Resources Measurement Strategy.

Better Protections for Fish and Wildlife and Other Instream Water Needs

As you know, fish and wildlife need healthy rivers with lots of running water to survive. The IWRS should focus on:

- drought resiliency measures that protect fish and wildlife, including ensuring minimum water flows on ecologically significant streams

- defining statewide instream demands – for fish, wildlife, water quality, and recreation and including peak and ecological flows

- speedy implementation of the original recommendation to establish new instream water rights to protect flows for fish, wildlife, recreation, and water quality

- more promotion and use of the Allocation of Conserved Water Program, which allows a water user who conserves water to use a portion of the conserved water on additional lands, lease or sell the water, or dedicate the water to instream use

Climate Change and Extreme Events

These should be a motivating factor for many improvements to the way we manage water. This planning should coordinate with the state's resiliency planning.

Land Use and Water Intersection

Land use is still largely unaddressed. As the Policy Advisory Group thinks through this, the strategies should get at how development must be respectful of historical hydrology. In addition, strong support for compact development should be signaled as it's a very effective way to save water and curb infrastructure expenses. As one example the Sacramento region has found that its blueprint for meeting climate change goals

through better land use and transportation planning resulted in a 33% reduction in urban water demand. Of course, the flip side of density is a lot of pavement, which can have detrimental effects on water, so new development in dense urban areas should emphasize pervious pavement and other LID practices.

In a similar vein, cities need to be very thoughtful about **stormwater and wastewater integration**. Where this is being done well can we get practitioners to help others around the state -- to transfer the technical know-how?

Environmental Justice

With regard to the **environmental justice imperative**, one of the ways that the state can better protect vulnerable populations is through better data … for example figuring out where schools, trailer parks, and low-income populations overlap with groundwater areas of concern and prioritizing groundwater testing there first. Also state agencies have an imperative to "ensure that all persons affected by decisions of natural resource agencies have a voice in those decisions". There is one environmental justice representative and one tribal member on the Policy Advisory Group, but we encourage a greater emphasis on outreach to farmworkers and other vulnerable communities whose voices may not have been heard so far.

Finally, we appreciate that WRD is lead on this plan and works closely with ODA, DEQ and OHA. But what about DLCD and Dept. of Forestry and others? It seems that just about every state agency has some role to play in clean and abundant water, even the Department of Education, which needs to protect kids from lead in school drinking water. All of these responsibilities should be clearly defined and state agencies must be held accountable.

Thank you for the opportunity to provide comment on the update to the IWRS. Please let us know if you have any questions about our recommendations.

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ROGUE BASIN PARTNERSHIP

Helping to manage our natural resources... from summit to sea. *P.O. Box 1214 Medford, OR 97501 email: info@roguepartners.org*

June 16, 2016

Subject: Public Input on the Next Iteration of Oregon's Integrated Water Resources Strategy

Hello Alyssa, other interested staff, and the WRD Board.

As I mentioned to you, Alyssa, I unfortunately will not be here for the Open House event you will be hosting in Southern Oregon to gather public input to fine-tune the Integrated Water Resources Strategy (IWRS). Therefore, on behalf of the Rogue Basin Partnership (RBP), please consider the following response. I hope it will help guide the process and involve a strong team approach with our State Water Resource Department (OWRD) and the communities of Southern Oregon.

The Rogue Basin contains the largest urban areas in southern and eastern Oregon, with a current population of more than a quarter of a million people in Jackson, Josephine and Curry counties. The Oregon Department of Employment estimates the population will increase by 46% (well over half a million) by 2065. Other than the Columbia, the Rogue River is the largest producer of Pacific Salmon in Oregon. It also offers tremendous rafting, boating and other outdoor recreation opportunities along its wild and scenic banks. The Rogue is known throughout the world for its incredible biodiversity. Clearly, our community actions impact the natural resources, and conversely, our natural resources are integral to the economic and social well-being of our communities.

