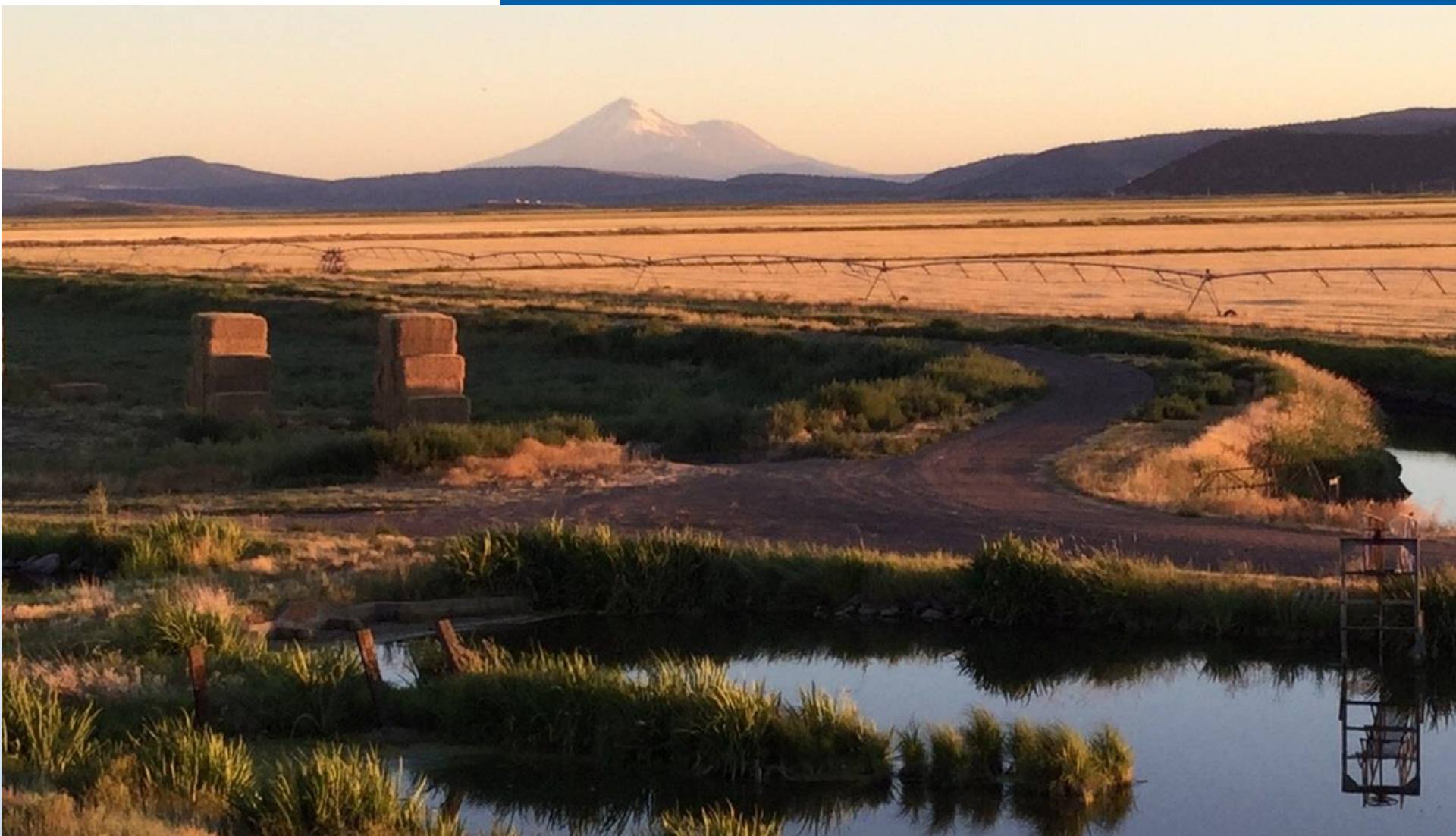




# Water 101



**Tom Byler, Director, Oregon Water Resources Department**



# Department Overview

- **Mission: To serve the public by practicing and promoting responsible water management.**
- **Goals:**
  - **To directly address Oregon's water supply needs**
  - **To restore and protect streamflows and watersheds...**

