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MEMORANDUM

TO: Water Resources Commission

FROM: Crystal Grinnell, IWRS Specialist

SUBJECT: Agenda Item G, November 16, 2023
Water Resources Commission

Integrated Water Resources Strategy Work Session

I. Introduction

During this agenda item staff will describe features of the first draft of the 3rd edition of the IWRS that has been developed by the IWRS Project Team. Commissioners will be asked to provide feedback on the direction of the work and advise on any changes they would like to see before the Department further develops and releases a draft document for public review and comment.

II. Integrated Water Resources Strategy Recommended Action

- 13.A Fund development and implementation of Oregon's IWRS

III. Background

The Department discussed the IWRS at several previous Commission meetings since November 2022. Materials from these meetings can be found on our website for the Commission: www.oregon.gov/owrd/aboutus/Commission.

Initial input to inform the 3rd Edition of the IWRS has been collected from a variety of sources.

- Public engagement
- State agency staff
- Interagency project team
- Water Core Team
- Tribes
- Federal Liaison Team
- Partner agency boards and commissions
- 100-Year Water Vision

During the meeting on September 29, 2023, the Commission expressed a desire to have more discussion on the draft 2023 IWRS framework approach before releasing the document for public comment. The Commission agreed to have the IWRS Project Team further develop a draft document to help Commissioners better understand the proposed framework (i.e., document

organization). The Department has developed several materials as attached to help the Commission evaluate the proposed modifications to the IWRS structure. Note that these documents are in draft form and will require further input from OWRD staff and staff at other agencies, in addition to obtaining public comment during the public comment period.

IV. 2023 IWRS Proposed Vision and Call to Action

Based on feedback from the last meeting, Department staff pulled together Attachment 1. The need for a vision for the next IWRS has come up during several previous Commission work sessions, and other contextual factors were requested at the last meeting. This work session will provide an opportunity to discuss further.

Attachment 1 is intended to be a companion to the Framework document in Attachment 2. This is a first draft, which identifies key water challenges across Oregon, the importance of water, a vision for the future, and a call to action. Both the draft vision and call to action are borrowed and revised from the 100-Year Water Vision effort, as that was the most recent related effort, which also included a significant amount of input and outreach. In addition, the Department is seeking to fold the 100-Year Water Vision work into the IWRS, where possible. In addition, the draft vision and call to action reflect the range of water considerations (e.g., economic, environmental) and urgency we heard during the 2023 IWRS public outreach and engagement efforts.

The right-hand side of Attachment 1 shows four categories of actions needed to improve our understanding of Oregon's water resources and meet our instream and out-of-stream needs, including water quantity, water quality, and ecosystem needs. The four categories are: Funding, Partnerships & Planning, Data & Research, and Management & Stewardship. These categories provide a way to group the critical issues and recommended actions from the previous versions of the IWRS, making them more accessible to the public, stakeholders, and agency staff. These categories reflect common language heard throughout the 2023 engagement process and 100-Year Water Vision and are intended to make it easier to locate a specific recommended action.

The specific proposed actions under each category are listed in Attachment 2, the 2023 IWRS Proposed Framework.

V. 2023 IWRS Proposed Framework

The 2023 IWRS Proposed Framework in Attachment 2 presents the proposed IWRS document organization. The Framework includes much of the same actions included in the 2017 IWRS, but the order in which the actions appear has been modified and are therefore renumbered. The IWRS Project Team believes this better locates similar topics to one another and will reduce repetition in the IWRS narrative document.

The draft Framework proposes grouping recommended actions by similar theme/action, rather than by the four Objectives that have been used in the past. The grouping of information by Objective has proved to be confusing and/or less engaging to the public and agency staff. The original goals and objectives from both the 2012 IWRS and 2017 IWRS are carried forward into the Framework, shown in the tan box in Attachment 2.

This proposed framework adds two new actions, 3D Lead Meaningful Engagement and 13D Utilize Natural Infrastructure. These topics were emphasized during both the 100-Year Water Vision and 2023 IWRS public outreach and engagement.

Four actions have been deleted. The 2017 IWRS action 2D Authorize the Update of Water Right Records with Contact Information was too detailed and not in line with the scale of other actions. Action 2E Regularly Update Oregon's Water-Related Permitting Guide was moved to an example action under Strengthen Water Quantity and Quality Permitting Programs (2023 IWRS Action 12G). The 2017 IWRS action 5B Assist with Climate Change Adaptation and Resiliency Strategies was deleted because the example actions appear elsewhere throughout other actions. The 2017 IWRS action 10E Continue the Water Resources Development Program was deleted because it already appears under an example action under funding (2023 IWRS Action 1C).

Three 2017 IWRS actions (13C, 13D, and 13E) were collapsed into one, now proposed in the 2023 IWRS to be 1C Invest in Planning, Feasibility Studies, and Water Resource Project Implementation.

The framework graphic shows actions with new proposed action numbers, with 2017 IWRS action numbers in brackets to help readers understand the proposed changes. The goal is to streamline some of the content to make it more approachable and trackable, without losing key actions.

VI. 2023 IWRS Proposed Action Summary Sheets

The IWRS Project Team proposes a new tool to increase accountability and support workplan development for implementing the IWRS. Recommended actions will be presented as one-page summaries within the IWRS as shown in Attachment 3 and include information identifying the lead and supporting agencies, workgroups or task forces working on that action, and relevant documents (e.g., statewide plans).

These summary sheets distill down the IWRS into the information most needed to implement the action. The IWRS Project Team envisions these summary sheets placed within the document, replacing the 2017 IWRS approach of using call out boxes nested within the narrative that only provided the action title and bullet list of example actions. The summary sheets can also be printed out as individual handouts for use by the public, staff, policy makers, and others.

The summary sheets show draft proposed additions to the example actions in red, and those proposed for deletion appear crossed out. Most example actions proposed for deletion have been completed. It is important to note that these example actions are still in draft form, require further review, and some are likely to change. These draft summary sheets are intended to provide the Commission with a better understanding of the proposed organizational structure, as well as a critical new component of the IWRS.

VII. Discussion

During the work session, the Department would like input from Commissioners on Attachments 1-3. Questions for the Commission to consider may include but are not limited to:

1. Attachment 1 attempts to provide a visual in response to some of the comments from the last meeting including providing at a high-level context/challenges, the importance of

water, a vision, and a call to action, as well as ties to the framework. Is this visualization a helpful way to present the information? Are there changes you would like to see to the layout? Do you have feedback on the draft text?

2. The draft proposed Framework shows actions grouped by similar action type rather than by objective. What feedback do you have on this re-organization of information?
3. The IWRS Project Team has been focusing on document reorganization, narrative updates, and developing the Action Summary sheets. A major focus includes refining the IWRS into a shorter document. This can be done by providing a more robust description of regulatory or management tools in the first chapter, building out the context for all of the proposed actions. In addition, the Action Summary sheets will become a major feature of the IWRS. Do you have any feedback on the Action Summary sheets or the IWRS format?

VI. Conclusion

The 2023 IWRS Draft narrative is still in process by the IWRS Project Team. A goal for the 2023 IWRS is to reduce the length of the document from the almost 200 pages in the 2017 IWRS. The IWRS Project Team will incorporate input from the Commission. The team will also continue working on condensing the narrative and reducing repetition, over the next few weeks. The Department is currently evaluating a revised schedule.

Attachments:

1. 2023 IWRS DRAFT Vision & Call to Action
2. 2023 IWRS DRAFT Framework
3. 2023 IWRS DRAFT One-page Action Summaries

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Oregon's 2023 Integrated Water Resources Strategy - Draft 1

Water Challenges Across Oregon

Oregon faces a number of water challenges that impact the quality and quantity of water for instream and out-of-stream needs, including:

- Climate change and associated increases in temperature, wildfire, drought, damaging floods, and harmful algal blooms;
- A half century of underinvestment in our water resources;
- Our changing population and associated development – growing in some areas, shrinking in others; and
- Too much demand for too little water for in-stream and out-of-stream uses.

Importance of Water

Water is essential to our ecosystems, communities, economies, health and safety, and cultural and spiritual values.

- 48 percent of the state's economic output depends on water; $228 billion annually
- Water supports the employment of 44 percent of Oregon workers
- Irrigated agriculture contributes $7.3 billion a year to Oregon's economy
- $2.2 billion per year is spent directly on freshwater recreation
- Salmon fishing and seafood processing contributes $23.5 million per year in economic output

Vision

To address changes in climate and population dynamics, Oregonians will take care of our water to ensure we have enough clean water for our people, our economy, and our environment, now and for future generations. Oregonians will invest strategically in partnerships and planning, data and research, and water management and stewardship for instream and out-of-stream across all regions to support resilient communities, vibrant local economies, and a healthy environment for all who live here.

Call to Action

We must both act now and plan for the long term, otherwise we will place the safety of our communities, the health of our people and environment, and Oregon's economic future at risk. How we choose to care for our water will determine if we pass a legacy of clean and sustainable water to future generations. A coordinated effort of immediate actions and thoughtful planning for the future are needed. The IWRS outlines the actions needed to understand and meet Oregon's instream and out-of-stream water needs, to create a foundation for coordinated action and funding.

The 2023 Integrated Water Resources Strategy proposes actions 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, in the following categories:

Funding

Oregon must invest now to secure our water future

Partnerships and Planning

All Oregonians must work together and plan for our water future

- **Land Use Planning**
- **Hazard Mitigation Planning and Extreme Events**
- **Education**
- **Coordination and Collaboration**
- **Place-Based Efforts**

Data and Research

Oregon needs foundational information to make wise decisions and pursue innovation

- **Water Quality and Quantity Information**
- **Define Out-of-Stream Water Needs**
- **Define Instream and Ecosystem Water Needs**

Water Management and Stewardship

Oregon must secure its water future through active management and stewardship of its resources

- **Healthy Ecosystems**
- **Clean Water**
- **Water Use and Management**
- **Water Infrastructure**
- **Water and Energy**

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Oregon's 2023 Integrated Water Resources Strategy Framework and Actions - 10/2023

Focusing on: Climate change, population growth, land use change, economic impacts, and energy demand

Partnerships and Planning

Education
2A [8C] - Promote Community Education and Training Opportunities
2B [8A] - Support Implementation of K-12 Environmental Literacy Plan
2C [8B] - Provide Career Training for the Next Generation of Water Experts

Coordination and Collaboration [new]
3A [9C] - Partner with Federal Agencies, Tribes, and Neighboring States in Long-Term Water Resources Management
3B [6B] - Improve State Agency Coordination
3C [9B] - Coordinate Implementation of Existing State and Local Plans
3D **[new]** - Lead Meaningful Community Engagement

Place-Based Efforts
4A [9A] - Continue to Undertake Place-Based Planning

Land Use Planning
5A [6A] - Improve Integration of Water Information into Land Use Planning (& Vice-Versa)
5B [6C] - Encourage Low Impact Development Practices and Green Infrastructure

Hazard Mitigation Planning and Extreme Events
6A [5.5A] - Plan and Prepare for Drought and Wildfire Resiliency
6B [5.5B] - Plan and Prepare for Flood Events
6C [5.5C] - Plan and Prepare for a Cascadia Subduction Earthquake and Tsunami Event

Note: 2017 IWRS numbering is shown in **[brackets]**.

Identified Actions Address These Strategy Goals and Objectives:

Goal 1: Improve Understanding of Oregon's Water Resources
- Understand Water Resources Today
- Understand Instream and Out-of-Stream Needs
- Understand Coming Pressures That Affect Needs and Supplies

Goal 2: Meet Oregon's Water Resources Needs
- Meet Oregon's Instream and Out-of-Stream Needs

Data and Research

Water Quality and Quantity Data Needs
7A [1B] - Improve Water Resource Data Collection and Monitoring
7B [1C] - Improve Inter-Agency Data Coordination
7C [1A] - Conduct Additional Groundwater Studies
7D [5A] -Support continued Basin-scale Climate Change Research
7E [8D] - Identify Ongoing Water-Related Research Needs and Partnerships

Define Out-of-Stream Water Needs
8A [2A] - Regularly Update Out-of-Stream Long-Term Water Demand Forecasts
8B [2B] - Improve Water-Use Measurement and Reporting

Define Instream and Ecosystem Water Needs
9A [3A] - Determine Flows Needed (Quality and Quantity) to Support Instream Needs
9B [3B] - Determine Needs of Groundwater Dependent Ecosystems
9C [4A] - Analyze the Effects on Water from Energy Development Projects and Policies

Management and Stewardship

Healthy Ecosystems
10A [11A] - Improve Watershed Health, Resiliency, and Capacity for Natural Storage
10B [11B] - Develop Additional Instream Protections
10C [11C] - Prevent and Eradicate Invasive Species
10D [11D] - Protect and Restore Instream Habitat and Habitat Access for Fish and Wildlife
10E [11E] - Develop Additional Groundwater Protections

Clean Water
11A [12A] - Ensure the Safety of Drinking Water
11B [12B] - Reduce the Use of and Exposure to Toxics and Other Pollutants
11C [12C] - Implement Water Quality Pollution Control Plans

Water Use and Management
12A [2C] - Determine Unadjudicated Water Rights Claims
12B [10A] - Improve Water-Use Efficiency and Water Conservation
12C [10B] - Improve Access to Built Storage
12D [10C] - Encourage Water Reuse Projects
12E [10D] - Reach Environmental Outcomes with Non-Regulatory Alternatives
12F [10F] - Provide Adequate Field Staff
12G [10G] - Strengthen Water Quantity and Water Quality Permitting Programs

Water Infrastructure
13A [7A] - Maintain, Upgrade or Decommission Water and Wastewater Infrastructure
13B [7B] - Encourage Regional (Sub-Basin) Approaches to Water and Wastewater Systems
13C [7C] - Support Dam Safety Program
13D **[new]** - Utilize Natural Infrastructure

Water and Energy
14A [4B] - Use Existing Infrastructure to Develop Non-Traditional Hydroelectric Power
14B [4C] - Promote Strategies that Increase/Integrate Energy and Water Savings

Funding

1A [13A] - Fund Development and Implementation of Oregon's Integrated Water Resources Strategy
1B [13B] - Fund Water Resources Management Activities at State Agencies
1C [13C-E] - Invest in Planning, Feasibility Studies, and Water Resource Project Implementation

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Oregon's 2023 Integrated Water Resources Strategy – Draft 1
Index for Action Summary Guides

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10E - Develop Additional Groundwater Protections

Clean Water

11A - Ensure the Safety of Oregon's Drinking Water
11B - Reduce the Use of and Exposure to Toxics and Other Pollutants
11C - Implement Water Quality Pollution Control Plans

Water Use & Management

12A - Determine Unadjudicated Water Rights Claims
12B - Improve Water-Use Efficiency and Water Conservation
12C - Improve Access to Built Storage
12D - Encourage Water Reuse Projects
12E - Reach Environmental Outcomes with Non-Regulatory Alternatives
12F - Provide Adequate Field Staff
12G -Strengthen Water Quantity and Water Quality Permitting Programs

Water Infrastructure

13A - Maintain, Upgrade or Decommission Water and Wastewater Infrastructure
13B - Encourage Regional (Sub-Basin) Approaches to Water and Wastewater Systems
13C – Support Dam Safety Program
13D - Utilize Natural Infrastructure

Water and Energy

14A - Use Existing Infrastructure to Develop Non-Traditional Hydroelectric Power
14B - Promote Strategies that Increase/Integrate Energy and Water Savings

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Notes for the Action Summary Guides:
Agencies identified as "Lead" or "Supporting" agencies have been identified based on their alignment with recent or current activities related to the IWRS action.
The identification of lead or supporting role does not imply their obligation to fulfill that role and their participation is dependent upon available funding and resources.