The people and entities in Southern Oregon who have a hand in managing our natural resources have taken a leading role in water conservation in the State. We have held "Drought Workshops" and "Water Conservation Summits", involving water resource managers and experts from around the State for several years. One city (Ashland) reduced peak water consumption by more than 35% during a drought year by launching a water conservation program; this reduction was achieved entirely as a volunteer effort by the community. Several of our irrigation districts launched a program to reduce irrigation schedules, minimizing alfalfa and hay cuttings during the drought. The Water for Irrigation, Streams, and the Economy (WISE) project is also on our horizons. A 200+ acre development in Central Point became the "poster child" for large-scale passive storm water treatment *before* any government regulations were even in place.

We are also taking important steps to work together more efficiently. Four of our local watershed councils merged together to form the Rogue River Watershed Council. and RBP was created to serve as the backbone organization for all restoration activities in the entire 3.3 million acre basin. RBP includes partners who manage our natural resources from summit to sea; including all watershed councils, advocacy groups, agencies, tribes, agriculture, land conservation groups, consultants; all coming to a common table to find common ground and make quantifiable progress.

Thanks to a grant awarded to RBP by the OWRD, we will soon be assessing the potential to conserve water in upland areas by adding organic material to the shallow soils, thereby

reducing runoff during the wet season and increasing retention and shallow groundwater infiltration daylighting as base flow in the hot summer months. Results from this pilot study will be useful to all areas throughout the northwest.

Considering our natural resources, our community and economy, and the leading role we have taken on water conservation, it is unfortunate that the Rogue Basin was not selected to participate in the ground-breaking Place-Based pilot project created by OWRD as part of the IWRS. This was unfortunate not only for the basin, but also because we have served as a robust example of such a strategy for the State; excellent proving grounds for a pilot study.

Nonetheless, we would like to work more closely with the OWRD to capitalize on the momentum we have created; a momentum that cannot be maintained indefinitely without support. I would enjoy discussing how to do so. Perhaps an update at an upcoming OWRD meeting would be in order?

Thank you for your time and effort. I have very much enjoyed working with you and others at OWRD for many years and look forward to more of the same! Please feel free to contact me anytime.

Robert Coffan, Chair
Rogue Basin Partnership

TUALATIN RIVER
WATERSHED COUNCIL
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503-846-4810; www.trwc.org

Engaging the community to sustain our watershed

July 14, 2016

Alyssa Mucken, Program Coordinator
Integrated Water Resources Strategy (IWRS)
Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem, OR 97301

Dear Alyssa:

Re: Integrated Water Resources Strategy place-based planning

Thanks for the recent update on the OWRD Integrated Water Resources open house on June 30, 2016 in Beaverton. We appreciated the opportunity to learn about past progress, future direction and to provide input to Oregon Water Resources Department on concerns and issues.

I'm writing on behalf of the Tualatin River Watershed Council (TRWC) to support the ongoing funding of Integrated Water Resources Strategy place-based planning programs. Place-based planning is an integral tool in developing strategic water planning for our communities and watersheds throughout Oregon. It will result in future coordinated wise use of water as issues such as climate change confront our communities. We also support the continuation of the recently developed OWRD grant programs that include feasibility studies and implementation of water projects.

TRWC submitted a letter of interest for place-based planning in December 2015. We received a strong ranking, but weren't selected for either full or partial funding. With our basin's history of collaboration among its stakeholders, a predicted 40% population increase over the next 30 years and limited water sources, place-based planning is vital to the future sustainability of our watershed. We urge OWRD to continue funding the pilot place-based planning program and allocate resources to help with in-kind or other support of these planning efforts.

Sincerely,

April Olbrich
Council Coordinator

TUALATIN RIVERKEEPERS.
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phone 503-218-2580 • fax 503-218-2583
www.tualatinriverkeepers.org

July 15, 2016

Oregon Water Resources Commission
725 Summer Street NE, Suite A
Salem, OR 97301

RE: Comments on Integrated Water Resources Plan

Dear Commissioners,

At a recent public meeting in Beaverton with OWRD staff, we were invited to comment on Oregon's Integrated Water Resources Plan, based upon summary information was presented at that meeting. Tualatin Riverkeepers is concerned about issues of ecological health, public safety and economic resilience that should be addressed in the Plan.

