

Overview of Dam Safety Program



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Overview

- Why have a dam safety program?
- Efforts to modernize
- Dam Safety Program Today
- Status of High Hazard Dams
- Continued Challenges
- Next steps
- Questions



Why have a Dam Safety program?

- Water storage is essential to meeting water needs
- Consequence of dam failure can be high
- Keep benefits, protect public

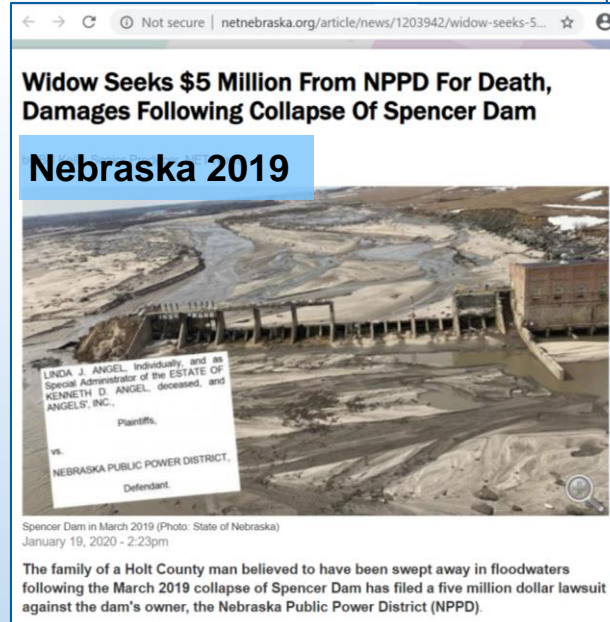
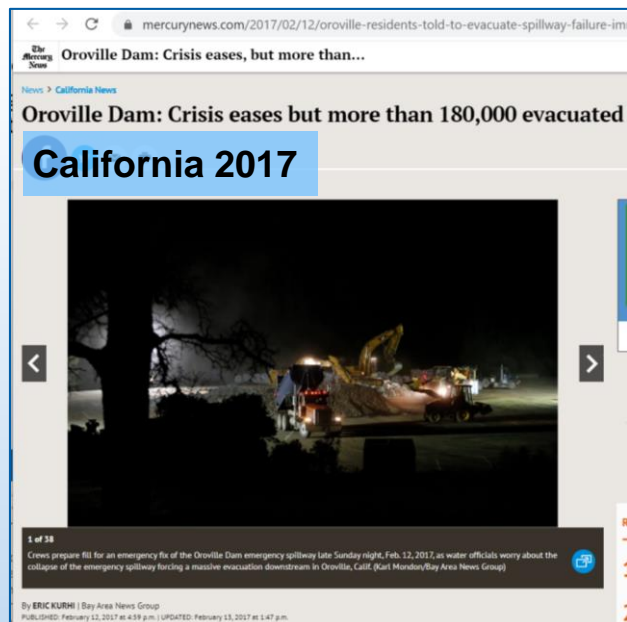
Factors in Failure

- Floods
- Maintenance
- Deterioration/Aging
- Design/Construction Flaw
- Spillway Failure/Overtopping
- Misoperation
- Landslides
- Earthquakes



Risks Amplified

- Climate change and extreme weather (floods)
- Aging infrastructure
- Lack of investment / funding