Example actions in black text are taken from the 2017 IWRS. Example actions in red text are proposed changes/additions.

Chapter 1 – Oregon's Water Context

Oregonians must invest strategically in water across all regions to support resilient communities, vibrant local economies, and a healthy environment for all who live here.

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Funding

Action 1A

Fund Development and Implementation of Oregon's Integrated Water Resources Strategy

Lead Agencies	Supporting Agencies	Partners
OWRD	BIZOR, DLCD, DOGAMI, ODA, ODEQ, ODF, ODFW, ODOE, ODSL, OHA, OPRD, OSMB, OWEB, Many federal agencies	Tribes, public, stakeholders

Background

Oregon Statute (ORS 536.220) designates the Oregon Water Resources Department to lead the development of the Integrated Water Resources Strategy, with support from other agencies and with input from Tribes, the public, and stakeholders.

The goals, objectives, and recommended actions spelled out in the Integrated Water Resources Strategy require dedicated funding for implementation and coordination among state, local, federal, and private partners.

Example Actions

- Fund implementation and coordination of the Integrated Water Resources Strategy
- Fund the development of workplans and biennial progress reports
- Fund the required Integrated Water Resources Strategy updates, including support from partner agencies

Equity & Justice Considerations and Actions

- Fund communication resources regarding the IWRS including web-based information and translations

Resources

Agency Programs

OWRD's Director's Office (leads development/updates to the IWRS)

Workgroups

Water Core Team, Tribal Water Task Force

Documents

2023 Integrated Water Resources Strategy

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Funding

Action 1B

Fund Water Resources Management Activities at State Agencies

Lead Agencies	Supporting Agencies	Partners
DOGAMI, DLCD, ODA, ODEQ, ODF, ODFW, ODOE, ODSL, OHA, OPRD, OSMB, OWEB, OWRD	BIZOR, Many federal agencies	Legislature

Background

The state's core responsibilities related to water, as described in the Integrated Water Resources Strategy have been underfunded for years. While there has been significant investments in recent years, adequate funding is needed to continue to address water security and ensure Oregon's natural resource legacy for future generations. Typical state agency water-related duties include:

- Coordinating and partnering with other public and private entities
- Updating plans and participating in federal, state, and local planning activities
- Improving scientific information, including data collection, analysis, sharing, and use in decision-making
- Updating technical tools, including software, applications, databases, maps, models, and education/outreach materials
- Protecting and restoring instream habitat and access, including fish passage and fish screening
- Providing engineering, scientific, water right reviews, permitting, regulatory and other technical expertise
- Conducting compliance, public health/safety monitoring and inspections
- Monitoring for and preventing invasive species, toxics, pollution, and hazards

Example Actions

- Fund those water management activities for which the state has responsibility
- Ensure increased and adequate funding from the General Fund
- Seek additional funding sources (e.g., federal funding, bonding)

Equity & Justice Considerations and Actions

- Provide staff access to training on equity and environmental justice
- Evaluate and implement opportunities to improve equitable delivery of services by state agencies

Resources

State agency biennial budgets

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Funding

Action1C

Invest in Planning, Feasibility Studies, and Water Resource Project Implementation

Lead Agencies	Supporting Agencies	Partners
BIZOR, DLCD, ODA, ODEQ, ODF, ODFW, OPRD, OWEB, OWRD	DOGAMI, ODOE, ODSL, OSMB, OHA	Tribes, local governments, SWCD's, watershed councils

Background

Investing in planning, feasibility studies and water resources project implementation is critical to ensuring communities can adequately meet their future water needs. Planning is done successfully by ensuring that resources exist to help organize people, apply for and administer funds, and facilitate the conversation. It also takes resources to gather existing information and to develop new data that fill key knowledge gaps. Feasibility studies help determine the environmental, engineering, economic, and social implications of proposed water supply projects prior to significant investment. Finally, reliable and sufficient funds are needed to implement a wide range of water resource projects.

Example Actions

- Continue to authorize and fund public and private investments in efforts such as Place-Based Integrated Water Resources Planning, including plan implementation
- Provide funding to assist small water systems to develop water management and conservation plans
- Provide funding to support hazard mitigation planning (e.g. droughts, floods) at the local level
- Support river basin-planning updates
- ~~Continue to provide OWRD administered Feasibility Study Grants to help evaluate the feasibility of water conservation, storage, and reuse projects~~
- Continue to provide BIZOR and OWEB administered grants that cover feasibility studies
- Authorize bonds to finance ~~these~~ investments in water resource projects
- Ensure that basic water infrastructure maintenance needs continue to be eligible for grant and loan funding
- Advocate for continued state and federal funding for water and wastewater-related infrastructure
- Develop funding and technical support for low-income, small communities, and districts to maintain and operate water and wastewater-related infrastructure
- Continue funding and support for watershed restoration and Focused Investment Partnerships
- Continue to fund Oregon Water Resources Department Feasibility Study Grants, Water Project Grants and Loans, and Water Well Abandonment, Repair, and Replacement funding opportunities. ~~Program~~

Equity & Justice Considerations and Actions

- House Bill 3293 (2021) addresses water project community engagement, including funding to increase participation by representatives of disproportionately impacted communities and applies to BIZOR, ODEQ, ODFW, OHA, OWEB, and OWRD
- Justice40 Initiative – The Federal Government has made it a goal that 40 percent of benefits of specific Federal investments are directed toward those marginalized, underserved and overburdened by pollution. Some funding administered by State agencies may be from Federal sources linked to this initiative. Funding categories relevant to the IWRS include climate change, remediation and reduction of legacy pollution, and development of critical clean water and wastewater infrastructure.

Resources

Agency Funding Programs

Placeholder - May add to an appendix, given the number of programs.

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Chapter 2 – Partnerships & Planning

All Oregonians must work together and plan for our water future.

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Education

Action 2A

Promote Community Education and Training Opportunities

Lead Agencies	Supporting Agencies	Partners
ODA, ODEQ, ODF, ODFW, ODOE, ODSL, OHA, OPRD, OSMB, OWEB, OWRD	USEPA, USGS	OSU Extension Service, SWCD's, Watershed Councils, CBO's

Background

Public engagement in 2023 for the 3rd edition of the IWRS revealed a desire for more access to information about water. Oregonians want to learn more about water, how it is governed, the hydrologic cycle, how they can conserve more water, and other stewardship practices. There is a need for agencies to increase their capacity to provide this education, and partner with community-based organizations to reach more people. See Action 2B for additional resources.

Example Actions

- Look for opportunities to keep the general public informed about the importance of water resources
- Look for opportunities to provide outreach about water-related programs ~~streamflow restoration, water conservation, transfers, and other programs and tools~~
- Promote technical training for public and private partners
- Promote access to water-related recreational opportunities through the use of state programs
- Develop a centralized location and outreach materials for people to access information about water conservation
- Develop and distribute informational materials related to the suite of tools available to protect instream flow
- Partner with community-based organizations to deliver water education to the public

Equity & Justice Considerations and Actions

- Increase outreach and education regarding water topics, including resources to produce communications in multiple languages and accessible to a variety of learning styles

Resources

Agency Programs

Pesticide Stewardship Partnership (inter-agency), OPRD's Water Trails Program, OSMB's Water Wits and Interactive Boat Oregon Map,

OSU Extension Service

Documents

2018 Water Rights in Oregon: An Introduction to Oregon's Water Laws

2015 OWRD Fact Sheets for Strategies to Save Water

Well Owner's Handbook

Well Owner's Handbook (Espanol)

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Education

Action 2B

Support Implementation of K-12 Environmental Literacy Plan

Lead Agencies	Supporting Agencies	Partners
Oregon Department of Education, OSU	BLM, ODEQ, ODFW, OPRD, OWRD, USGS	Many cities, utility districts, non-profits

Background

Oregon's Environmental Literacy Plan is aimed at helping students become lifelong stewards of their environment and community. Administered by Oregon State University Extension, the current Environmental Literacy Program website provides resources. The goals of the plan are to: prepare students to understand and to address the major environmental challenges; contribute to students establishing a healthy lifestyle through outdoor experiences in the school curriculum; and give teachers opportunities for enhanced professional development.

Example Actions

- Support funding for implementation (e.g., Outdoor School, Children's Clean Water Festival)
- Natural resource agencies, community organizations, and others should engage in education for environmental literacy activities

Equity & Justice Considerations and Actions

- Incorporate environmental justice, and culturally-specific water stewardship values in environmental literacy programs
- Engage and support culturally-specific community-based organizations in the design and implementation of environmental literacy programs

Resources

Agency Programs

ODFW's Salmon and Trout Enhancement Program (Fish Eggs to Fry)

Oregon's Environmental Literacy Program, Oregon's Outdoor School Program, Outdoor School Education Fund

Events

Children's Clean Water Festival, https://www.cleanwaterfestival.org/

Documents

2013 Environmental Literacy Plan

Environmental Literacy Resource Directory

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Education

Action 2C

Provide Career Training for the Next Generation of Water Experts

Lead Agencies	Supporting Agencies	Partners
ODA, ODEQ, ODFW, OWRD	NOAA, USEPA	Tribes, community colleges, OSU

Background

During the 1970s and 80s, the water and wastewater treatment industry grew rapidly to fulfill the requirements of the federal Clean Water Act and the Safe Drinking Water Act. The need for science professionals, including biologists, chemists, hydrologists, and others grew as well. Now, with recent and impending retirements, the water and wastewater industry, state agencies, and scientific communities face some substantial losses in its workforce. Additionally, challenges posed by climate change, aging infrastructure, and population increases will increase the demand for water professionals. Water professionals are needed in a wide range of specialties, including water and wastewater treatment, well drilling, science, engineering, policy, law, planning, engagement, and science communications.

Example Actions

- Determine whether career training programs are available and equipped to meet the coming demand for water professionals
- Offer job shadow programs to expose students to careers in water
- Provide internships for new and aspiring water professionals
- Continue funding support for water-related trade and science programs at Oregon community colleges
- Increase coordination between state agencies and universities to develop programs that foster interest in water-related fields and career progression for graduating students

Equity & Justice Considerations and Actions

- Offer paid apprenticeship or internship programs to expose students and new professionals to careers in water
- Partner with Hispanic Serving Institutions (HSI's) to increase support for water-related trade programs at Oregon community colleges and universities

Resources

Agency Programs

OWRD Certified Water Right Examiner Annual Training, OWRD Well Constructor Continuing Education

Websites

Workforwater.org – website promoting career choices in the water sector

Office of Community Colleges and Workforce Development – provides a listing of colleges that offer water-related courses, degrees, and programs throughout Oregon

OSU Traditional Ecological Knowledge Lab, https://tek.forestry.oregonstate.edu/

NOAA's National Sea Grant College Program, https://seagrant.noaa.gov/

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Coordination & Collaboration — Action 3A

Partner with Federal Agencies, Tribes, and Neighboring States in Long-Term Water Resources Management

Lead Agencies	Supporting Agencies	Partners
ODA, ODEQ, ODF, ODFW, ODOE, OWRD	BPA, BLM, NOAA, USACOE, USBR, USEPA, USFWS, USGS, USDA, BIA, US Dept of Interior	Tribes, State of California, State of Idaho, State of Washington, Canada

Background

Partnerships with federal agencies, tribes, and neighboring states have played an important and necessary role in Oregon's management of water resources. A large percentage of Oregon's landscape is managed by federal agencies, and Oregon shares three major waterways with California, Washington, and Idaho.

Oregon is also home to nine federally recognized tribes, all of which have cultural ties to and an interest in water, as well as responsibilities for protecting and managing water resources. The Strategy presents an opportunity to strengthen these government-to-government relationships.