Our comments fall into the following categories:

1. **State Forecast for Municipal & Industrial demand is inconsistent with local, regional and national trends and underestimates the potential for conservation and efficiency.**

2. **The Water Resources Commission needs to adopt regulations that allow and encourage water recycling including Direct Potable Reuse.**

3. **Urban Stormwater Runoff is a huge untapped supply of water. Changes in municipal storm sewer systems and their regulation should be made to facilitate and encourage harvest of urban stormwater.**

4. **Economic (pricing) signals that promote water conservation in agriculture should be adopted in Oregon.**

5. **Disaster planning is absent from the current Integrated Water Resources Plan. The next Cascadia Subduction Zone earthquake threatens to disable water and sewer infrastructure for years. The Plan should include infrastructure upgrade and recovery response.**

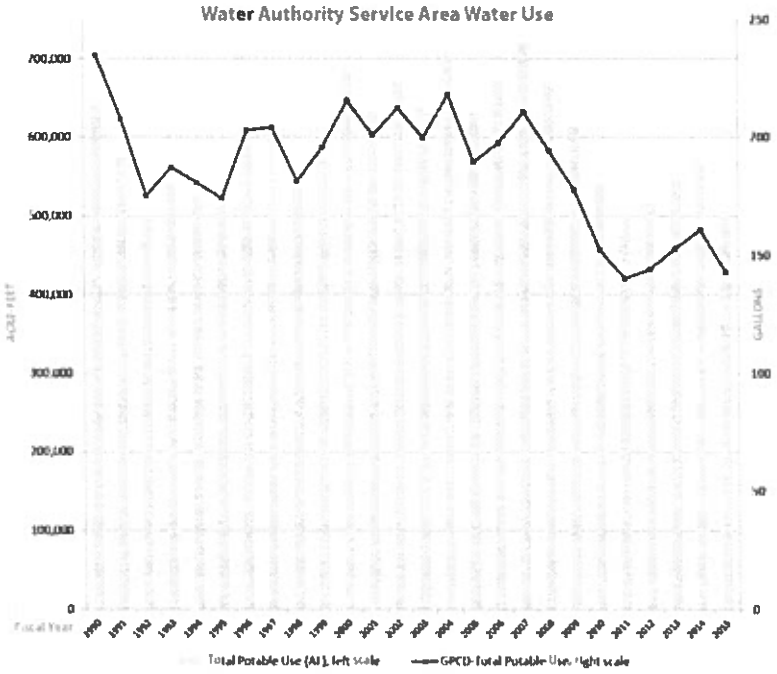
More details to these comments and supporting information are presented below.

1. **The 2015 Statewide Long-Term Water Demand Forecast for Municipal & Industrial Demand is flawed** and could lead to planning decisions that misallocate funds.

   The 2015 Statewide Long-Term Water Demand Forecast projects population increases by 40% and the per capita use increases by 1.5 gallons per day, and increase in M&I per capita demand of 20%. This forecast is mathematically impossible. A 40% population increase and a per capita increase would result in an increase of more than 40%.