**21 Districts in 5 Regions**

**~167 staff (2017-19)**

**~110,000+ miles of streams**

**~89,000 water rights**

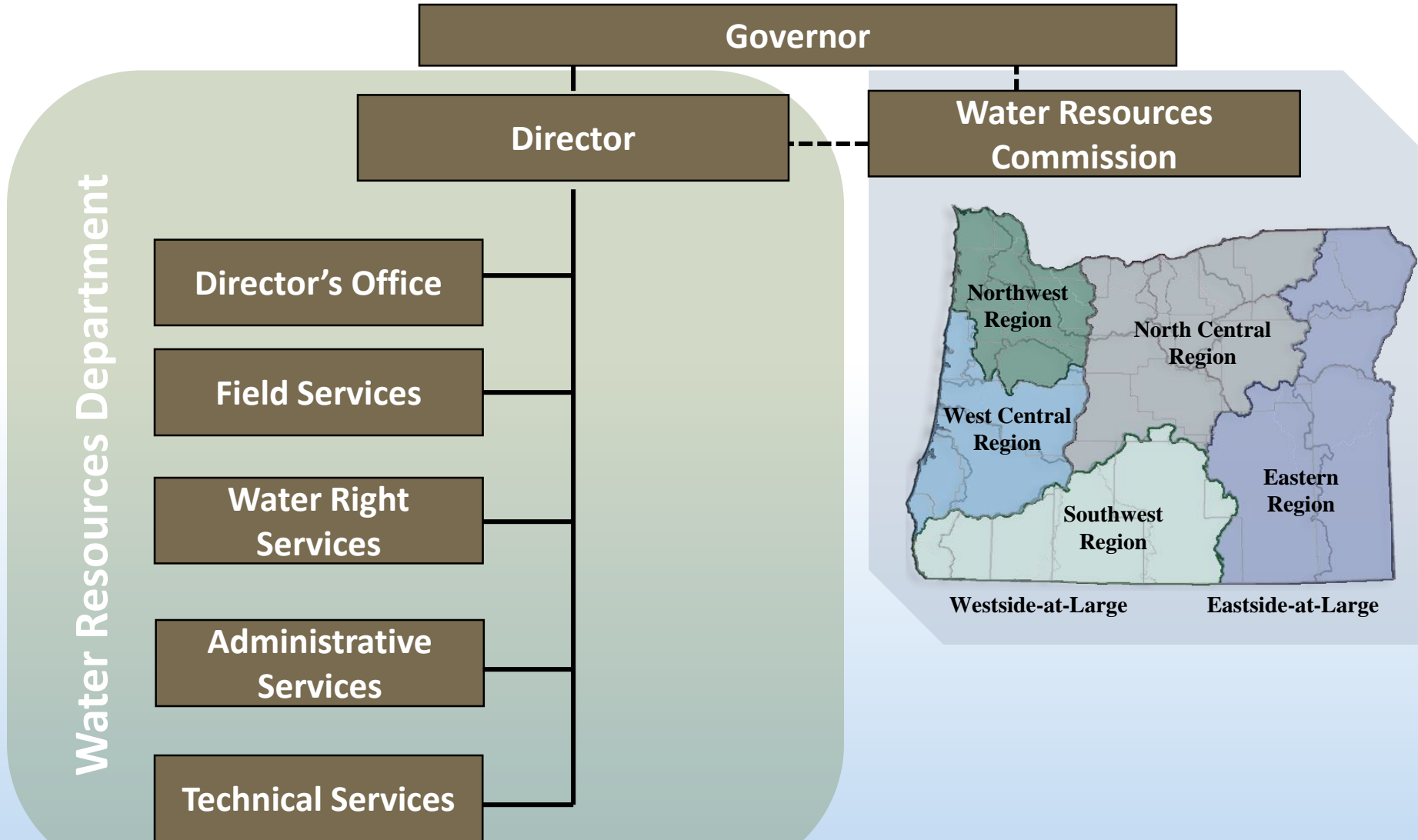
**~230,000+ wells**

**~970 dams (non-federal)**

**~260 stream gaging stations**

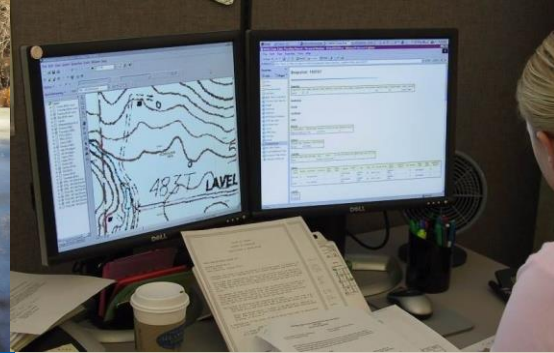
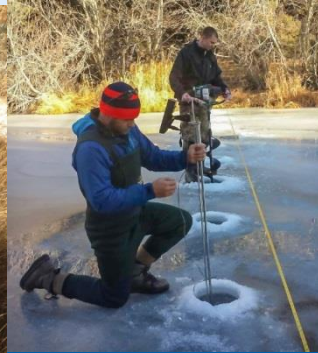
**~1,270+ observation wells**

# Commission and Department



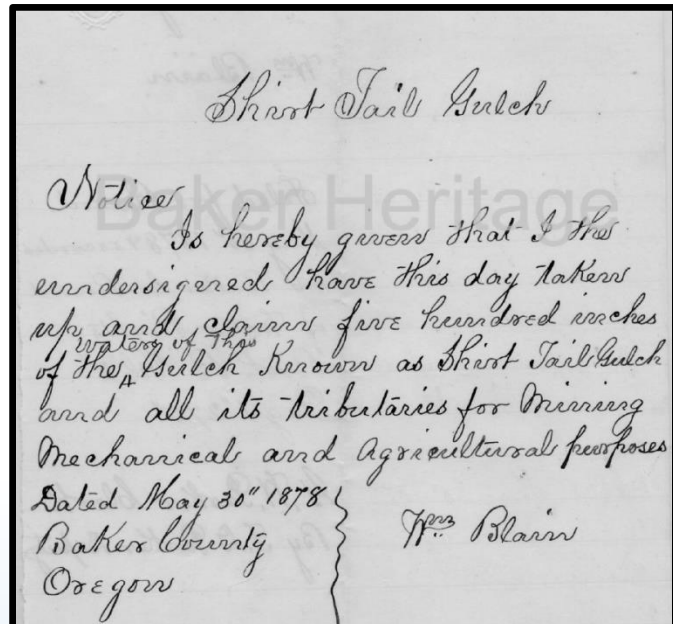
# Key Responsibilities

- Collecting, analyzing, and providing data
- Protecting public safety
- Distributing water under the system of prior appropriation
- Providing planning, technical assistance, and funding to address water supply needs
- Processing water rights transactions