Example Actions

- Protect Oregon's interests in shared surface water and groundwater basins
- Negotiate agreements such that water protected instream is shepherded across state lines to the mouth of the river
- Partner with neighboring states and tribes to continue or improve access to additional sources of water
- Carry out actions identified in the 2023 Tribal Water Task Force Report

Equity & Justice Considerations and Actions

- Identify who may benefit, or be impacted by, long-term water management approaches

Resources

Workgroups

Tribal Water Task Force
Natural Resources Working Group
Cultural Resources Cluster Group
Legislative Commission on Indian Services
Interstate Workgroups (Walla Walla, Idaho Power)
Klamath River Compact Commission

Treaties, Inter-state Agreements, and Work

Columbia Basin Fish Accords

Klamath River Compact

U.S. Department of State website: Columbia River Treaty

Summary of Active and Inactive Klamath Basin Agreements

Pacificorp Press Release Klamath Dam Removal
Walla Walla Groundwater Study

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Coordination & Collaboration

Action 3B

Improve State Agency Coordination

Lead Agencies	Supporting Agencies	Partners
BIZOR, DLCD, DOGAMI, ODA, ODEQ, ODF, ODFW, ODOE, ODOT, ODSL, OHA, OSMB, OWEB, OPRD, OWRD, and others	DAS	OSU

Background

Given the distribution of water-related responsibilities across multiple agencies, it is critical that agencies coordinate to support one another's work. Agencies should seek to improve coordination to ensure efficient use of public resources.

Agencies currently coordinate work through various agency workgroups, identified below. Agencies will need to collaborate on the development of interagency workplans to implement the IWRS.

Another opportunity is through the State Agency Coordination Program. Twenty five state agencies have a State Agency Coordination (SAC) Program, which is intended to assure that its "rules and programs affecting land use" comply with the statewide planning goals, and that agency actions are compatible with acknowledged city and county comprehensive plans and land use regulations. (See ORS 197.180, OAR 660-030 and OAR 660-031.)

Additional ways for agencies to improve coordination includes continuing existing or establishing new interagency permit review teams and workgroups.

Example Actions

- Develop interagency workplans for implementing IWRS actions
- Support new and existing interagency review teams or interagency work groups
- Create tools to help the public, local government, and community-based organizations navigate state agencies
- Update State Agency Coordination Programs in partnership with the Department of Land Conservation and Development
- ~~Design each agency permit "contingent" upon approval of all other state agency permits~~
- Establish procedures for cross-agency coordination and approval of relevant state agency permits

Equity & Justice Considerations and Actions

- Create ways for community members and community-based organizations to navigate state agencies
- Explore options to integrate the Oregon Water Data Portal with the state-led Environmental Justice Mapping tool

Resources

Workgroups

Conservation Effectiveness Partnership, Interagency Review Team, Oregon STREAM Team, Oregon Technical Advisory Committee, Regional Solutions Team, Water Core Team, Water Supply Availability Committee, Drought Readiness Council, Technical Review Teams for OWRD Grants

Documents

Oregon's 2023 Integrated Water Resources Strategy

State Agency Coordination Plans

2017 Monitoring Strategy for Oregon's Waters: An Inter-Agency Approach

DRAFT

Coordination & Collaboration

Action 3C

Coordinate Implementation of Existing State & Local Plans

Lead Agencies	Supporting Agencies	Partners
DLCD, ODA, ODEQ, ODFW, OWRD	USEPA, USFWS, NOAA	Tribes, Utilities, Irrigation Districts, SWCD's, Watershed Councils, Local gov'ts, non-profits

Background

Within a basin or sub-basin, multiple planning documents that involve water management, directly or indirectly, may exist. These plans may be contradictory or complementary. Coordination of these plans can lead to improved collaboration, resulting in greater benefits for natural resources.

Example Actions

- Dedicate resources to coordinate and reconcile existing planning documents
- Dedicate resources for implementation of existing state and local ~~implementation of existing~~ plans

Equity & Justice Considerations and Actions

- Include state and local plans that address equity and environmental justice

Resources

Documents

ODA - Agricultural Water Quality Plans

OWRD - Water Management and Conservation Plans (developed by municipal water supplier or irrigation district)

OWRD Administrative Basin rules and studies

ODFW - Fish Conservation and Recovery Plans

ODEQ - Total Maximum Daily Loads

Local land use plans

Place-Based Integrated Water Resources Plans

Watershed restoration action plans

Oregon Plan for Salmon and Watersheds

Oregon Conservation Strategy

Oregon Resilience Plan

Oregon Climate Changed Adaptation Framework

Oregon Diversity, Equity, and Inclusion Action Plan

Local, Tribal and State Natural Hazards Mitigation Plans

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Coordination & Collaboration

Action 3D [new]
Lead Meaningful Community Engagement

Lead Agencies	Supporting Agencies	Partners
DLCD, ODA, ODEQ, ODF, ODFW, OWEB, OWRD	BIZOR, OPRD	Tribes, community leaders, community-based organizations, non-profits

Background

Solutions to water challenges can often be found through collaboration with the impacted communities. Just as agencies are funded to address a water-related issue, resources need to be made available for engagement, including to organizations that represent underserved/under-represented populations. Funding and resources to support participation in state-led planning, engagement, policy development and management activities will help ensure plans and projects meet the needs of those most impacted by them. This action addresses Oregon's Equity Blueprint (2021) recommendation to lead meaningful community engagement and focuses on addressing environmental and climate justice.

Example Actions

- Provide resources for capacity-building for community-based organizations
- Use accessible and inclusive engagement strategies
- Create opportunities for communities to engage decision-makers
- Conduct outreach to invite underserved/under-represented populations to participate in planning activities
- Provide funding for agencies and organizations to sustain engagement over the life of a project
- Provide resources for facilitation and coordination, and staff experts in outreach and engagement best practices

Equity & Justice Considerations and Actions

- Consider best practices for engagement as identified in the State of Oregon Diversity, Equity, and Inclusion Action Plan and other documents, including cultural and language-specific needs, as well as accessibility
- EJScreen may help agencies to evaluate potential impacted communities for state-led planning, engagement, policy development and management activities
- Environmental justice is achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, work, learn and play

Resources

Policies

Oregon's Environmental Justice Law

Workgroups

Environmental Justice Council

Documents

State of Oregon Climate Equity Blueprint

State of Oregon Diversity, Equity and Inclusion Action Plan

State of Oregon Environmental Justice Task Force: Environmental Justice: Best Practices for Natural Resources Agencies

DRAFT

Place-Based Efforts

Action 4A

Continue to Undertake Place-Based Planning

Lead Agencies	Supporting Agencies	Partners
OWRD	DLCD, DOGAMI, ODA, ODEQ, ODFW, OHA, OWEB, USGS	Tribes, local governments, citizens, SWCD's, watershed councils, stakeholders

Background

Forging partnerships between local communities and state agencies through planning offers a unique opportunity for the implementation of a wide range of recommended actions described in the 2023 Strategy. From land-use practices to natural resources management and emergency preparedness, communities are well-positioned to build trust, hold difficult conversations, and make progress on issues beyond what state agencies can do on their own.

In 2015, the Oregon Legislature passed Senate Bill 266 giving the Water Resources Department authority to support place-based planning with grants and technical assistance. Four communities were chosen to pilot the program, using the 2015 Draft Planning Guidelines. The Oregon Legislature made the Place-based Integrated Water Resources Planning Program permanent through the passage of House Bill 2010 during the 2023 legislative session. House Bill 2010 allocated $2 million to the Water Resources Department to establish a permanent program and fund to assist communities with place-based planning and provided staff at several state agencies to support this work. OWRD will be updating the program, establishing rules, and making funding available to new places by 2025.

Example Actions

- Promote success by continuing to support the places currently following the draft planning guidelines and as they develop integrated implementation plans
- Continue to provide financial and technical assistance to support collaborative water planning
- Develop or recapitalize funding pathways for plan implementation to achieve instream and out-of-stream objectives
- Promote peer-to-peer learning between communities pursuing collaborative water planning
- ~~Assess and review efforts thus far, soliciting input on place-based planning~~, Refine planning guidelines, and implement~~ing~~ process improvements
- Undertake actions necessary to implement Place-Based Planning as a permanent program

Equity & Justice Considerations and Actions

- Include public outreach and engagement activities to encourage participation by under-represented populations

Resources

Agency Programs

OWRD's Planning, Collaboration, and Investment Section, OWRD's Place-Based Planning Fund

Workgroups

Harney Community-Based Water Planning Collaborative
Lower John Day Basin Work Group
Mid-Coast Water Planning Partnership
Upper Grande Ronde River Watershed Partnership

Documents

2015 Draft Planning Guidelines

2022 Report of the Work Group on State-Supported Regional Water Planning & Management

DRAFT

Land Use Planning

Action 5A

Improve Integration of Water Information Into Land Use Planning (& Vice-Versa)

Lead Agencies	Supporting Agencies	Partners
DLCD, ODEQ, ODFW, OWRD	DOGAMI, ODA, ODSL	Local governments

Background

Local government land use planners do not always have the information they need to make long-term decisions that affect water resources. Oregon can help remedy this issue by improving communication and coordination between state and local governments on land use matters and water resources. A specific gap that has been identified includes the evaluation of carrying capacity in land use decisions, particularly in those reviews that result in additional opportunities for development/urbanization such as zone changes and urban growth boundary expansions. When considering urban expansion, water availability must be adequately evaluated.

Oregon's 19 Statewide Planning Goals express the state's policies on land use and related topics, like citizen involvement, housing, and natural resources. Oregon's statewide goals are achieved through local comprehensive planning and State Agency Coordination Programs. State law requires each city and county to adopt a comprehensive plan and the zoning and land-division ordinances needed to put the plan into effect.

Example Actions

- ~~Protect natural water bodies in the course of land use decisions, such as wetlands, estuaries, groundwater aquifers, rivers, and lakes~~ Update land use protections for water bodies incorporating best available data
- Update Goal 5 resource inventories
- Continue to support ODEQ's efforts to locate and document Underground Injection Control Systems
- Develop and share information with local governments regarding the location, quantity, and quality of water resources for ~~that can be~~ use ~~d~~ ~~by local governments~~ in land use decisions; consider mechanisms for increasing access to water data such as through the Oregon Water Data Portal
- Improve coordination, technical guidance, and assistance to local governments for land use decisions ~~with regard to~~ regarding water availability and impacts to water quality
- Take next steps to implement land use goals related to water resources—establishing implementing rules, updating acknowledged plans, completing local government plans, applying appropriate safeguards during permitting
- Build partnerships with state and local governments to provide land use information, such as tax lot information
- Update State Agency Coordination Programs and associated rules (see Action 3B)

Equity & Justice Considerations and Actions

- Land use planning activities must carefully consider potential environmental justice implications.

Resources

Agency Programs

DLCD Community Service Division, Rural Planning, Urban Planning, and Transportation & Growth Management Programs, ODEQ Underground Injection Control Program, ODFW Water Program, ODSL Waterways & Wetlands Program, OWRD Surface Water, Groundwater, and Planning Programs

Documents

Oregon's Statewide Planning Goals

Integrating Water Efficiency into Land Use Planning in the Interior West: A Guidebook for Local Planners

State Agency Coordination Plans

DRAFT

Land Use Planning — Action 5B

Encourage Low Impact Development Practices and Natural/Green Infrastructure

Lead Agencies	Supporting Agencies	Partners
DLCD, ODEQ	BIZOR, NRCS, ODF, ODSL, OHA, OWEB, OWRD, USEPA, USFS	Local Gov'ts, Oregon Environmental Council, OSU Extension Service

Background

Land development often alters the natural hydrology of a site, resulting in a decrease in water infiltration and increase in stormwater runoff that can pollute waterways. Low Impact Development (LID) practices, including ecologically sensitive site design and the installation of natural or green infrastructure, act to retain rainfall close to where it falls and promote infiltration and pollution reduction. The techniques appropriate for a development project need to be determined early on in project planning. LID also and has the potential to provide climate resilience. Regulatory benefits include meeting requirements for a TMDL plan, the Safe Drinking Water Act, state land use planning goals 5 and 6, and reducing impacts on Endangered Species Act listed species. This Action addresses the importance of planning for LID and natural infrastructure, while complementary Action 13D addresses implementation of natural infrastructure projects.

> *Low Impact Development – an approach to land development that relies on a collection of techniques that preserve natural resources and mimics natural systems to manage stormwater while meeting development goals*
>
> *Natural Infrastructure – the strategic use of natural lands (forests, wetlands) and working lands (farms, ranches) to meet infrastructure needs such as water storage, pollution reduction, and flood control, and provide a suite of co-benefits (ecological, economic, and community health and wellness)*
>
> *Green Infrastructure – a subset of natural infrastructure, green infrastructure generally refers to the site scale interventions to manage stormwater, including eco-roofs, bio-swales, and trees*

Example Actions

- Continue to compile and provide online information on low impact development best practices
- Support updates to local development codes, improving local capacity to review and permit low impact development and green infrastructure designs
- Encourage communities to consider natural infrastructure in lieu of, or as a complement to, built infrastructure

Equity & Justice Considerations and Actions

- Consider how and where co-benefits of natural/green infrastructure will occur, including flood abatement, clean drinking water, lower water/wastewater utility rates, educational opportunities, and climate resilience

Resources

Agency Programs

DLCD Transportation & Growth Management Program, ODEQ Total Maximum Daily Load Program, ODEQ Nonpoint Source Pollution Program

Workgroups

Websites

ODEQ - https://www.oregon.gov/deq/wq/tmdls/Pages/TMDLs-LID.aspx
EPA - https://www.epa.gov/nps/urban-runoff-low-impact-development

Documents

LID Overview Fact Sheet http://oeconline.org/wp-content/uploads/2014/11/LID_OVERVIEW_FACT_SHEET.pdf

2016 ODOT Green Infrastructure Study Green Infrastructure Techniques for Resilience of the Oregon Coast Highway

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Natural Hazard Mitigation Planning & Extreme Events — Action 6A

Plan and Prepare for Drought and Wildfire Resiliency

Lead Agencies	Supporting Agencies	Partners
DLCD, ODA, ODEQ, ODF, ODFW, OEM, OWRD	USBR, USEPA, NOAA, NRCS, USFS	Tribes, local gov'ts, Oregon Climate Change Research Institute/Oregon Climate Service, utilities, irrigation districts, farmers

Background

Oregon and the western United States are in the worst megadrought on record. A megadrought is a period of extreme dryness that lasts for decades. Although there have been individual years of wet conditions over the past two decades, on average the span between 2000-2021 have been drier than any other 22-year period in the past thousand years. Drought conditions impact water supplies, streamflow, agricultural productivity, wildfire danger, and ecosystem health.