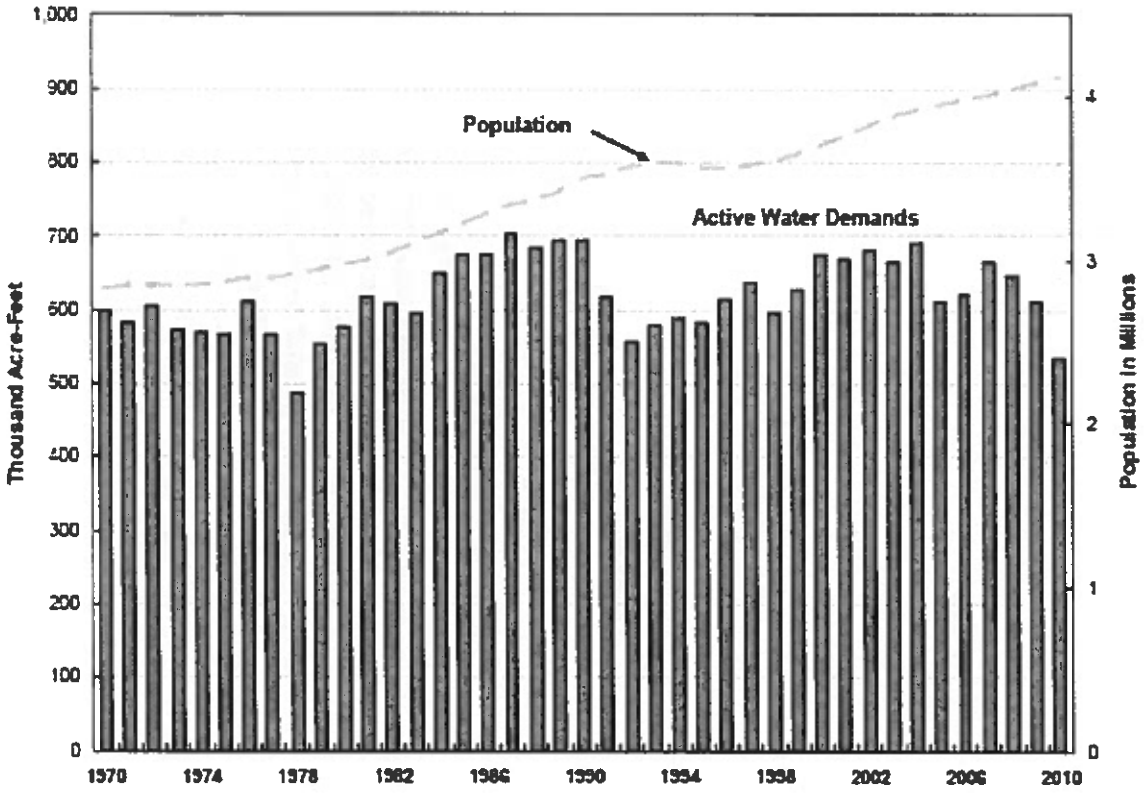
   The forecasted per capita increase is also not supported recent trends that show per capita demand for M&I declining in western cities. Based on historical data, the Forecast for Municipal & Industrial demand significantly overestimates future demand and underestimates trends in conservation and efficiency. Western cities show decreased demand for water associated with growth in population. Nationally total water use has declined. Extracts from various reports below illustrate these trends.

   - Potable water use by the **San Diego County Water Authority**'s 24 member agencies has decreased more than 20 percent since 2007. Per capita water use in the Water Authority's service area has fallen from more than 200 gallons per person/day to less than 150 gpcd over the past decade, as shown in the chart to the right. In 2015 total regional use of potable water is projected to be about 21 percent less than it was in 1990, even with a population increase of approximately 30 percent over that period.[i]



1- San Diego County Water Authority Water Use Trends - See more at: http://www.sdcwa.org/water-use#sthash.rkUZ2m4e.dpuf

- A 40-year history of water use for the **City of Los Angeles**. Note that population has grown over 1 million people during this interval (1970-2010), but overall water consumption has remained stable. Source: LA Department of Water and Power, 2010



- **Total water use in the United States declined markedly in the five-year period ending in 2010**, according to data released from the United States Geological Survey (USGS). Total water use in the U.S. is now lower than it was in 1970, despite continued population and economic growth. The Pacific Institute, an internationally-renowned independent think tank focused on water issues, reviewed the USGS' most recent data collection, along with historical, national water use data. Remarkably, water use in 2010 was down in all sectors – agriculture, municipal and industrial, and thermoelectric power. The report shows that, from 2005 – 2010, per capita water use in the United States declined 17% to 1,200 gallons per person per day, levels not seen since the 1940s and the single largest decline in any five-year period. Moreover, the economic productivity of water – which measures the dollars of Gross Domestic Product per unit of water used – increased by 20% during that period to an all-time high of $11.49 per 100 gallons, an indication that the U.S. produces far more wealth, with less water than at any time in the past. Source: http://pacinst.org/publication/water-use-trends-in-the-united-states/