The Need to Improve Dam Safety

Oregon's **2017** Integrated Water Resources Strategy



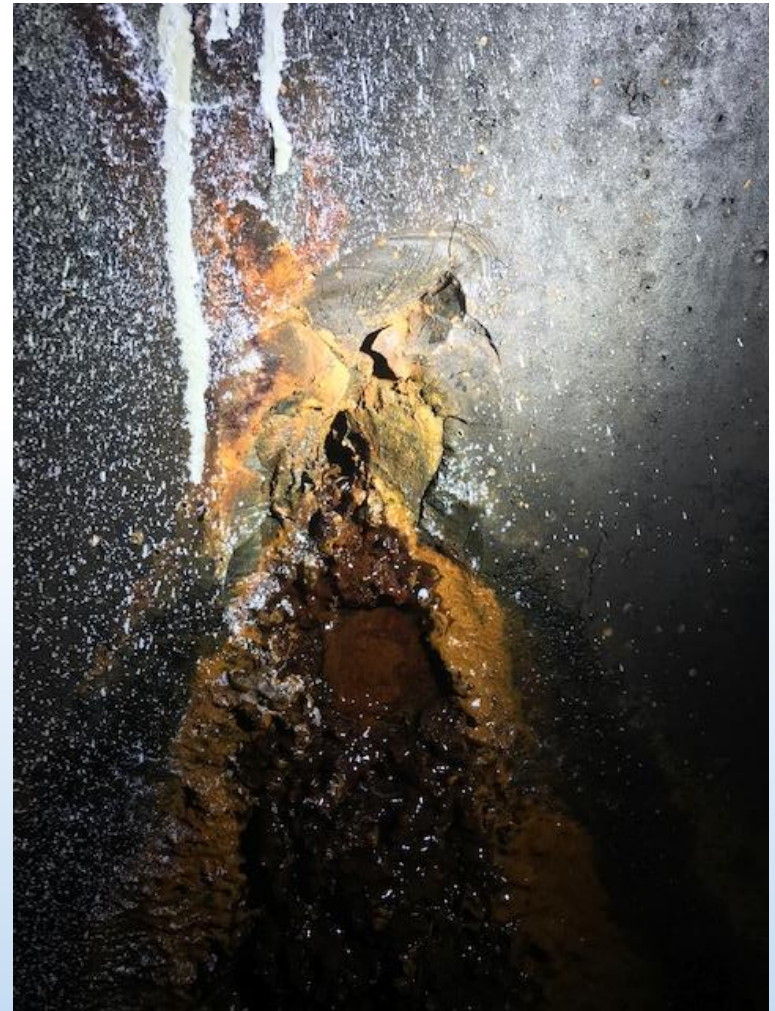
Recommended Action 7.C Ensure Public Safety / Dam Safety

Examples of how to implement this action:

- 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 standards
- Authorize emergency actions and encourage cooperative actions to improve the safety of dams
- Properly decommission dams at the end of their useful life
- Coordinate interagency emergency responses regarding dam inspection, communication, and evacuation
- Define the legal responsibilities of a dam owner
- 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 high hazard
- Authorize a fee for review of plans and specifications
- Dedicate grant and loan resources for rehabilitation of deficient dams

Dam Safety Program

- HB 2085 (2019); July 1, 2020
- 10 feet high and 3+ million gallons
- Nonfederal dams
- Review designs and inspect dams
- Require owners to address deficiencies/maintain
- Prepare and respond to dam emergencies
- 2 Engineering FTE; 1 Limited Duration; watermasters