Drought is one of eleven natural hazards discussed in the state's 2020 Natural Hazards Mitigation Plan (NHMP). DLCD and OEM will release an update in 2025. In preparation for the next NHMP, the state is preparing a drought vulnerability risk assessment. In addition, groups of state agencies with natural resources management, public health, or emergency management expertise coordinate to provide the scientific foundation that decision-makers need to identify and respond appropriately to drought and review local requests for assistance and makes recommendations to the Governor regarding the need for state drought declarations.

Example Actions

- Assess and assist those communities and ecosystems most vulnerable to drought (e.g., assess water supply systems for vulnerability)
- Develop the appropriate set of indicators that signal and forecast differing stages of drought
- Document the economic, social, and environmental impacts of drought, including the frequency, distribution, intensity and duration
- Prepare for, respond to, and mitigate for the impacts of drought
- Improve the drought toolbox through education and outreach, drought contingency plans, more efficient water distribution systems, and additional voluntary measures to improve streamflow
- Increase education and outreach efforts to help landowners minimize risk to their property from wildfires
- Invest in built and natural infrastructure, refer to Actions 5B, 10A-10E, 12C, and 13A-13D

Equity & Justice Considerations and Actions

- Prioritize resources for planning and preparation to those most vulnerable to drought impacts

Resources

Agency Programs

DLCD Natural Hazard Mitigation Planning Program, OWRD Technical Services Division

Workgroups

Multihazard Mitigation Council, Drought Readiness Council, Water Supply Availability Committee, State Interagency Hazard Mitigation Team

Documents/Websites

OWRD Drought webpage
Drought.gov
Oregon's Emergency Operations Annex – Drought
Oregon's Emergency Operations Annex – Wildlands Fire
OWRD Summary, State Drought Declaration Process and Emergency Tools
Drought and Public Health
Oregon Department of Emergency Management: Local Water Supply Emergency Planning Guidance

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Natural Hazard Mitigation Planning & Extreme Events — Action 6B

Plan and Prepare for Flood Events

Lead Agencies	Supporting Agencies	Partners
DLCD, DOGAMI, ODEQ, ODFW, ODOT, OEM, OWRD	FEMA, NRCS, ODA, ODF, OHA, USEPA, USACOE	Tribes, local govt's

Background

This recommended action focuses on the public safety and emergency nature of flooding. Floodplain protection and restoration is discussed under the topics "Land Use Planning" and "Healthy Ecosystems," respectively.

Floods are one of eleven natural hazards discussed in the state's 2020 Natural Hazards Mitigation Plan (NHMP). DLCD and OEM are leading an update of the Oregon Natural Hazards Risk Assessment in 2023, and a five-year update to the NHMP that will be due in 2025. Each hazard is analyzed statewide and at a regional level. The plan contains mitigation actions, which are meant to reduce or eliminate the long-term risk to people and property from hazards. Potential funding sources for mitigation activities are included in the NHMP.

DLCD coordinates implementation of the National Flood Insurance Program (NFIP) in Oregon through an agreement with the FEMA. Almost all cities and counties in Oregon that are subject to flooding participate in the NFIP. DLCD staff provide assistance and training to local floodplain managers, property owners, surveyors, real estate agents, and others to support compliance with the NFIP.

Example Actions

- Develop indicators of flood emergency stages, using information about meteorologic, hydrologic, hydraulic, and watershed conditions
- Document the economic, social, and environmental impacts of floods
- Evaluate potential for extreme flooding, under atmospheric rivers and climate change scenarios
- Establish early flood warning systems in areas where recent drought and wildfire have affected forests and vegetation
- Complete update of precipitation frequency estimates for Oregon
- Complete the development of a statewide maximum flood document

Equity & Justice Considerations and Actions

- Prioritize resources for planning and preparation to those most vulnerable to flood impacts

Resources

Agency Programs

DLCD's Natural Hazards Program, OWRD's Dam Safety Program

Workgroups

USACE Silver Jackets Flood Risk Program, Flood Core Team, State Interagency Hazard Mitigation Team

Websites

National Flood Insurance Program

Documents

2020 Natural Hazards Mitigation Plan (NHMP)

Oregon's Emergency Operations Annex - Flood

OWRD flood inundation study (coming soon)

DRAFT

Natural Hazard Mitigation Planning & Extreme Events — Action 6C

Plan and Prepare for a Cascadia Subduction Earthquake & Tsunami Event

Lead Agencies	Supporting Agencies	Partners
DLCD, DOGAMI, ODEQ, OEM, OHA, OWRD	USEPA, NRCS, ODF, OWRD, USFS	Local Gov'ts, Oregon Environmental Council, OSU Extension Service

Background

Earthquakes and tsunamis are two of eleven natural hazards discussed in the state's 2020 Natural Hazards Mitigation Plan (NHMP). DLCD and OEM are leading an update of the Oregon Natural Hazards Risk Assessment in 2023, and a five-year update to the NHMP that will be due in 2025. Each hazard is analyzed statewide and at a regional level. The plan contains mitigation actions, which are meant to reduce or eliminate the long-term risk to people and property from hazards. Potential funding sources for mitigation activities are included in the NHMP.

Example Actions

- Follow the recommendations provided by the Oregon Seismic Safety Policy Advisory Commission in its 2013 Oregon Resilience Plan
- Evaluate and retrofit dams and other water infrastructure to meet new seismic standards
- See recommended actions in the infrastructure section of the IWRS (~~7A–7C~~ 13A – 13D)

Equity & Justice Considerations and Actions

- Prioritize resources for planning and preparation to those most vulnerable to earthquake and tsunami impacts

Resources

Agency Programs

DLCD Hazard Mitigation Planning Program, DOGAMI Geological Survey and Services Program, OWRD Dam Safety Program

Workgroups

Oregon Seismic Safety Policy Advisory Commission, State Interagency Hazard Mitigation Team

Websites

DOGAMI clearinghouse of tsunami information

Documents

2020 Natural Hazards Mitigation Plan

Oregon's Emergency Operations Annex – Earthquake

Oregon's Emergency Operations Annex - Tsunami

2020 DOGAMI Oregon Coastal Hospital Resilience Project

2013 Oregon Resilience Plan

2012 DOGAMI Earthquake Risk Study for Oregon's Critical Energy Infrastructure Hub

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Chapter 3 – Data & Research

Oregon needs foundational information to make wise decisions and pursue innovation.

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Water Quality & Quantity Information — Action 7A

Improve Water Resource Data Collection and Monitoring

Lead Agencies	Supporting Agencies	Partners
ODEQ, ODFW, OWEB, OWRD, OHA	BOR, NRCS, USGS, NOAA-NWS	Local governments

Background

The state has several water resource data collection and monitoring programs, however, the geographic scope and frequency of data collection and analysis is limited due to resource constraints and varies by agency. Real-time monitoring of surface and groundwater water is limited state-wide. On-going statewide groundwater monitoring establishes long-term data sets to evaluate climatic, seasonal, and water use impacts on aquifers, and supports active management of the resource. Additional resources are needed for monitoring and data analysis of surface water to identify more impaired waterbodies, improving the process for meeting Oregon's water quality standards for the protection of public health and aquatic life. Monitoring data are also pivotal for ensuring that water quality improvement strategies and investments, such as ecological restoration, are cost-effective and achieve the desired habitat or water quality targets.

Example Actions

- Use agencies' monitoring strategies, or similar methods, to design, expand, and maintain real-time monitoring networks for surface water and groundwater
- Prioritize basins for data collection and monitoring and increase the frequency of data collection and monitoring events
- Establish quality assurance procedures to verify the accuracy of water use and other data
- Improve agency capacity to collect and analyze data, bringing records to final form
- Implement an on-going state-wide groundwater quality monitoring program
- ~~Update water quality standards and develop additional TMDLs~~ (see Action 11C)
- Increase monitoring and evaluate the effectiveness of pollution control plans (moved from 12C)
- Increase the number of stream gages with reportable water temperature data to support water quality programs
- Help homeowners test water quality in private drinking water wells; update real estate transaction database
- Help renters test water quality in private drinking water wells
- Monitor habitat and watershed conditions and evaluate the effectiveness of restoration effort (e.g., OWEB restoration inventory)
- Establish methods for measuring ecosystem services and incorporate results into planning efforts (from 10A)

Equity & Justice Considerations and Actions

- Consider environmental justice principles when prioritizing new monitoring
- Increase resources to help homeowners and renters test water quality in private wells in rural and low-income communities
- Analyze existing water quality data for environmental justice trends

Resources

Agency Programs

ODEQ Water Quality Program, ODFW Temperature Monitoring, OWEB Restoration Inventory Program, OWRD Technical Services Division

Websites

OWEB Oregon Watershed Restoration Inventory, OWRD Water Use Report

OWRD Groundwater Information System (GWIS), OWRD Realtime Streamflow and Lake Level Data

Workgroups

Oregon Plan Monitoring Team, Water Quality Pesticide Management Team, Oregon STREAM Team, Oregon Water Data Portal Steering Committee and Oregon Water Data Portal

DRAFT

Water Quality & Quantity Information — Action 7B

Enhance Inter-Agency Data Coordination

Lead Agencies	Supporting Agencies	Partners
DSL, ODA, ODEQ, ODF, ODFW, OWEB, OWRD	BPA, DLCD, USBR, USACE, NRCS, NWS, USGS	Tribes, Local Gov'ts, SWCD's, watershed councils, OSU

Background

Federal, state, and local agencies monitor and study Oregon's waterways. This data collection and analysis is critical to the understanding and management of Oregon's surface water and groundwater resources. The lack of stable resources to maintain the state's monitoring networks, to collect and share data, to conduct studies, and to develop modeling tools presents a significant, ongoing challenge. Several years' worth of water quantity and quality data still needs to be processed, analyzed, and shared with the public and other partners.

Example Actions

- Improve ~~coordination of data sets~~ integration of federal, state, and local data collection efforts while adhering to quality control standards
- Provide resources for inter-agency data management, including data infrastructure and stewardship, as well as participation in the Open Data Portal
- Support the development and implementation of the Oregon Water Data Portal Project
- Provide inter-agency training to improve data collection standards, including manuals and technical support
- Improve data sharing and availability using on-line platforms and emerging technologies, mobile apps, and open standards
- Invest in information technology and modernization of databases and applications
- Develop or update modeling and other decision-support tools
- ~~Encourage inter-agency work among a variety of partners~~

Equity & Justice Considerations and Actions

- Improve public access to water data and provide a centralized location to access various types of water data

Resources

Agency Programs & Workgroups

DSL Waterways & Wetlands Program, ODA Agricultural Water Quality Program, ODEQ Water Quality Program, ODF Compliance Monitoring Program, ODFW Water Program, OWEB Effectiveness Monitoring Program, OWRD Surface Water Hydrology Section, OWRD Groundwater Hydrology Section

Conservation Effectiveness Partnership, Oregon Plan Monitoring Team, Water Quality Pesticide Management Team, Oregon STREAM Team, Oregon Water Data Portal Steering Committee and Oregon Water Data Portal

Documents

2017 Monitoring Strategy for Oregon's Waters: An Inter-Agency Approach

Oregon Open Data Portal

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Water Quality & Quantity Information

Action 7C

Conduct Additional Groundwater Basin Studies

Lead Agencies	Supporting Agencies	Partners
ODEQ, OWRD, USGS	DOGAMI, ODA, ODFW, OHA, USEPA, USFS	Tribes, local governments, OSU Extension Service, Universities

Background

Accurate well location and use information, and aquifer water-level data are critical for assessing groundwater resources. Oregon has a need for additional basin studies to further understand the relationship between groundwater and surface water, and their availability. Conducting groundwater investigations is a priority for the state, which typically evaluates groundwater resources at the basin scale through cooperative, cost-share programs with federal agencies.

OWRD oversees more than 20 groundwater administrative areas, which include limited or "classified" areas, critical areas, and withdrawn areas. These designations assist in preventing further water level declines. Groundwater administrative areas should be periodically evaluated to assess whether these areas are meeting the goals of groundwater stabilization, groundwater recovery, and protection of existing water users. The state needs to dedicate resources to determine whether additional areas require groundwater designations.

Example Actions

- Install and maintain dedicated state observation wells in priority basins
- Partner with ~~U.S. Geological Survey~~ USGS to conduct and cost-share additional groundwater recharge studies and basin investigations. Investigate connections between groundwater and surface water, particularly where groundwater sustains summer low flows and/or discharges cold water
- Evaluate existing and potential establishment of new groundwater administrative areas; review time-limited permits more efficiently
- Locate and document water wells, including exempt use wells, permitted wells, and unused wells
- Ensure ~~high-quality~~ groundwater level measurements are high-quality; install measuring tubes and make scheduled measurements
- Support and coordinate with ODEQ's Groundwater Monitoring Program (water quality)

Equity & Justice Considerations and Actions

- In addition to monitoring groundwater quality, data should be analyzed for environmental justice trends and impacts. A new tool being developed, the Oregon Environmental Justice Mapping Tool, would be an appropriate place to include this information.