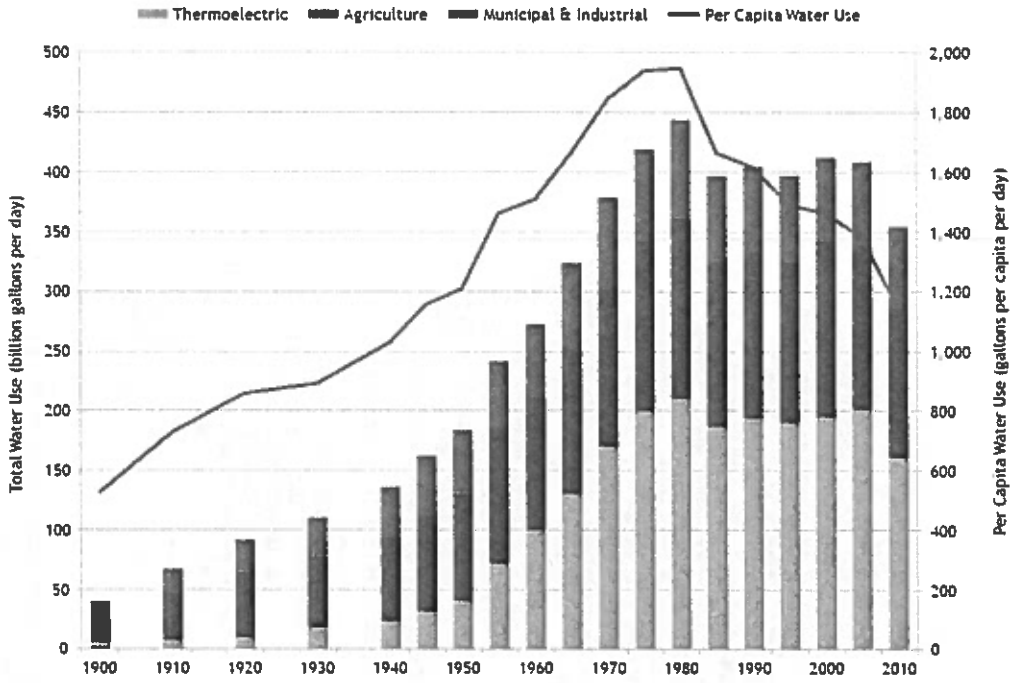


Figure 1. Total Water Use (Freshwater and Saline Water), by Sector (1900–2010)

Notes: Municipal and Industrial (M&I) includes public supply, self-supplied residential, self-supplied industrial, mining, and self-supplied commercial (self-supplied commercial was not calculated in 2000–2010). Agriculture includes aquaculture (1985–2010 only), livestock, and irrigation. Between 1900 and 1945, the M&I category includes water for livestock and dairy.

Sources: Data for 1900–1945 from the Council on Environmental Quality (CEQ) (1991). Data for 1950–2010 from USGS (2014a). Population data from Williamson (2015).

- **From the Portland Water Bureau Water Management and Conservation Plan 2010:** *Historical water use, both retail-only and combined retail and wholesale demand, has not kept pace with the increase in service area population. Since 1990, the number of gallons per capita per day for the entire retail and wholesale area has declined while the population has grown. Figures ES-1 and ES-2 show, respectively, the system service area population compared with the average daily demand and the demand in per capita gallons per day, for calendar years 1960-2007.*