# Challenge: History and Complexity of the Laws

- Statehood 1859
- 1909 Water Code
- (1927) 1955 Groundwater Code
- (1955) 1987 Instream Water Rights Act
- 2015 formation of Water Resources Development Program



Shirst Tail Gulch

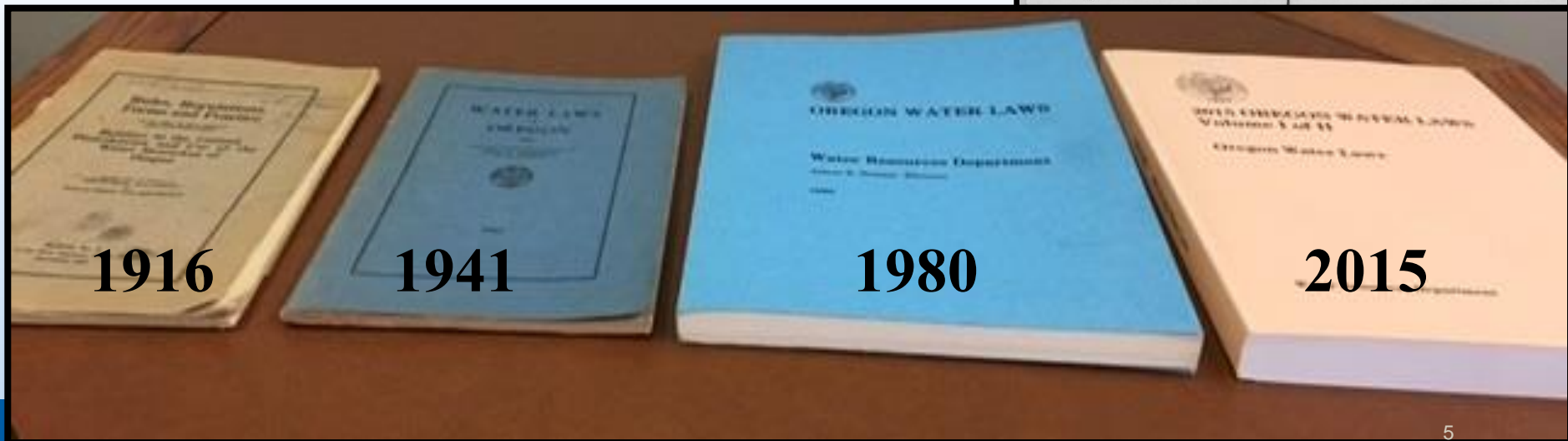
Notice

As hereby gives that I the undersigned have this day taken up and claims five hundred inches of the <sup>waters of the</sup> Gulch known as Shirst Tail Gulch and all its tributaries for Mining Mechanical and Agricultural purposes