Resources

Agency Programs

ODEQ Groundwater Protection Program and Groundwater Monitoring Program, OWRD Groundwater Monitoring Program

Workgroups

ODEQ & OWRD Groundwater Technical Advisory Team

Documents

2021 Oregon Groundwater Resource Concerns Assessment

2021 Review of Deschutes Groundwater Mitigation Program Report

2021 DOGAMI Bulletin 108 - Geology of the North Half of the Lower Crooked River Basin, Crook, Deschutes, Jefferson, and Wheeler Counties, Oregon

Data

OWRD Groundwater Information System (GWIS)

DRAFT

Water Quality & Quantity Information

Action 7D

Support Basin-Scale Climate Change Research

Lead Agencies	Supporting Agencies	Partners
DLCD, ODA, ODEQ, ODFW, OWRD	DOGAMI, NOAA, NRCS, USFWS, OWEB	Tribes, OSU, OCCRI, Oregon Climate Action Commission

Background

Many local, state, federal, and tribal governments are conducting climate change research, identifying and assessing risks, and developing actions specific to the Pacific Northwest. Several of Oregon's drainage basins have been the focus of these research efforts, which aid water managers and natural resources agencies in developing strategies for addressing climate-related impacts on water quality, water quantity, and ecosystem health.

Example Actions

- Make improvements in surface water and groundwater monitoring, flood and drought frequency projections, and long-range forecasts
- Improve climate change projections at the basin-scale
- Develop reliable projections of basin-scale hydrology and associated impacts on built and natural systems, including aquatic species and habitat
- Analyze how instream and out-of-stream water rights will fare with hydrologic changes
- Investigate potential shifts in the hydrograph and impacts to agriculture and irrigation seasons
- Investigate new crop types suitable to a changing climate
- Investigate increased risks to water supply infrastructure associated with wildfires, particularly in environmental justice communities
- Finalize and implement ODFW's Aquatic Habitat Prioritization assessment

Equity & Justice Considerations and Actions

- Reference Oregon's Climate Change Vulnerability Assessment (being led by DLCD), and Drought Vulnerability Assessment (being led by OWRD)
- Include an assessment of vulnerable water supply systems and identify those in environmental justice communities
- Consider the increased risk to water infrastructure by wildfire in environmental justice communities
- Look for equity impacts of climate change (i.e., climate justice)

Resources

Agency Programs

DLCD Natural Hazards, ODA Natural Resources, ODEQ Water Quality, ODFW Water Program, OWRD Field Services and Technical Services Divisions

Policies

ODFW's Climate Policy

Workgroups

OWEB's Climate and Water Committee, Climate Impacts Research Consortium

Documents

2022 State of Water Justice Report

2021 Oregon's Climate Change Adaptation Framework & Equity Blueprint

DRAFT

Water Quality & Quantity Information — Action 7E

Identify Ongoing Water-Related Research Needs & Partnerships

Lead Agencies	Supporting Agencies	Partners
DLCD, ODA, ODEQ, ODF, ODFW, ODOE, OWRD	DOGAMI, NOAA, OWEB	Tribes, local governments, OSU Extension Service, public & private research institutions

Background

As tribes and state agencies conduct their existing data and research duties, they encounter data gaps and are well positioned to identify additional research questions. Tribes and state agencies should partner on defining and leading these research initiatives. When appropriate, they may seek support from public and private research institutions, with a focus on ensuring the research can be effectively applied to practical management efforts.

Example Actions

- Continue to identify ongoing research needs at the local and state level
- Partner with Tribes, public and private institutions to address research needs
- Participate in research initiatives

Equity & Justice Considerations and Actions

- Consider research initiatives that would address frontline communities' environmental and climate justice challenges

Resources

Agency Programs

ODA Natural Resources Program, ODEQ Water Quality Program, ODFW Water Program, OWRD Surface and Groundwater Water Programs

Workgroups

Climate Impacts Research Consortium

Documents

2021 Oregon Climate Change Adaptation Framework

Oregon Climate Equity Blueprint

DRAFT

Out-of-Stream Water Needs

Action 8A

Regularly Update Long-Term Water Demand Forecasts

Lead Agencies	Supporting Agencies	Partners
ODEQ, ODFW, OWRD	DLCD, DOGAMI, ODA	Tribes, local govt's, municipal water providers

Background

There is a need to understand how the demand for water, across many use sectors, is projected to change over time. This can help inform planning and infrastructure decisions to anticipate these demands.

The state should regularly update its fifty-year forecast of water needs across all sectors. Such a forecast includes identifying trends in water use, economic development, urban-rural population growth/shift, per capita demands, and changing crop water requirements due to a changing climate.

Example Actions

- Periodically update demand projections with new population, per capita water demand, industrial demand, crop water use, and climate projections
- Develop models/studies to quantify the economic, social, and cultural value of consumptive uses of water
- Employ remote sensing to improve crop water use estimates

Equity & Justice Considerations and Actions

- Consider environmental justice and other frontline communities in demand forecasts

Resources

Agency Programs & Workgroups

OWRD's Planning, Collaboration, & Investment Section, OWRD Technical Services Division

Documents

2015 Statewide Long-Term Water Demand Forecast

DRAFT

Out-of-Stream Water Needs

Action 8B

Improve Water-Use Measurement and Reporting

Lead Agencies	Supporting Agencies	Partners
OWRD	ODEQ, ODFW	Water rights holders

Background

Objective water management decisions are made possible when they are based on reliable information about water use. Availability of water use data is fundamental to ensure efficient water management, effective water distribution, and to help plan for future water needs. The information is also used to ground-truth demand projections or models. The Water Resources Department has the authority to require new users to measure and report water use and can require existing users who already measure water use to report the resulting data. Water users who keep track of their use are better able to demonstrate the validity of their water rights, to develop water management and conservation plans, and to determine the design and funding needs of their future water systems.

Example Actions

- Continue to improve the software and tools used for water-use measurement and reporting
- ~~Improve the state's~~ Implement new authority that allows OWRD to require reporting of water use, where measurement is required
- Update and implement the Water Resources Commission's Strategic Measurement Plan, measuring significant diversions
- Coordinate the Water-Use Reporting Program and Water Resource Commission's Strategic Measurement Plan
- Provide resources to assist with installation of measurement devices; update cost-share program

Equity & Justice Considerations and Actions

- Include equity considerations for assistance through measurement cost share programs

Resources

Agency Programs & Workgroups

OWRD Water-Use Reporting Program, OWRD Water Use Measurement Cost Share Program

Documents

2022 OWRD Legislative Report on Water Use Measurement and Reporting

2000 Oregon Water Resources Department Strategic Measurement Plan

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Instream & Ecosystem Water Needs — Action 9A

Determine Flows Needed (Quality and Quantity) to Support Instream Needs

Lead Agencies	Supporting Agencies	Partners
ODEQ, ODFW, OPRD, OWRD	BPA, NOAA, ODA, ODF, ODSL, OWEB, USACE	Tribes

Background

Oregon's water resources directly support the habitat needed for species to live and thrive. Our rivers and streams, lakes, reservoirs, aquifers, wetlands and estuaries all contribute greatly to our economy and health. Without adequate water supply, instream uses and their associated economic and ecological benefits are greatly diminished. Instream flows are also critical for supporting Tribes' access to First Foods. To improve protection of instream needs (Action 10B), streamflow prescriptions must first be established that describe the duration, timing, frequency, and volume of flows required year-round to maintain the biological, ecological, and physical functions of the river or stream. Additional studies on year-round instream demand statewide are needed.

Example Actions

- ~~Prioritize and install gages in additional locations to monitor the status of instream flows and water rights~~
- ~~Identify~~ Prioritize basins ~~with listed species~~ and install monitoring equipment to help characterize the full suite of flows through these basins
- Conduct instream needs studies, such as ~~base flow studies and elevated~~ ecological and environmental flow requirements or prescriptions
- Update ODFW Rules (OAR 635-400; last modified in 1989) to reflect ecological and environmental flow requirements
- Pursue a consistent, model-based framework for characterizing long-term instream demand and integrate projections of future climate for planning purposes
- Develop models/studies to quantify the economic, social, and cultural value of instream uses
- Support state agency instream flow efforts and programs (e.g., ODFW, ODEQ, OPRD)
- Support ODFW and ODEQ collaboration regarding temperature modeling

Equity & Justice Considerations and Actions

- Support Tribal access to First Foods
- Support access to water for spiritual and recreational opportunities

Resources

Agency Programs

ODEQ Water Quality Program, ODFW Water Program, OWRD Water Rights Division, OWRD Technical Services Division

Workgroups

Oregon STREAM Team

Policies

Oregon's Instream Water Right Act

Documents

Oregon Plan for Salmon and Watersheds

2023 ODFW Guidance for Determining Instream Flow Needs

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Instream & Ecosystem Water Needs

Action 9B

Determine Needs of Groundwater-Dependent Ecosystems

Lead Agencies	Supporting Agencies	Partners
ODEQ, ODFW, OWRD	DLCD, DOGAMI, ODF, USFS, USFWS, USGS	Tribes, The Nature Conservancy

Background

Groundwater is vital to both ecosystems and human communities, as groundwater discharges and supplies water to wetlands, rivers, and lakes. Groundwater provides late-summer flow for many rivers, and creates cool-water upwellings critical for aquatic species during the warmer summer months. Groundwater-dependent ecosystems contain species and habitats that rely on groundwater for some or all of their life cycle. These ecosystems form the interface between groundwater and surface water, and due to their unique hydrology, often harbor many rare species native only to these locations. Groundwater-dependent ecosystems still need to be fully identified and characterized across the state, including their groundwater quantity and quality requirements.

Example Actions

- Identify and characterize groundwater-dependent ecosystems
- ~~Quantify~~ Identify the water quantity and water quality needs of groundwater-dependent species and ecosystems

Equity & Justice Considerations and Actions

- Consider environmental justice and community co-benefits of groundwater ecosystems

Resources

Agency Programs

ODEQ Water Quality Program, ODFW Water Program, ODFW Technical Services Division

Documents

Online mapping tool by The Nature Conservancy, Global Groundwater Dependent Ecosystems

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Instream & Ecosystem Water Needs — Action 9C

Analyze the Effects on Water from Energy Development Projects and Policies

Lead Agencies	Supporting Agencies	Partners
ODOE, ODEQ, ODFW	BPA, DLCD, NOAA, OWRD, USACOE	Tribes, Public Utility Commission, Oregon Climate Action Commission

Background

Future energy projects have the potential to impact both water quantity and quality. The development of renewable power systems to achieve a cleaner energy mix and new economic opportunities brings with it as-yet-unquantified demands for water. An analysis of water demands for water-intensive energy development projects and policies in each energy sector is needed. This analysis would provide a better scientific understanding of the state's future water commitments.

Additionally, careful considerations must be made regarding impacts to water quality. Historic hydroelectric energy development practices negatively impacted water quality and limited fish passage.

Example Actions

- Analyze the water demand and water quality impacts of current and proposed energy development projects (hydroelectric, solar, wind, geothermal, bio-energy, and natural gas) in the context of climate change and greenhouse-gas reduction strategies

Equity & Justice Considerations and Actions

- Consider where impacts to water quantity and quality associated with new energy projects will be experienced

Resources

Agency Programs

ODOE Energy Planning & Innovation Division, ODEQ Water Quality Program, ODEQ Section 401 Hydropower Program, ODFW Hydropower Program, OWRD Hydroelectric Program

Workgroups

Hydroelectric Application Review Team (ODEQ, ODFW, OWRD)

Documents

2022 ODOE's Biennial Energy Report

2021 Oregon's Climate Change Adaptation Framework

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Chapter 4 – Water Use & Management

Oregon must secure its water future through active management and stewardship of its resources.

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Lead Agencies	Supporting Agencies	Partners
ODA, ODEQ, ODF, ODFW, ODSL, OWEB	BPA, BLM, USBR, NRCS, OPRD, OWRD, USFS, USFWS	Tribes, Watershed Councils, SWCD's, Local Gov'ts,

Background

Protecting and restoring ecological function to Oregon's watersheds supports adaptation to disturbance and climate change, provides habitat, protects water quantity and quality, and supports Tribal access to First Foods. Riparian areas, floodplains, wetlands, estuaries, and uplands have all been significantly modified by human activities over the last 150-200 years. Projects to provide benefits such as flood control, irrigation, navigation, hydropower, recreation, and municipal water supply have yielded negative consequences by degrading water quality and habitat and reducing floodplain connectivity and natural storage capacity. Uplands, including forests and oak savanna's, have been significantly modified by development, fire suppression, and logging. Upland protection and responsible management can contribute to Oregon's economy, high-quality drinking water, habitat, carbon storage, and climate change resilience.

Example Actions

- Improve riparian conditions to provide habitat and ~~protect~~ create a healthy buffer between sensitive aquatic ecosystems and adjacent land use and development ~~and terrestrial ecosystems~~
- Restore meadows, wetlands and connectivity to side channels and floodplains to maintain critical functions like processing nutrients, providing habitat, and storing water
- Protect estuarine conditions to maintain ~~a healthy buffer between~~ the natural mixing of freshwater and marine systems
- ~~Establish methods for measuring ecosystem services and incorporate results into planning efforts~~ (moved to 7A)
- Protect and restore beaver habitat and beaver-modified habitat
- Protect and restore riparian-floodplain vegetative communities
- Restore areas to allow for safe tidal inundation to build resiliency for sea level change and flooding
- Implement actions to protect and maintain source water quality in upland and forested areas
- Collaborate with Tribes to prioritize locations targeted for protection and restoration and restore access to First Foods
- Explore juniper removal where applicable

Equity & Justice Considerations and Actions

- Invest in restoration projects led by tribes, low-income communities, and communities of color to discover new approaches and best management practices that meet community goals for clean water
- Degraded watersheds inhibit the ability of Tribes to safely access First Foods
- Frontline communities face disproportionate impact from waterway pollution
- Consider climate justice impacts including displacement from flooding, risk of harm from extreme temperatures, and wildfire exposure

Resources

Agency Policies, Programs & Workgroups

Forest Practices Act, Private Forest Accord, ODFW's Climate and Ocean Change policy, OWEB Grant Programs, ODFW's Water Program, Oregon Conservation and Recreation Fund

Documents

Oregon's Conservation Strategy
Oregon Plan for Salmon and Watersheds
Oregon's Agriculture Water Quality Management Plans (38 total)
The Beaver Restoration Guidebook
ODFW's 3-Year Action Plan for Beaver-Modified Landscapes August 2022 – 2025

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Healthy Ecosystems

Action 10B
Develop Additional Instream Protections

Lead Agencies	Supporting Agencies	Partners
ODEQ, ODFW, OPRD, OWRD	DOGAMI, ODSL, NOAA	Tribes, private landowners, The Freshwater Trust, Deschutes River Conservancy, Trout Unlimited

Background

In many areas of Oregon, streamflows are very low or even non-existent during late summer months, associated with water withdrawals for irrigation, drinking water, industrial processes, hydropower, and other beneficial uses. During a drought, low or no-flow conditions can extend for many months of the year, threatening aquatic species' short and long-term survival. Low streamflows often mean higher water temperatures and increased nutrient concentrations, contributing to poorer water quality. During the winter, high flows are necessary to maintain fish habitat and trigger migration.