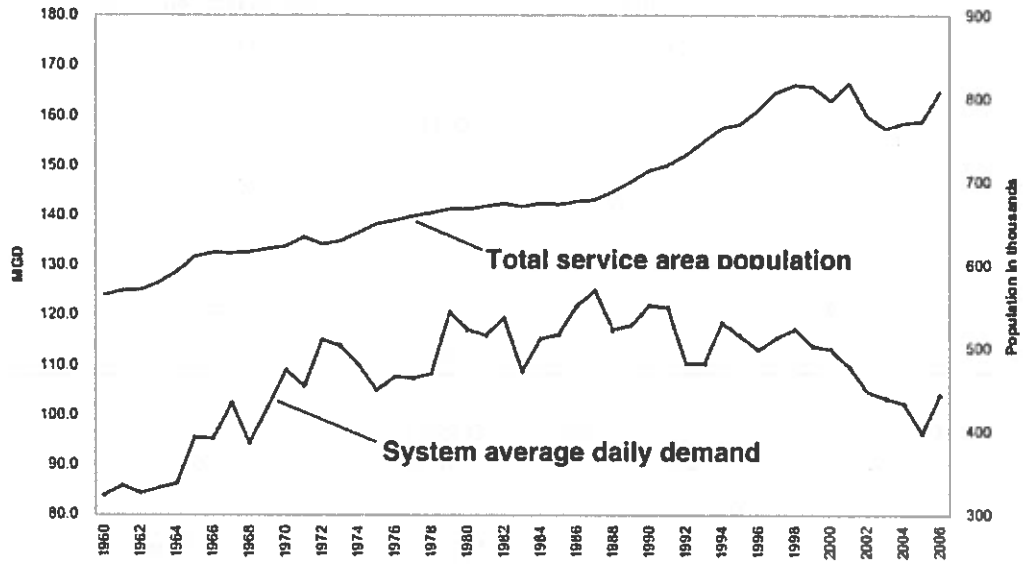


Figure ES-1. Historical Total System Service Area Population and Average Daily Demand, Calendar Years 1960-2006

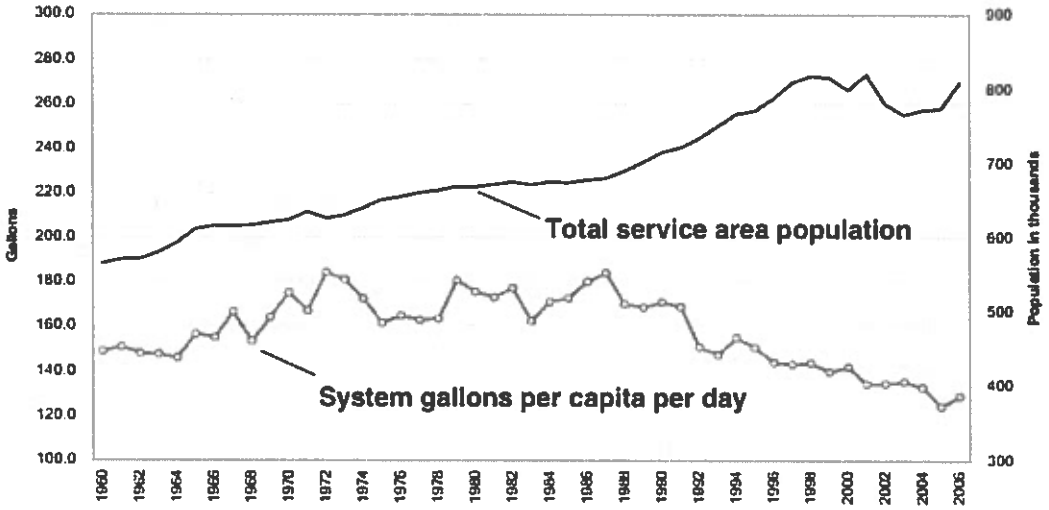


Figure ES-2. Historical Total System Service Area Population and Gallons per Capita per Day, Calendar Years 1960-2006

2 Portland Oregon historical population and water demand trends. Portland Water Bureau Water Management and Conservation Plan 2010

2. **The Oregon State Water Commission needs to adopt regulations that allow and encourage water recycling including Direct Potable Reuse.** After rulemaking procedures, Clean Water Services was allowed to demonstrate the potential of purified effluent from the Durham Advanced Wastewater Treatment Plant through a beer brewing competition.