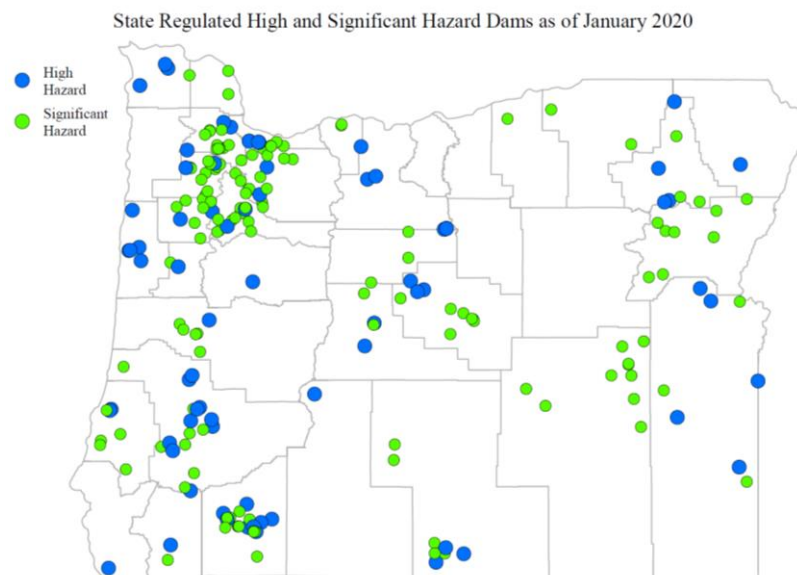
State Regulated Dams

945 State Regulated Dams

- 78 – High Hazard Dams
- 151 – Significant Hazard Dams
- 716 – Low Hazard Dams

**Hazard rating does not indicate condition*

***As of 9/2020*



Condition of High Hazard Dams

Poor Condition - 12

- BARNES BUTTE
- BEAR CREEK
- DUGGAN
- JUBILEE LAKE
- MORGAN LAKE
- OSBORNE CREEK
- PONY CREEK - LOWER
- POLE CREEK
- WAGEMAN
- WALCH DAM
- WALLOWA LAKE
- WINCHESTER

Unsatisfactory - 7

- CROWLEY
- BIG CREEK #1 (LOWER)
- BIG CREEK #2 (UPPER)
- FERRY CREEK
- MCMULLEN CREEK
- WOODRAT KNOB
- WILLOW CREEK 3 (MALHEUR)

Program Challenges

- Condition of dams based on visual inspection: inadequate to determine all risks
- No dam has had a full risk assessment in several decades
- New understanding of seismic and flood risk; no flood protocol developed
- Lack of funding to address deficient dams or to monitor deficient dams
- Lack of resources to prepare for emergencies at dams

Current Goals

- Resources to determine if dams have safety deficiencies: *Inspections, assessments, and analyses*
- Funding to address deficient dams: *Use data to drive strategic investments*
- Building capacity to prepare for and respond to emergencies: *Update, train, and exercise Emergency Action Plans; Monitoring*



Strategy, Vision, Climate

Oregon's 2017 Integrated Water Resources Strategy



OREGON NATURAL HAZARDS MITIGATION PLAN 2015



Oregon's 100-Year Water Vision: A Call to Action

Preparing a Secure, Safe, and Resilient Water Future for All Oregonians

Vision Statement

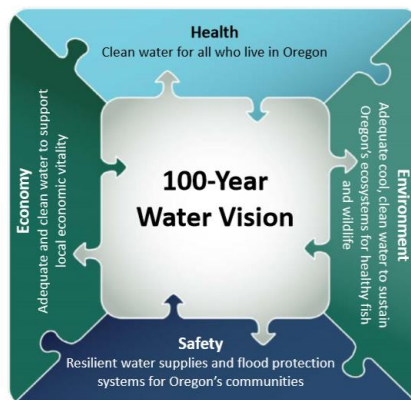
To address changes in climate and population dynamics, Oregonians will take care of our water to ensure we have enough clean water for our people, our economy, and our environment, now and for future generations. Oregonians will invest strategically in infrastructure and ecosystems across all regions to support resilient communities, vibrant local economies, and a healthy environment for all who live here.

Premise

Many areas of Oregon are known for clean and reliable water. As identified in Oregon's [Integrated Water Resources Strategy](#), some of the forces that combine to place significant stress on Oregon's water and water systems include:

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

These factors impact the quality and quantity of water for our communities, including water in our rivers, lakes, oceans, reservoirs, and aquifers. Simply put, if we are not willing to roll up our sleeves and work together to invest in the ecosystems that sustain us along with built and natural water infrastructure, we place the safety of our communities, the health of our people and environment, and Oregon's economic future at risk.



Oregon
Kate Brown, Governor

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May 15, 2020

RE: Oregon Water Resources Department May 15, 2020 Executive Order No. 20-04 Report

Governor Brown –

Per Executive Order (EO) 20-04, the Oregon Water Resources Department (OWRD) is required to comply with General Directives to State Agencies contained in section (3). This includes the submission of a report to the Governor on current and proposed actions within agency statutory authority to reduce GHG emissions and mitigate climate change impacts through agency decisions, especially for vulnerable communities. This letter serves as the required report.