Dated May 30<sup>th</sup> 1878

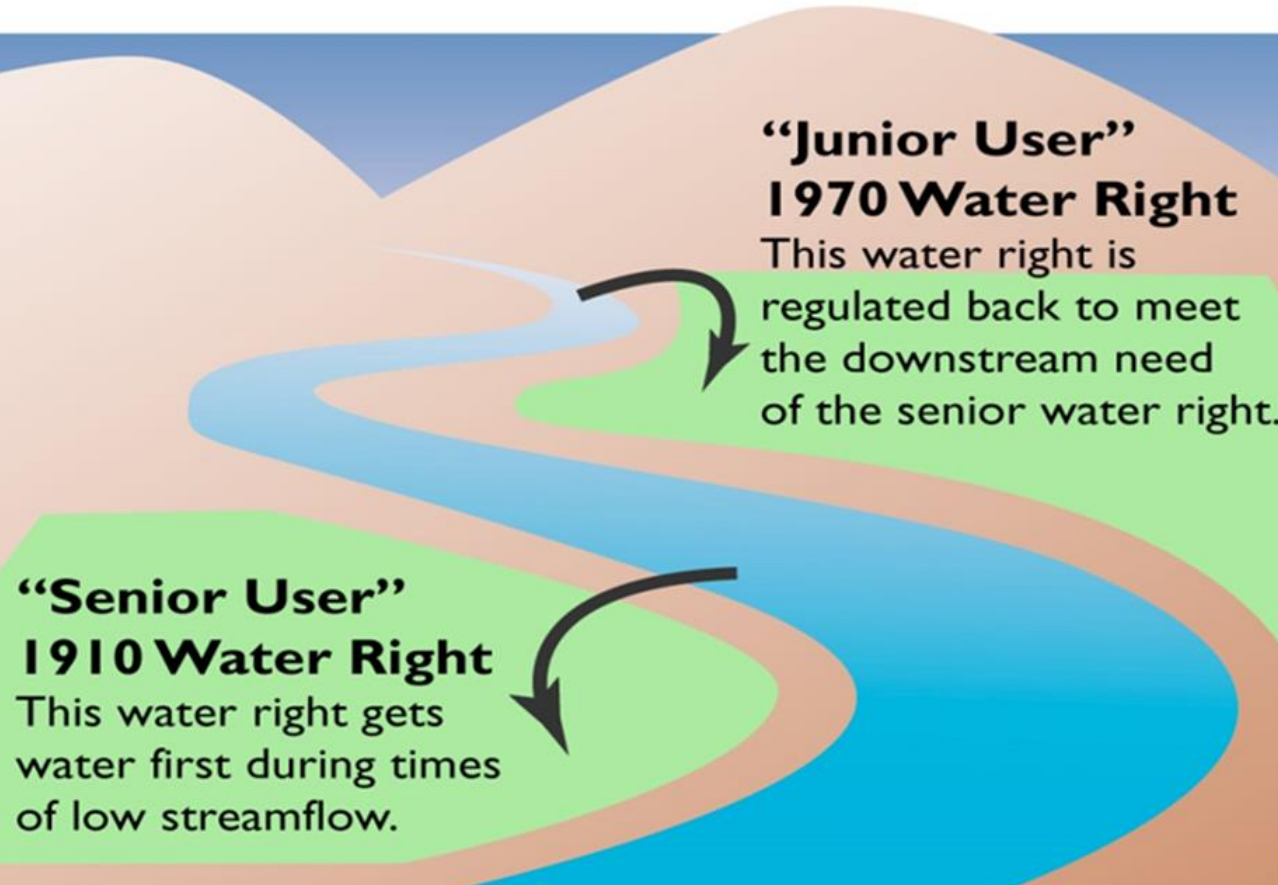
Baker County  
Oregon

Wm Blair



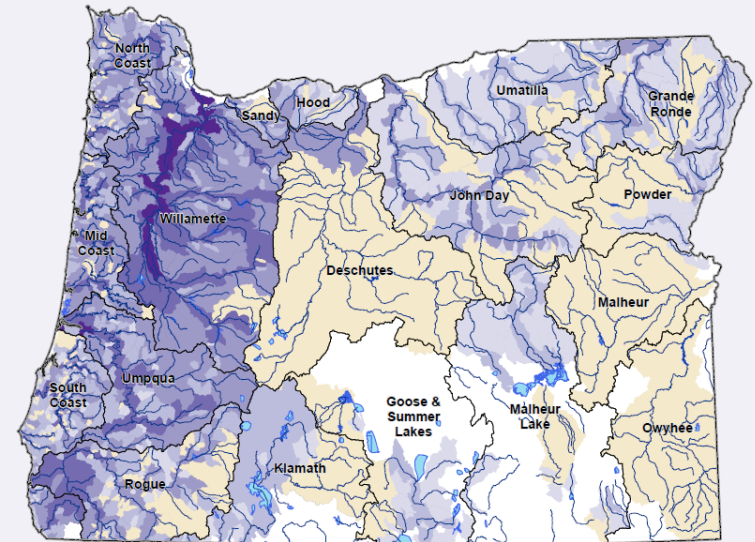
# First in Time, First in Right

**Regulation to some extent occurs every year.**

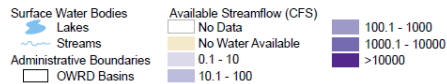


## Water availability for live flow allocation in August

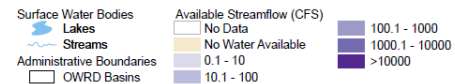
## Water availability for storage in January