   The California Water Resources Board is working on rules to facilitate Direct Potable Reuse. According to KQED:

   By the end of December, the state water board will finalize regulations that will allow highly purified recycled water to be added to drinking water reservoirs. This added water must meet or exceed all drinking water standards. They are developing these regulations with the advice of an expert panel. Also by the end of the year, the board will release a report to the state legislature on the feasibility of developing statewide regulations on "direct potable reuse" or DPR. This is when the highly purified recycled water is placed directly into the drinking water supply, or directly upstream of a drinking water distribution system. These types of potable reuse projects have the potential to greatly expand the use of recycled water in California, well beyond what we are using today.

   Acceptance of Direct Potable Reuse as a safe and economical source of water is growing in the U.S. and worldwide. Oregon should not be left behind because of failure to adopt new regulations.

3. **Urban Stormwater Runoff is a huge untapped supply of water.** The Pacific Institute estimates "that stormwater capture in urbanized Southern California and the San Francisco Bay region has the potential to increase water supplies by 420,000 to 630,000 acre-feet per year, at its upper end approximately as much water as used by the entire city of Los Angeles each year."[ii] Older existing storm sewer systems waste a valuable resource, deliver pollutants to natural water bodies and cause erosion in urban creeks and rivers. Changes should be made to municipal separate storm sewer systems and to the regulation of those systems through NPDES – MS4 permits administered by Oregon Department of Environmental Quality to accommodate the harvest and storage of stormwater and to recharge aquifers.

4. No representative of Oregon Department of Agriculture attended the public meeting in Beaverton. Since agriculture dominates demand for water in Oregon, involvement of Oregon's Department of Agriculture in such public discussions is essential.

   While individual municipal water customers' consumption is metered and priced to provide economic signals that encourage conservation, agriculture, which accounts for 86% of water demand in Oregon is generally not metered and often subsidized. Free water to water-rights holders does not protect a public trust resource and encourages waste, not efficient use and conservation. **Economic signals that promote water conservation in agriculture should be adopted in Oregon as they are elsewhere in the West.**

Policy makers will increasingly rely on irrigation pricing strategies and markets to motivate improvements in water management and to improve resource allocation. Farm-level costs will increase, but innovative management and wise use of technology will enable farmers to adjust in ways that generate greater value from limited water resources.[iii]

5. **A Cascadia Subduction Zone Earthquake is a tremendous threat to Oregon's water infrastructure.** Loss of dams, canals, pipelines, and the electrical and communications systems that control distribution are all at risk. The Oregon Resilience Plan estimates that it will take "one to three years to restore drinking water and sewer service in the coastal zone" and "one month to one year to restore water and sewer in the valley zone." The Integrated Water Resources Plan should mandate the protection of infrastructure from natural disasters including floods, earthquakes and volcanoes and include recovery plans.

Thank you for your consideration of these comments and for the opportunity to participate in the Integrated Water Resources Plan. We hope you find the comments helpful and we look forward to participating in future discussions of the plan.

Sincerely,

Brian Wegener, Riverkeeper
Advocacy & Communications Manager

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[i] San Diego County Water Authority: http://www.sdcwa.org/water-use#sthash.rkUZ2m4e.dpuf

[ii] Stormwater Capture Potential in Urban and Suburban California, June 2014 IB:14-05-G Pacific Institute, Noah Garrison, with additional contributions by Jake Sahl, Aubrey Dugger, and Robert C. Wilkinson, Ph.D.

[iii] Agricultural Water Pricing: United States, by Dennis Wichelns, of Hanover College, Indiana, is one of the background reports supporting the OECD study (2010) Sustainable Management of Water Resources in Agriculture, which is available at www.oecd.org/water.