The mission of OWRD is to serve the public by practicing and promoting responsible water management through two key goals:

- To directly address Oregon's water supply needs
- To restore and protect streamflows and watersheds in order to ensure the long-term sustainability of Oregon's ecosystems, economy, and quality of life.

OWRD currently carries out its mission through the statewide Integrated Water Resources Strategy; processing water rights and other transactions; protecting public health and safety through well construction and dam safety programs; scientifically characterizing surface water and groundwater supplies; distributing water rights according to water rights of record; and supporting local communities and individuals through local water planning, feasibility, and project funding and coordination.

As outlined below, OWRD currently supports the reduction of greenhouse gases and adaptation to climate change with its existing authorities. Much of the Department's work related to climate change is through the lens of the impacts on water supply, and the need to mitigate and adapt to those impacts. Climate change is anticipated to increase the likelihood of floods and droughts, reduce snowpack reservoirs, and increase the demand for water.

There are two general requirements of agencies described in EO 20-04:

- 1) Prioritize and implement actions that reduce GHG emissions, and
- 2) Integrate climate change, climate change impacts, and GHG reductions goals into planning, budget, investment, and policy making decisions.

Additionally, agencies are asked to prioritize approaches that are cost effective, that will help vulnerable populations and impacted communities, and that build processes which consult the EJ task force.

As requested, here we describe ongoing or future work that could be pursued to implement EO 20-04. In some instances, additional resources will be required to fully implement these actions.

2021 Agency Request Budget

Policy Option Package #101

- Assess dams for safety risks; prioritize
- Develop methods to determine extreme flood event size and evaluate risk of failure
- Prepare for and respond to emergencies at dams
- [Link](#) to POP Narrative



Questions?



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2019 FEMA Grant

2019 FEMA High-Hazard Potential Dam Grant - \$260k

- Position dams to qualify for future funding
- Statewide Hazard Mitigation Plan Update
- Risk assessment protocol for Oregon specific risks
- Risk assessments for 16 high hazard rated dams - flood, earthquake, internal erosion, landslide, deterioration
- Population at risk and likely economic losses
- Two Floodplain Management Plans

Applied for 2020 grant

HB 2085 (2019)


- Links to More Detailed Information on House Bill 2085
 - Summary:
<https://olis.leg.state.or.us/liz/2019R1/Downloads/CommitteeMeetingDocument/199817>
 - Comparison:
<https://olis.leg.state.or.us/liz/2019R1/Downloads/CommitteeMeetingDocument/200013>

2018 Budget Note

- 2018 Report addressing:
 - Existing Dam Safety Program activities
 - Cost to rehabilitate high-hazard dams in poor or unsatisfactory condition
 - Funding resources
 - Policy and budget recommendations
- Link to Presentation:



<https://olis.leg.state.or.us/liz/201711/Downloads/CommitteeMeetingDocument/153147>
- Link to Budget Note Report:

<https://olis.leg.state.or.us/liz/201711/Downloads/CommitteeMeetingDocument/153148>



Condition of High-Hazard Dams and Costs: Caveats

- Specific costs are difficult to ascertain without a full-scale engineering analysis for each individual dam
- Insufficient resources to conduct more in-depth assessments of dams; inspections are only visual in nature
- All costs are estimates

Condition of High-Hazard Dams and Costs

Cost Estimates for Publicly Owned Dams				
Dam	Location (County)	Condition	Probable Safety Action	Estimated Cost
Big Creek #1	Lincoln	Unsatisfactory	New Dam	\$19-\$71M
Big Creek #2	Lincoln	Unsatisfactory	New Dam	
Ferry Creek	Curry	Unsatisfactory	New Dam	\$8-\$15M
McMullen Creek	Josephine	Unsatisfactory	Rehabilitate	\$3-\$5M
Bear Creek	Clatsop	Poor	Rehabilitate	\$0.5M
Morgan Lake	Union	Poor	Rehabilitate	\$1M
Wallowa Lake	Wallowa	Poor	New Dam	\$10-\$16M