August Available Streamflow  
Calculated at 80% Exceedance



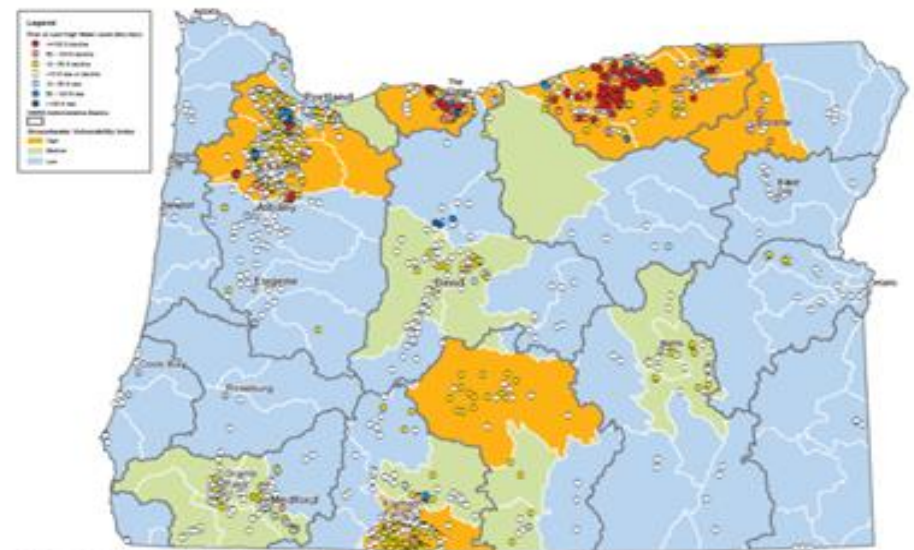
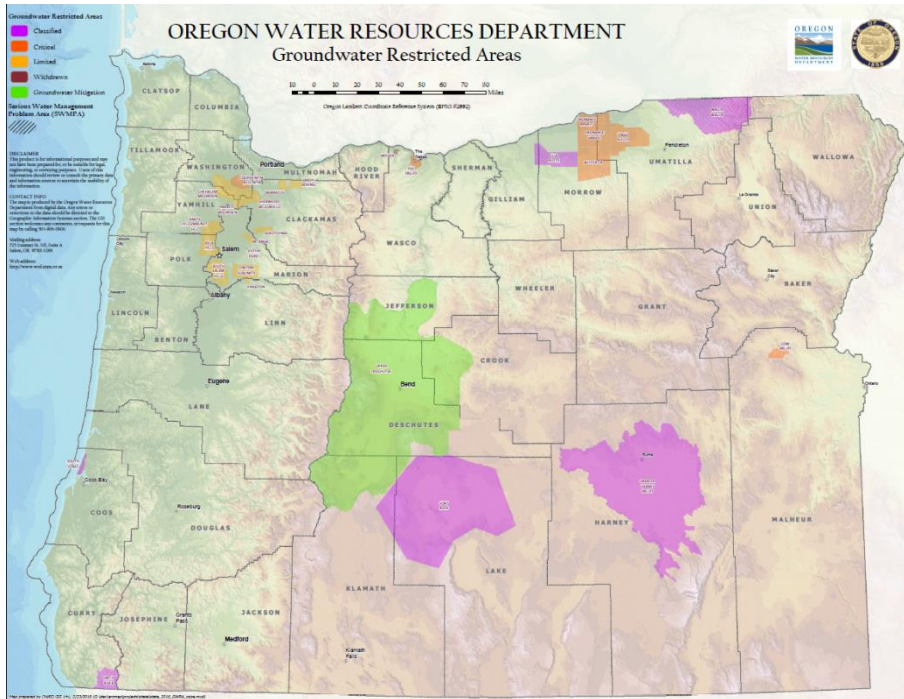
January Available Streamflow  
Calculated at 50% Exceedance