Oregon needs to support necessary streamflows by developing additional instream protections, securing instream water rights, and exploring other voluntary programs that result in flow restoration (e.g., instream transfers and leases, and allocation of conserved water). Three agencies—the Department of Environmental Quality, Department of Fish and Wildlife, and Parks and Recreation Department—have the authority to submit applications for instream water rights to the Water Resources Department. Voluntary partnerships with senior water right holders will continue to be a valuable path towards increasing instream flows.

Example Actions

- Designate Scenic Waterways where needed to protect recreation, fish, and wildlife uses
- Designate Outstanding Resource Waters where needed to protect extraordinary water quality or ecological values
- Establish additional instream water rights where needed to protect the full suite of flows for fish and wildlife, water quality, recreation, and scenic attraction
- Expand education and use of voluntary programs to protect and restore streamflow, lake levels, and cold water refugia
- Expand the geographic range of flow restoration efforts by identifying flow restoration priorities and focusing resources to priority areas
- Develop strategies to increase collaboration between water use sectors, particularly instream and out-of-stream users

Equity & Justice Considerations and Actions

- The ability to keep water instream, through exercising of senior water rights or other methods, relates directly to the ability of indigenous communities to meet their rights to access First Foods.

Resources

Agency Policy, Programs & Workgroups

Scenic Waterway Act, Outstanding Resource Waters designation, Oregon's Instream Water Rights Act, Oregon's Allocation of Conserved Water Act

OWRD Allocation of Conserved Water Program
OWRD Instream Transfer Program
OWRD Instream Leasing Program

Documents

Oregon Plan for Salmon and Watersheds

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Lead Agencies	Supporting Agencies	Partners
ODA, ODF, ODFW, OSMB	USDA, USFS	Tribes, OSU Extension Service

Background

According to the Oregon Invasive Species Council, an invasive species is a non-native species that can cause economic or environmental harm or cause harm to human health. It can be a plant, animal, or any other microorganism that enters an ecosystem beyond its native range. Invasive species disrupt the natural function of an ecosystem by competing and replacing native species and disrupting the natural habitat.

Oregon experiences threats from invasive species in both aquatic and terrestrial ecosystems. Aquatic invasive species can flourish in waterways, reducing water quality, choking out native plants, and clogging boat, hydropower, and irrigation infrastructure. Native plant species in riparian and wetland areas adjacent to waterways are also under threat, limiting their capacity to provide benefits such as shade, shelter, and food. Invasive species can also impact the health of uplands, where well-managed forests are critical to protecting source water quality. Both agriculture and forestry industries require ongoing, consistent program support to identify and eradicate invasive species.

Example Actions

- Support and continue funding for the Aquatic Invasive Species Prevention Program
- Identify and implement projects to support the Oregon Conservation Strategy's seven statewide actions to prevent new introductions, and decrease the scale and spread of infestations
- Continue to implement and enforce ballast water management regulations
- Provide technical assistance for invasive species detection and eradication on agricultural and forestlands
- Continue funding for invasive species eradication and native species restoration efforts (also see 10A)

Equity & Justice Considerations and Actions

- Consider impacts of invasive species on culturally significant plants, animals and ecosystems

Resources

Agency Programs

ODA's Insect Pest Prevention and Management Program, ODF's Conservation Program, ODFW & OSMB's Aquatic Invasive Species (AIS) Prevention Program, ODF's Bark Beetle Mitigation Program

Workgroups

Oregon Invasive Species Council

Websites

ODA Noxious Weed Profiles
ODA Insect Pest Alerts
USDA National Invasive Species Information Center

Documents

Oregon Conservation Strategy

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Lead Agencies	Supporting Agencies	Partners
ODEQ, ODFW, ODOT, OWEB, OWRD	USBR, BPA, USDA-NRCS, USBLM, Nat'l Fish & Wildlife Fund, USEPA, SFS, USFWS, NOAA	Tribes, private landowners, watershed councils, SWCD's

Background

Changes in the hydrologic regime, older culverts, and many dams or other impassible barriers have greatly reduced historically accessible habitat for many aquatic species. Additionally, the quality of habitat has been degraded by modifications to rivers and streams including channelization, large woody debris and riparian vegetation removal, and bank instability exacerbated by livestock access.

Without an appropriate fish screen, water diversions allow fish living in streams to be diverted with the water into fields, ditches and machinery with no chance to escape. Fish screens prevent fish mortality and injury at water diversions while still allowing the water to be delivered to its place of use. Appropriate fish screening and fish passage barrier removal should be coupled with stream restoration efforts to improve habitat conditions.

Example Actions

- Continue to update the inventory of fish passage barriers and high priority screening sites
- Remove fish passage barriers and support fish screening efforts
- Build upon existing ecological planning and restoration efforts by incorporating fish screening and passage needs
- Update streamflow restoration priority areas using new species distribution and climate change information
- Incentivize voluntary flow restoration projects
- Ensure water diversions have appropriate mechanisms to protect fish and allow passage when necessary
- Restrict livestock access to streambeds through fencing efforts

Equity & Justice Considerations and Actions

- Environmental justice considerations include the restoration of First Foods for indigenous communities. Degraded instream habitat and fish passage barriers contribute to the decline of salmonids and other aquatic species.

Resources

Agency Programs

Oregon's Fish Screening and Cost Sharing Program, ODFW Fish Screening and Passage Program, ODFW Water Program, OWRD Dam Safety Program, ODOT Environmental Program

Documents

Oregon Plan for Salmon and Watersheds
Oregon Conservation Strategy
Northwest Power and Conservation Council's Strategy for Salmon
2020 ODOT's Routine Road Maintenance: Water Quality and Habitat Guide Best Management Practices

Funding

ODFW's Oregon's Fish Screening and Passage Cost Sharing Program, OWEB's Focused Investment Partnerships
Many Federal Sources: USDA-NRCS, USBLM, NFWF, USEPA, USFS, NOAA, BPA

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Lead Agencies	Supporting Agencies	Partners
ODEQ, OWRD	DLCD, DOGAMI, ODFW	Tribes, Local Gov'ts,

Background

Groundwater discharge contributes to springs, wetlands, and streamflow throughout the state. Contributions from groundwater support ecosystems and human systems alike. Protecting groundwater from over-use or contamination benefits groundwater-dependent ecosystems as well as senior water rights.

All groundwater in the state is a potential drinking water source and should be protected from untreated stormwater, pesticides, nitrates, chemicals and chemical spills, coliform bacteria from improperly maintained septic systems, and other forms of contamination. Actions 11A-11C, 13A address specific ways to prevent these sources of contamination.

Example Actions

- ~~Develop a long-term plan~~ Implement actions for sustainable groundwater management through both voluntary, incentive-based, and regulatory means
- Develop clear objectives for monitoring groundwater quality and quantity and metrics
- Identify and prioritize important tasks and sketch out the necessary timelines, staffing, and resource needs
- Protect groundwater through proper well construction (also see Actions 11A, 13A)

Equity & Justice Considerations and Actions

- Groundwater contamination continues to be an environmental justice concern in Oregon. Frontline communities are experiencing unsafe drinking water, with potentially serious health consequences.
- Climate justice – consider water quantity and quality impacts to drinking water supplies as droughts persist, such as domestic wells drying up, or degraded water quality.

Resources

Agency Programs

ODEQ Water Quality Program, OWRD Technical Services Division, OWRD Policy Section

Agency Policies

The Groundwater Act of 1955, Areas of Groundwater Concern, Groundwater Management Areas

Documents

2019 ODEQ Groundwater Quality Protection in Oregon

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Lead Agencies	Supporting Agencies	Partners
ODEQ, OHA, OWRD	USEPA, ODA, ODF	Tribes, local governments, municipalities

Background

Whether people obtain their drinking water from a private well, a small community system, or a large municipal system, the original source of that water is from groundwater or surface water (or a combination of the two). Therefore, the means for protecting the safety of Oregon's drinking water includes protecting those sources. The unfortunate reality, however, is that groundwater and surface water are vulnerable to contamination from many potential threats.

Additionally, the municipalities, utilities, and small water systems that deliver drinking water to people face increasing challenges for the safe treatment of groundwater and surface water. Climate change contributes to decreases in supply, increases in contaminant concentrations, and the potential for harmful algal blooms (HABs). Increased resources for monitoring source waters and infrastructure maintenance and upgrades are key to ensuring safe drinking water delivery.

Example Actions

- Assist drinking water systems of all sizes; increase resources for small water systems (less than 15 connections)
- Protect drinking water sources through restoration and land acquisition
- Increase understanding of occurrence and health implications of contaminants of emerging concern
- Encourage water providers to join the Oregon Water/Wastewater Agency Response Network
- Increase domestic well testing and provide updated support materials and education (including translations, when needed)

Equity & Justice Considerations and Actions

- Information regarding water quality needs to be made available to renters (using a domestic well) and may also need to be translated so that non-English speakers can understand their risks
- Oregon's Environmental Justice Council is developing an EJ Mapping tool
- Frontline communities facing current water quality challenges may experience an increase in frequency or intensity associated with climate change

Resources

Agency Programs

ODA's Agriculture Water Quality Program, OHA/ODEQ Drinking Water Protection Program, ODEQ's Underground Injection Control Program, OHA's Drinking Water State Revolving Fund, ODFW's Land Resources and Regional Habitat Program, upcoming OWEB grants for source water protection

Workgroups

Drinking Water Advisory Committee

Policies

Safe Drinking Water Act, Private Forest Accord, Forest Practices Act

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Lead Agencies	Supporting Agencies	Partners
ODA, ODEQ, ODF, ODFW, ODSL, OHA, OWEB	DAS, ODOT, USEPA	OSU, PSU, local governments, farmers and farmworkers

Background

Protecting public health and the environment from the impacts of toxic pollutants for all Oregonians is a top priority for ODEQ with regard to air, water, and land. Thousands of toxic chemicals are in products that individuals and businesses use daily. Old chemicals that may not be sold today but are stored in homes, schools, and businesses also pose risks. Whether used in their raw form or in products, these chemicals can be released into Oregon's air, water, and land as toxic pollutants in a variety of ways. Once in the environment, toxic pollutants can adversely affect the health of people and other living organisms.

Example Actions

- Update and implement the Department of Environmental Quality's 2018 Toxics Reduction Strategy
- Implement green chemistry executive order, including revising purchasing practices related to toxic chemicals
- Implement Water Quality Pesticide Management Plan
- Support Pesticide Stewardship Partnerships
- Continue "take back programs" and develop partnerships with community-based organizations and Tribes to facilitate culturally relevant "take back programs"
- Continue to identify and address hazardous or contaminated sites, including brownfields and abandoned, derelict vessels
- Prevent blue-green algae (including Harmful Algal Blooms or HABs) from forming beyond natural background levels
- ~~Update the 2011 Harmful Algal Bloom Strategy to reflect current climate, health, and equity factors and priorities~~ Support implementation of the 2023 ODEQ Freshwater Cyanobacteria Harmful Algal Bloom Strategy
- Monitor recreational waters and inform the public when contaminants are present. Improve communications about advisories to better reach non-English speaking, low-income, Tribal, and rural residents and businesses

Equity & Justice Considerations and Actions

- Toxic pollutants that affect air, land, and water quality intersect with and become cumulative and disproportionate environmental justice impacts to frontline communities
- Take steps to engage historically or currently impacted frontline communities in design of clean-up efforts so that they can experience the benefits of the effort, such as utilizing Community Benefits Agreements.

Resources

Agency Programs

ODA Agricultural Water Quality Management Program, ODEQ Leaking Underground Storage Tank Program, Oregon Beach Monitoring Program, and Total Maximum Daily Load Programs, ODOT's Spill Prevention, Control and Countermeasure Program, ODSL's Abandoned and Derelict Vessels Program

Policies

Executive Order No. 12-05 ("Environmentally Friendly Purchasing and Product Design")

Workgroups

Abandoned and Derelict Vessels Workgroup, Water Quality Management Team, Legislative Policy & Research Office Harmful Algal Bloom Workgroup, Pesticide Stewardship Partnership, Coordinated Streamside Management (includes Strategic Implementation Areas or SIA's)

Documents

2023 ODEQ Freshwater Cyanobacteria Harmful Algal Blooms Strategy
2018 ODEQ Toxics Reduction Strategy
Oregon's Water Quality Pesticide Management Plan
2020 ODOT's Routine Road Maintenance: Water Quality and Habitat Guide Best Management Practices

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Lead Agencies	Supporting Agencies	Partners
ODA, ODEQ	ODFW, ODOT, ODSL, NRCS	Tribes, private landowners, Local governments, SWCD's

Background

It is important to continue developing and implementing Total Maximum Daily Load (TMDL), or clean water plans, for waterbodies that do not meet Oregon water quality standards. This includes developing TMDLs for the remaining waterbodies and pollutants on Oregon's 303(d) impaired waters list and for those added in the future, in accordance with the federal Clean Water Act. It also includes reviewing and updating existing TMDLs and providing oversight to ensure that implementation measures are effective. Oregon needs to ensure the effective management and oversight of stormwater in urbanized areas through the implementation of MS4 permits, TMDL Implementation Plans for Urban Designated Management Agencies, best management practices, or comparable voluntary plans.