# Era of Water Scarcity

## Groundwater Restricted Areas

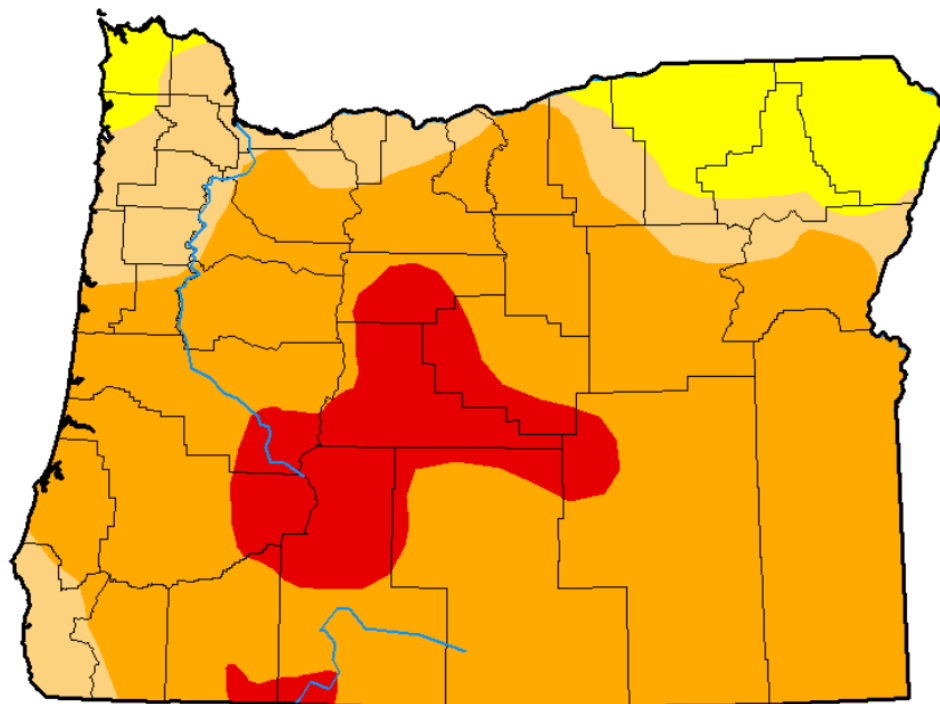
## Groundwater Areas of Concern





# Era of Water Scarcity

## US Drought Monitor January 22, 2019



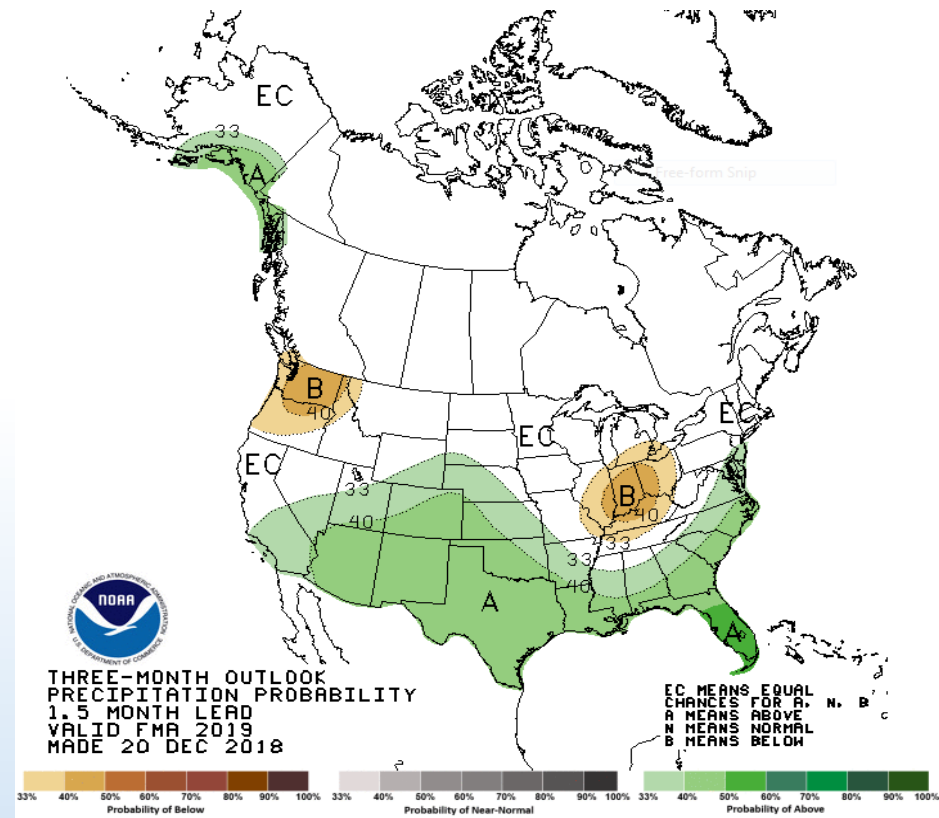
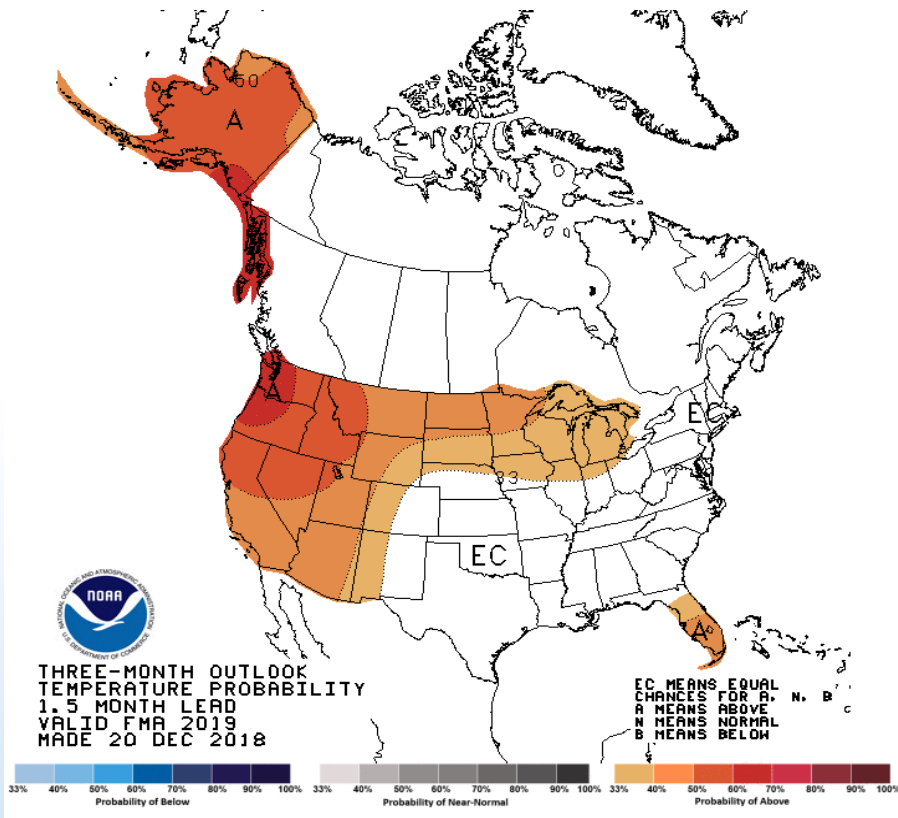
### Intensity:

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



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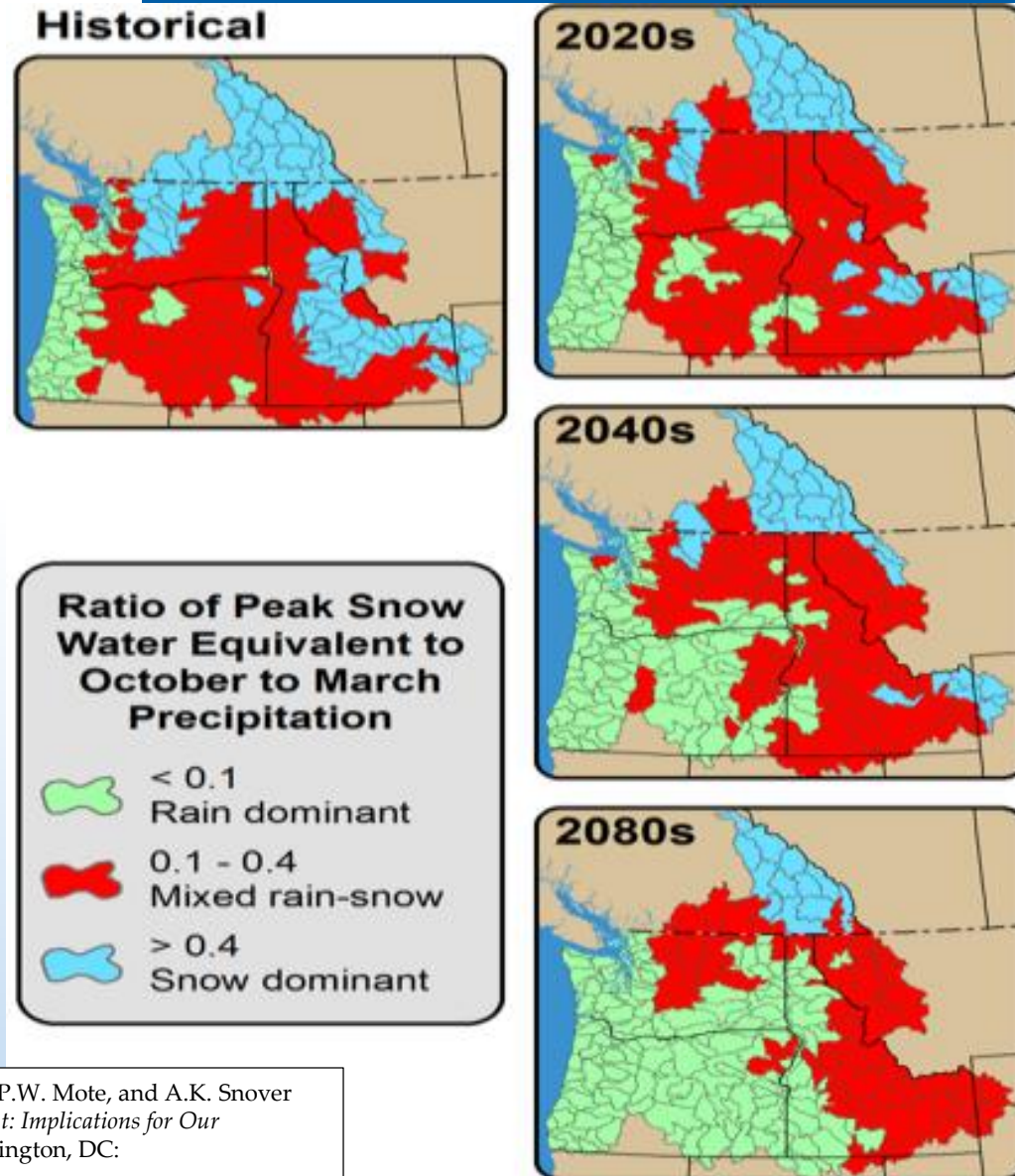
# Three-Month Outlook



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



# Climate and Loss of Snowpack



## Oregon's 2017 Integrated Water Resources Strategy

A framework for improving our understanding of Oregon's water resources and meeting our instream and out-of-stream needs, including water quantity, water quality, and ecosystem needs



### ( 1 ) Understand Water Resources Today

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

Improve Water Quality &  
Quantity Information

Further Understand Our  
Water Management Institutions

#### Understanding Water Resources / Supplies / Institutions

- 1.A Conduct additional groundwater investigations
- 1.B Improve water resource data collection & monitoring
- 1.C Coordinate inter-agency data collection, processing, and use in decision-making

← OBJECTIVES →

← CRITICAL  
ISSUES →

← RECOMMENDED  
ACTIONS →

### ( 2 ) Understand Instream and Out-of-Stream Needs

Further Define Out-of-Stream Needs / Demands  
(i.e., diverted water)

Further Define Instream Needs / Demands  
(i.e., left-in-place water)

#### Understanding Oregon's Out-of-Stream Needs/Demands

- 2.A Regularly update long-term water demand forecasts
- 2.B Improve water-use measurement & reporting
- 2.C Determine unadjudicated water right claims
- 2.D Authorize the update of water right records with contact information
- 2.E Regularly update Oregon's water-related permitting guide

#### Understanding Oregon's Instream Needs/Demands

- 3.A Determine flows needed (quality & quantity) to support instream needs
- 3.B Determine needs of groundwater dependent ecosystems

← OBJECTIVES →

← CRITICAL  
ISSUES →

← RECOMMENDED  
ACTIONS →

### ( 3 ) Understand the Coming Pressures That Affect Our Needs and Supplies

Economic Development

Water & Energy

Climate Change

Extreme Events

Population Growth

Water & Land Use

Water-Related Infrastructure

Education & Outreach

#### Water & Energy

- 4.A Analyze the effects on water from energy development projects & policies
- 4.B Take advantage of existing infrastructure to develop non-traditional hydroelectric power
- 4.C Promote strategies that increase/integrate energy & water savings