Nonpoint sources of pollution, or pollution that does not come directly from a pipe, includes runoff from agricultural, forest, and ranching activities, construction sites, home landscaping, and road surfaces. The ODEQ Nonpoint Source Pollution Program's addresses these sources of pollution using water quality management programs in conjunction with regulatory and voluntary compliance and financial and technical assistance.

State law provides DEQ with regulatory authority over onsite sewage treatment and disposal. More than one million Oregonians, or about 35 percent of the state's population, use on-site sewage systems, also known as septic systems. Most of these are single-family homes in rural areas without access to municipal sewer systems. A failing septic system increases the risk of contamination of both surface water and groundwater and can be a public health hazard.

Example Actions

- Continue to develop and implement TMDLs for water bodies that do not meet water quality standards
- Continue to update and revise TMDLs to conform with current temperature standards
- Continue to work with Designated Management Agencies, as defined in each TMDL, to achieve water quality standards
- Continue to address nonpoint sources of pollution across all land uses
- ~~Increase monitoring and evaluate the effectiveness of pollution control plans~~ (moved to 7A)
- Ensure effective management and oversight of stormwater in urbanized areas
- Assist communities with septic system challenges

Equity & Justice Considerations and Actions

- Review TMDL prioritization process to ensure geographic equity among places with a completed and approved TMDL
- Septic and infrastructure impacts, costs of individual septic systems etc.
- Potential impacts to communities as part of the water quality management plan portion of a TMDL

Resources

Agency Programs

ODA Natural Resources Program, ODEQ Total Maximum Daily Load, Nonpoint Source Pollution, Water Quality Permitting, and Onsite Wastewater Management Programs

Policies

Forest Practices Act, Private Forest Accord

Documents

Agricultural Water Quality Area Plans (38 total)
Water Quality Management Plans (and implementation plans for an approved TMDL)

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Water Use & Management

Action 12A

Determine Unadjudicated Water Rights Claims

Lead Agencies	Supporting Agencies	Partners
OWRD	USBR, ODEQ, ODFW	Tribes, private landowners

Background

In many parts of Oregon, landowners began using water long before the Oregon Water Code was enacted. Passage of the Water Code by the Legislature in 1909 established, for the first time in Oregon, a centralized administrative system for acquiring rights to the use of surface water. These water rights are managed within a prior appropriation system of water allocation. Similar actions were taken for groundwater in the 1955 Groundwater Act. Court cases over the years have further established federal and tribal "reserved" water rights.

Adjudications may be conducted to determine pre-1909 Water Code surface water rights, and pre-1955 Groundwater Act groundwater rights, as well as federal and tribal reserved water rights. The ability to manage water resources has been greatly facilitated in those areas of the state where adjudications have been concluded. Adjudicating water right claims creates an enforceable system that is protective of senior users in times of shortage. Without the adjudication process, these claims cannot make calls for their water or take advantage of water management tools, such as transfers or leases.

The remaining unadjudicated areas for surface water consist primarily of river basins located west of the Cascades. Only one groundwater adjudication has been conducted; groundwater adjudications are still needed in most parts of the state. In addition, federal and tribal reserved water rights still have not been determined in many basins that have been adjudicated. Tribes play an important role in the resolution of water rights claims in basins throughout the West. The need to resolve tribal and federal rights in Oregon is real and significant.

Example Actions

- Conduct surface water and groundwater adjudications
- Settle federal reserved claims, including tribal claims

Equity & Justice Considerations and Actions

- Tribes' ability to exercise senior water rights impacts their ability to steward water resources and access First Foods

Resources

Agency Programs & Workgroups

OWRD's Water Rights Program

Documents

Water Rights in Oregon

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Lead Agencies	Supporting Agencies	Partners
ODA, OWEB, OWRD	ODEQ, ODOE, USBR, NRCS	Utilities, municipalities, Irrigation Districts, farmers, ranchers

Background

One of the more widely recognized approaches to managing demand for water—and stretching supplies of water— is water conservation. Water conservation, as defined in state law, is a means of eliminating waste or otherwise improving the efficiency of water use by modifying the technology or method of diverting, transporting, applying or recovering water.

The state lacks a comprehensive program to lead a coordinated approach to conservation across multiple water use sectors. Such a program is needed to provide a central point of guidance, technical assistance, and information regarding existing incentives or funding resources. Developing such a program could include creating a user-friendly website, conservation materials for use by public and private partners, an on-line clearinghouse that highlights best management practices, funding, and technical resources.

Example Actions

- Establish a comprehensive water-use efficiency and conservation program that provides incentives and technical assistance to water users in all sectors
- Conduct a statewide water conservation potential assessment, considering high priority water management, or instream and out-of-stream needs
- Prioritize agricultural water-use efficiency and conservation projects
- Develop an outreach strategy to expand participation in already-existing water-use efficiency and conservation programs
- Develop outreach materials, a user-friendly website, and online clearinghouse that highlights best practices, funding, and technical resources

Equity & Justice Considerations and Actions

- Ensure disadvantaged communities are not overburdened by mandatory or voluntary water conservation measures

Resources

Agency Programs

OWRD's Water Management and Conservation Planning Program, OWRD's Allocation of Conserved Water Program

Funding

OWRD's Grants & Loans Program, Statewide Irrigation Modernization Program, USBR's Water and Energy Efficiency Grants

Resources

Alliance for Water Efficiency

Water Research Foundation

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Water Use & Management

Action 12C

Improve Access to Built Storage

Lead Agencies	Supporting Agencies	Partners
ODEQ, ODFW, OWRD	ODA, USFWS, USBR, USACOE	Local Gov'ts, Utilities, Irrigation Districts

Background

Built storage has the potential to extend access to water for both instream and out-of-stream uses during dry summer months and provide resilience in the face of climate change. The Oregon Water Resources Department can authorize storage in reservoirs or ponds through the water right permitting process. The state has a storage policy that acknowledges that both structural and nonstructural methods should be used in Oregon to store water, with preferences for storage that optimize instream and out-of-stream public benefits and beneficial uses. In 1993, the Oregon Legislature codified the state's policy regarding water storage facilities, declaring it a high priority to develop environmentally acceptable and financially feasible multipurpose storage projects, and to enhance watershed storage capacity through natural processes using non-structural means (e.g., floodplain restoration). Restoration activities, which accomplish many other benefits besides natural storage, are outlined in Action 10A.

Below ground storage options include aquifer storage and recovery, and artificial recharge.

Example Actions

- Encourage increased use of below-ground storage sites
- Assess and make improvements to the Aquifer Storage and Recovery and Artificial Recharge Programs to promote and increase the use of this tool
- Re-allocate water in federal reservoir systems that have not undertaken formal allocation processes in Oregon
- Investigate potential off-channel sites for above-ground storage projects
- Evaluate the status of storage infrastructure, including the maintenance and rehabilitation needs of reservoirs, and potential for expanding existing storage capacity
- Investigate the use of existing reservations of water during planning efforts

Equity & Justice Considerations and Actions

- Consider equity, environmental justice, and water insecurity in the prioritization of storage sites

Resources

Agency Programs & Workgroups

BIZOR's Aquifer Recharge Due Diligence Grant and Forgivable Loan Program

Documents

2009 OWRD Inventory of Potential Below Ground Storage Sites

DRAFT

Water Use & Management

Action 12D

Encourage Water Reuse Projects

Lead Agencies	Supporting Agencies	Partners
ODEQ, OWRD	OHA, ODFW, OWRD, Dept of Consumer & Business Services	Tribes, local governments, Recode, utilities

Background

Water reuse is the practice of treating "used" water (or effluent) and making it available for another beneficial use. Examples include treating municipal wastewater effluent for use as irrigation for a golf course or treating and reusing water within a closed loop (e.g., industrial data center cooling). When considering water reuse, it is most cost effective to match the correct level of treatment to the planned secondary use of the water.

Reusing water can provide many benefits to both water quantity and quality. It can provide a benefit to water quantity by reducing the demand on municipal water sources. In general, recycled water places fewer demands on freshwater, leaving more water instream or in the ground for other uses. However, there is potential for reuse projects to negatively impact a waterway. For example, when treated water that normally goes into a stream, others may rely on that water or it may support instream values. Therefore, specific situations must be evaluated for impacts to instream quality and quantity.

Example Actions

- Conduct a statewide assessment of the potential for additional water reuse, considering impacts and benefits to water quantity and quality
- Ensure that state agencies coordinate and communicate various policies, procedures, and regulations to facilitate reuse projects
- Provide incentives to increase and track water reuse
- Develop technical assistance capacity to promote and inform water reuse practices and projects
- Complete evaluation and updates of water reuse programs as required in 2023 legislation

Equity & Justice Considerations and Actions

- Evaluate who benefits, or is negatively impacted by, reuse projects

Resources

Agency Programs & Workgroups

ODEQ's Water Reuse Program, OWRD's Reclaimed Water Program

Funding

ODEQ Clean Water State Revolving Fund, OWRD Water Projects Grants and Loans

Websites

Recode, frequently asked questions about reuse alternatives

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Water Use & Management

Action 12E

Reach Environmental Outcomes with Non-Regulatory Alternatives

Lead Agencies	Supporting Agencies	Partners
ODA, ODEQ, ODF, ODFW, OWEB, OWRD	ODSL, USEPA	Tribes, local governments, SWCD's, watershed councils

Background

Water conservation, storage, and reuse are a set of traditional tools for meeting water needs. These traditional water supply tools are used in conjunction with state and federal regulatory tools that protect water resources for future generations. Today, however, we also need to consider less traditional approaches to meeting our collective and often competing demands for water and consider holistic strategies to meet water quality, water quantity, and ecosystem needs. These alternatives require strong partnerships with senior water users. Potential solutions include voluntary actions by water users that often include technical assistance from agencies.

Example Actions

- ~~Assist in the~~ Research and develop~~ment of~~ voluntary, non-regulatory tools to meet environmental outcomes
- Continue to develop water quality trading programs
- Develop protocols for translating streamflow restoration into credits and accounting strategies
- Investigate and establish incentives for voluntary efforts to reach environmental outcomes
- Develop an outreach strategy for informing the public about non-regulatory alternatives
- Support agencies to provide technical assistance regarding voluntary efforts
- Develop a voluntary agreement framework (O.R.S. § 537.745) for water right holders
- Partner in implementation of federal Conservation Reserve Enhancement Programs

Equity & Justice Considerations and Actions

- Identify who benefits from improved environmental outcomes

Resources

Agency Programs

ODA Strategic Implementation Areas, ODF & ODA Stewardship Agreement Program, ODEQ Water Quality Trading Rules, ODFW Grant and Tax Incentive Programs, OWEB Grant Programs

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Lead Agencies	Supporting Agencies	Partners
ODA, ODEQ, ODF, ODFW, OSMB, OWRD	DSL, OHA, OPRD	Tribes, community-based organizations, SWCD's, watershed councils, local or state law enforcement

Background

Oregon's natural resources agencies have personnel in the field that are responsible for data collection, site inspections, education, permit compliance, conducting enforcement activities, and responding to inquiries or emergencies. Communities have strong compliance with rules and laws in areas where field presence is robust and public education is strong and consistent. Areas of the state with a long history of regulation and partnership with the state have higher rates of compliance, resulting in more timely and efficient water management.

Strengthening Oregon's field-based work will require financial investments in staff capacity, communications equipment, information platforms, and outreach materials. It also means a look at more efficient ways to coordinate and partner with other agencies to carry out our shared responsibilities and modernize and streamline regulatory and enforcement processes.

Example Actions

- Review and assess workloads; establish priorities and seek efficiencies
- Improve regulatory tools, including updating ~~the legal and statutory foundation~~ laws, modernizing technology and enforcement tools, and providing (cross) training
- Improve the ability for field staff to conduct education and outreach within their districts; develop outreach materials to have on hand when interacting with the public
- Enhance ~~Department of Fish and Wildlife's capacity~~ all natural resource agencies capacity to conduct field studies and work directly with water users and conservation interests
- Employ staff in rural and remote areas to respond to and assist more communities across the state

Equity & Justice Considerations and Actions

- Increase field staff capacity to build and maintain relationships with communities, community-based organizations, and farmworker advocates
- Provide access to training that addresses equity, environmental justice, and community engagement
- Develop culturally appropriate education materials

Resources

Agency Programs

ODA Natural Resources Program, ODEQ Water Quality Program, ODF Compliance Monitoring Program, ODFW Water Program, ODFW & OSMB Aquatic & Invasive Species Prevention Program, OWRD Dam Safety Program, OWRD Regulation Program, OWRD Enforcement Section, OWRD Well Construction & Compliance Section
Locate your local Watermaster

Policies

2022 Water Hauling & Cannabis Laws

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Lead Agencies	Supporting Agencies	Partners
DSL, ODA, ODEQ, ODFW, OWRD	USACE	SWCD's, watershed councils

Background

Several natural resources agencies in Oregon are engaged in water-related permitting. Permit reviewers frequently answer calls or questions from water users, permit holders, and realtors, and conduct records research, and process case files. It is imperative that agencies have enough well-trained permitting staff to process requests in a timely and accurate manner.

Water rights permits and certificates, water rights transfers, and well construction special standards are examples of permitting programs through the Water Resources Department. There are many types of water quality permits administered by the Department of Environmental Quality through the National Pollution Discharge Elimination System. Other agencies also administer permitting systems, often associated with water quality; for example, the Department of State Lands issue removal/fill permits, while the Oregon Department of Agriculture administers Confined Animal Feeding Permits.