#### Climate Change

- 5.A Support continued basin-scale climate change research efforts
- 5.B Assist with climate change adaptation & resiliency strategies

#### Extreme Events

- 5.5A Plan and prepare for drought resiliency
- 5.5B Plan and prepare for flood events
- 5.5C Plan and prepare for a Cascadia subduction earthquake event

Economic Development & Population Growth  
(See Actions 2A and 3A)

#### Water & Land Use

- 6.A Improve integration of water information into land use planning (and vice versa)
- 6.B Improve state agency coordination
- 6.C Encourage low-impact development practices and green infrastructure

#### Water-Related Infrastructure

- 7.A Develop and upgrade water and wastewater infrastructure
- 7.B Encourage regional (sub-basin) approaches to water and wastewater systems
- 7.C Ensure public safety/dam safety

#### Education and Outreach

- 8.A Support Oregon's K-12 environmental literacy plan
- 8.B Provide education and training for Oregon's next generation of water experts
- 8.C Promote community education and training opportunities
- 8.D Identify ongoing water-related research needs

### ( 4 ) Meet Oregon's Instream and Out-of-Stream Needs

Place-Based Efforts

Water Management & Development

Healthy Ecosystems

Public Health

Funding

#### Place-Based Efforts

- 9.A Continue to undertake place-based integrated, water resources planning
- 9.B Coordinate implementation of existing natural resource plans
- 9.C Partner with federal agencies, tribes, and neighboring states in long-term water resources management

#### Water Management & Development

- 10.A Improve water-use efficiency and water conservation
- 10.B Improve access to built storage
- 10.C Encourage additional water reuse projects
- 10.D Reach environmental outcomes with non-regulatory alternatives
- 10.E Continue the water resources development program
- 10.F Provide an adequate presence in the field
- 10.G Strengthen water quantity & water quality permitting programs

#### Healthy Ecosystems

- 11.A Improve watershed health, resiliency, and capacity for natural storage
- 11.B Develop additional instream protections
- 11.C Prevent and eradicate invasive species
- 11.D Protect and restore instream habitat and habitat access for fish and wildlife
- 11.E Develop additional groundwater protections

#### Public Health

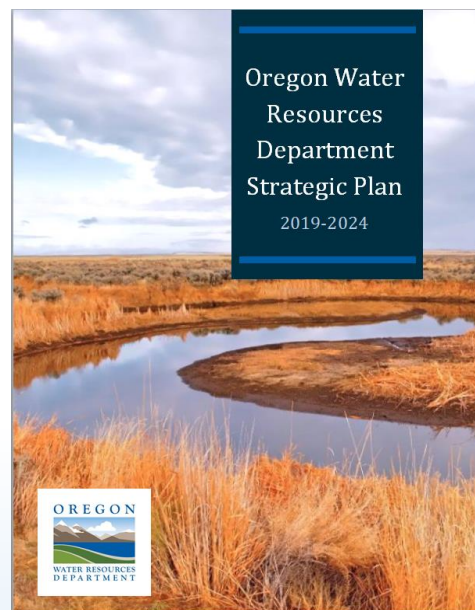
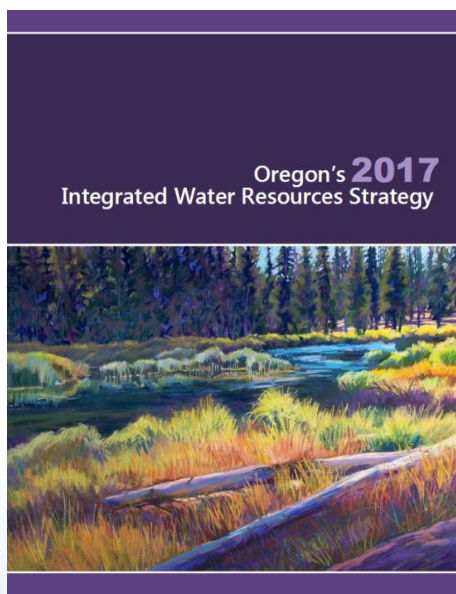
- 12.A Ensure the safety of Oregon's drinking water
- 12.B Reduce the use of and exposure to toxics and other pollutants
- 12.C Implement water quality pollution control plans

#### Funding

- 13.A Fund development and implementation of Oregon's IWRS
- 13.B Fund water resources management activities at state agencies
- 13.C Invest in local or regional water planning efforts
- 13.D Invest in feasibility studies for water resources projects
- 13.E Invest in implementation of water resources projects



# Preparing for our Water Future



***Water law is deeply rooted in Oregonians' livelihoods, cultures, and well-being. The importance of water in our lives is unquestionable. Yet our current and future challenges require that we modernize our current systems and stretch ourselves to innovate.***

# Closing

- **Big mission**
  - **Small # of staff**
  - **Era of water scarcity**
  - **Aging infrastructure**
- **Need to focus on what needs to be done to meet Oregon's water needs now and into the future**



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