Example Actions

- Expand staff training opportunities, including interagency trainings; provide adequate staffing
- Update technologies, processing manuals, and expand guidance documents for transparency
- Develop outreach materials and follow-up procedures to help water users understand the application process and permit, transfer, or extension requirements
- Develop a state-wide mitigation strategy
- Create stronger linkages among partner agencies
- Develop and implement a workplan to improve the quality and timeliness of individual National Pollutant Discharge Elimination System permits
- Improve the timeliness of water right transactions and reduce backlogs
- Create and modernize for more efficient and user-friendly permitting infrastructure
- Regularly update Oregon's water-related permitting guide

Equity & Justice Considerations and Actions

- Develop programs and resources to support BIPOC farmers and business owners, as well as farmers and business owners for whom English is not a primary language, in obtaining and managing permits and other authorizations.
- Improve resources for NPDES monitoring and permitting to help attain water quality that aligns with fish consumption standards for Oregon Tribes.

Resources

Agency Programs

DSL Removal-Fill Permits, ODA Water Quality Program, ODEQ Water Quality Program, ODEQ 401 Hydropower Program, ODFW Aquatic Invasive Species Prevention Program, ODFW Water Program, OWRD Water Rights Program, OWRD Well Construction & Compliance Program

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Water Infrastructure

Action 13A

Maintain, Upgrade, or Decommission Water and Wastewater Infrastructure

Lead Agencies	Supporting Agencies	Partners
ODEQ, OHA, ODFW, OWRD	BIZOR, DLCD, DOGAMI, ODOE, USACE, USFWS	Tribes, Local governments, utilities

Background

Ensuring that Oregon's water-related infrastructure is maintained and functioning is important for a variety of environmental, public health, and safety reasons, but also for meeting our state's economic needs.

It takes an extensive system of pumps, pipes, treatment, and storage facilities to deliver water to our homes, businesses, and fields every day. Additionally, infrastructure is necessary for conveying and treating wastewater produced by residences, businesses, and industry. Updating aging infrastructure improves water security and may also result in water conservation. In some cases, decommissioning or removing infrastructure may be a more cost-effective alternative.

Inventories and inspections of dams is covered under Action 13C. Decommissioning of dams is covered under this action.

Example Actions

- Use an "asset management" approach to identify and plan for rehabilitation, upgrade, or replacement of infrastructure
- Provide timely inspection of well construction, review of well logs, and educate drillers and pump installers to ensure construction standards are met
- Inventory, inspect, and make safety improvements to levees, accounting for future conditions associated with climate change
- Properly decommission infrastructure, such as a well, culvert, levee, or dam, at the end of its useful life
- Upgrade infrastructure to improve water efficiency and conservation (e.g., pipe irrigation canals)

Equity & Justice Considerations and Actions

- Incorporate equity and community vulnerability assessments into asset management planning to inform strategies for repair, replacement, and funding infrastructure improvements
- Assess additional locations where levee accreditation could help lower floodplain insurance costs for low-income households and improve flood protection for vulnerable communities

Resources

Agency Programs

OWRD Well Construction Program and Dam Safety Programs

Funding

BIZOR grant and loan programs, including Community Development Block Grant, Safe Drinking Water Fund, Special Public Works Fund, Tidegate Fund, Water/Wastewater Fund

ODEQ Clean Water State Revolving Fund and Drinking Water Protection Program

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Water Infrastructure

Action 13B

Encourage Regional (Sub-basin) Approaches to Water and Wastewater Systems

Lead Agencies	Supporting Agencies	Partners
ODEQ, OWRD, BIZOR, OHA	DLCD, ODFW, ODOE	Tribes, local governments, utilities, Oregon Association of Clean Water Agencies

Background

Many Oregon communities, particularly less populated ones, struggle to adequately fund water and wastewater related infrastructure. The high capital costs related to infrastructure, the construction, operation, and maintenance cost of facilities, and the salary and training costs of retaining qualified personnel may be prohibitively expensive to communities with a small ratepayer base. In Oregon, these tend to be rural, coastal, and/or small urban communities.

Developing a regional water and/or wastewater system may be more cost-effective and provide co-benefits such as improved water quality. A regional system could include physical consolidation, system redundancy, or shared contracts, services, purchases, mutual assistance agreements, interties, and back-up supplies. State and federal agencies often provide incentives such as funding and technical assistance to encourage a regional approach to meeting water needs.

Example Actions

- Make use of shared contracts, services, and purchases
- Develop mutual assistance agreements between neighboring communities and water/wastewater systems
- Establish inter-ties and back-up supplies for water supplies
- Provide incentives to encourage regional approaches to water distribution and wastewater treatment

Equity & Justice Considerations and Actions

- Incorporate equity and community vulnerability assessments into asset management planning to inform strategies for repair, replacement, and funding infrastructure improvements

Resources

Agency Programs

BIZOR grant and loan programs, including Community Development Block Grant, Safe Drinking Water Fund, Special Public Works Fund, Water/Wastewater Fund

Funding

ODEQ Clean Water State Revolving Fund and Drinking Water Protection Program, OWRD's Water Projects Grants & Loans OWRD's Place-Based Planning Fund

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Lead Agencies	Supporting Agencies	Partners
OWRD, OEM	BPA, ODEQ, ODFW, USACE	Homeowners, farmers, irrigation districts, private industry, municipalities

Background

Approximately 1,200 dams in Oregon are at least 10 feet high and store at least 3 million gallons of water (9.2 acre-feet of water), making them subject to Oregon's Dam Safety Program. The largest dams, such as the Bonneville Dam on the Columbia River, are regulated by federal agencies like the Bonneville Power Authority and the United States Army Corps of Engineers. The Water Resources Department is the lead public authority responsible for ~950 non-federal dams.

The original focus of Oregon's Dam Safety Program was the review and approval of designs for new dams. Many of Oregon's dams were constructed decades ago, with some more than 100 years old. As a result, the Dam Safety Program now focuses on evaluating the condition of existing dams through regular inspection feedback to owners regarding needed safety improvements.

Inventories, inspections, safety improvements, and decommissioning of levees is covered under Action 13A.

Example Actions

- ~~Modernize state laws to improve the safety and resiliency of Oregon dams~~
- Authorize resources to determine if dams have safety deficiencies; evaluate and retrofit dams to meet new seismic and hydrologic standards
- ~~Authorize emergency actions and encourage cooperative~~ Implement actions to improve the safety of dams
- Properly decommission dams at the end of their useful life
- Coordinate interagency emergency response regarding dam inspection, communication, and evacuation
- Define the legal responsibilities of dam owners
- ~~Authorize a requirement for remote monitoring on deficient, high hazard, dams~~
- ~~Dam owners should prepare and implement an Emergency Action Plan for all existing dams rated as High Hazard~~
- ~~Authorize a fee for review of plans and specifications~~
- Dedicate grant and loan resources for rehabilitation of deficient dams

Equity & Justice Considerations and Actions

- Map potential impacts to critical infrastructure (e.g. schools, hospitals, water treatment facilities) and demographics of who will be impacted by dam failures

Resources

Agency Programs & Workgroups
OWRD's Dam Safety Program

Agency Programs & Workgroups
Association of State Dam Safety Officials

Funding
FEMA High Hazard Potential Dam Grant, FEMA National Dam Safety Program Grant

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Water Infrastructure

Action 13D [new]

Implement Natural Infrastructure Projects

Lead Agencies	Supporting Agencies	Partners
ODEQ, ODFW, OWEB, OWRD	BIZOR, DLCD, DOGAMI, NRCS, ODF, OHA, USEPA, USFS	Tribes, local gov'ts, utilities, Oregon Association of Clean Water Agencies

Background

Built infrastructure, such as pipes, tanks, dams, reservoirs, and wastewater treatment plants, are constructed by humans to accomplish a water management objective such as flood control, conveyance, storage, and treatment. In contrast, natural infrastructure is an approach to meeting an infrastructure need, but using a naturally occurring feature (e.g., floodplain, forest) or created or enhanced natural feature (e.g., constructed wetland) to provide multiple benefits for humans and the environment. Investing in natural infrastructure projects helps communities adapt to and mitigate for climate change.

> *Natural Infrastructure – the strategic use of natural lands (forests, wetlands) and working lands (farms, ranches) to meet infrastructure needs such as water storage, pollution reduction, and flood control, and provide a suite of co-benefits (ecological, economic, and community health and wellness)*

Examples of natural infrastructure projects include:

- Floodplain connectivity – stream channel re-alignment and floodplain restoration to better absorb flood flows and decrease downstream flooding and improve localized water storage
- Stormwater treatment – retain or reclaim pervious surfaces to infiltrate stormwater close to its source
- Wastewater polishing – constructed wetlands for temperature reduction to prevent temperature pollution in receiving stream
- Forest management – forest management for biodiversity and watershed health to protect the source of drinking water (quality and quantity)

Example Actions

- Provide funding and incentives for natural infrastructure projects
- Quantify benefits
- Create guidance and provide technical assistance to maximize co-benefits

Equity & Justice Considerations and Actions

- Consider how and where co-benefits of natural/green infrastructure will occur, including flood abatement, clean drinking water, lower water/wastewater utility rates, educational opportunities, and climate resilience

Resources

Agency Programs

ODEQ Total Maximum Daily Load Program, ODFW Water Program, OWEB Grant Programs, OWRD Water Projects Grants and Loans Program

Documents

2021 Report by Willamette Partnership & Oregon Environmental Council, Natural Infrastructure in Oregon: Common Challenges, Opportunities for Action, and Case Studies

2016 ODOT Green Infrastructure Study Green Infrastructure Techniques for Resilience of the Oregon Coast Highway

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Use Existing Infrastructure to Develop Non-Traditional Hydroelectric Power

Lead Agencies	Supporting Agencies	Partners
ODEQ, ODFW, ODOE, OWRD	BIZOR, BPA, DLCD, ODA, ODOT, ODSL, OEM, NRCS, USEPA	Tribes, Local govt's, Energy Trust, Farmers Conservation Alliance, Oregon Climate Action Commission, Oregon Public Utility Commission, irrigation districts, water utilities

Background

Almost 40 percent of Oregon's 2020 electricity sold to utility customers came from hydropower. Climate change, including droughts and reduced river flow, and high maintenance costs may reduce the power production capacity of some hydroelectric systems. Large dams associated with traditional hydroelectric production impact water quality, aquatic habitat, and fish passage. In tandem with solar and wind, the development of non-traditional hydroelectric power projects helps diversify Oregon's energy portfolio.

Non-traditional hydroelectric power projects include pumped storage systems, in-conduit (within-a pipe) hydropower systems, and modifications to existing dams that don't currently generate power. Pumped storage systems produce energy by transferring water between two reservoirs at different elevations. In-conduit hydroelectric systems produce power by installing micro-turbines inside water distribution pipes and can be utilized when piping irrigation canals, within municipal/utility distribution systems, and when injecting water into aquifer storage and recovery wells. Modifying an existing dam to produce power must also consider impacts to fish passage and water quality.

Example Actions

- Utilize the state's expedited application process to develop hydroelectric projects at existing infrastructure
- Invest in alternative energy projects

Equity & Justice Considerations and Actions

- Historic development of hydropower facilities (dams) has impacted fisheries and water quality
- Energy affordability

Resources

Agency Programs

ODEQ Section 401 Hydropower Program, ODFW Hydropower Program, OWRD Hydroelectric Program

Workgroups

Hydroelectric Application Review Team (ODEQ, ODFW, OWRD)

Additional Information

Pumped Storage Hydropower | Department of Energy

Funding

ODOE Small-Scale Local Energy Loan Program

Documents

2022 ODOE Biennial Energy Report

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Water and Energy

Action 14B

Promote Strategies that Increase / Integrate Energy and Water Savings

Lead Agencies	Supporting Agencies	Partners
ODA, ODOE, OWRD	BIZOR, BPA, DLCD, ODA, USDA, USEPA	Tribes, Local govt's, Energy Trust, Farmers Conservation Alliance, irrigation districts, Oregon Association of Clean Water Agencies, Oregon Climate Action Commission, Oregon Public Utility Commission, OSU Extension Service, water utilities

Background

Water is critical for energy production, and energy is used to convey water through pipes for residential, commercial, industrial, and irrigation purposes. Water conservation also conserves energy, and energy conservation reduces the amount of water used in energy production. Climate change presents the challenge of having reduced availability of both water and energy. In order to increase water/energy conservation, there is a need to increase the sharing of information about conservation strategies, along with financial incentives to implement the strategies.

Residential customers can select WaterSense® fixtures and choose ENERGY STAR certified products. Some utilities offer their customers rebates for installing ENERGY STAR products. Wastewater utilities typically use a lot of energy to treat wastewater, but there are ways to generate energy onsite using fats, oils, and grease to power co-generation engines.

Agriculture uses both large amounts of water and energy to pump and move water. Unfortunately, some high efficiency irrigation systems also have a high energy demand. However, increased efficiency can result in co-benefits such as labor savings, water savings, and improved soil productivity.

Example Actions

- Move toward energy independence for publicly operated treatment works (wastewater treatment)
- Continue to implement and evaluate building codes that encourage water and energy efficiencies
- Encourage individuals, communities, industries, and businesses, including agriculture, to look for and integrate ways to conserve both energy and water
- Encourage cross-sector and cross-agency collaboration to achieve energy and water savings
- Strive to capture and publicly report energy and water savings data
- Promote resources that expand irrigation efficiency and conservation
- Promote regenerative agriculture and permaculture practices

Equity & Justice Considerations and Actions

- Improve availability of cost savings associated with ENERGY STAR and similar programs to low-income or disadvantaged households and businesses

Resources

Agency Programs

ODOE Energy Planning & Innovation, ODOE Energy Development Services, ODEQ Climate Protection Program

Workgroups

Northwest Power and Conservation Council
Oregon Climate Action Commission (formerly Oregon Global Warming Commission before 2023)
Energy Facility Siting Council
Energy Advisory Work Group

Documents

Oregon Global Warming Commission 2023 Oregon Climate Action Roadmap to 2030
Oregon Global Warming Commission 2021 Natural & Working Lands Proposal

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