



# Oregon


John A. Kitzhaber, MD, Governor

## Water Resources Department

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### MEMORANDUM

TO: Water Resources Commission

FROM: Phillip C. Ward, Director 

SUBJECT: Agenda Item F, March 6, 2014  
Water Resources Commission Meeting

### Potential Storage Opportunities in Oregon

#### I. Introduction

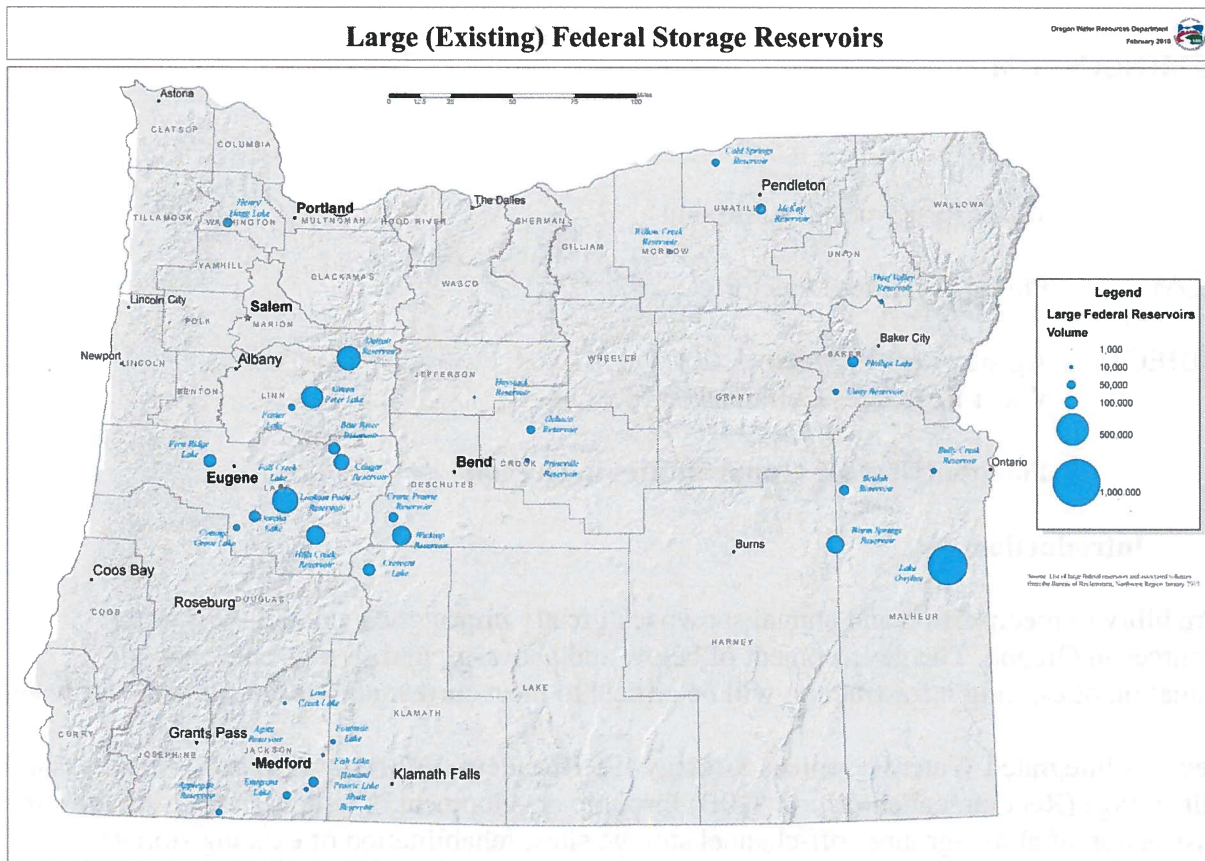
Variability in precipitation and annual snowpack greatly impact the availability of water resources in Oregon. The development of below and above-ground storage sites, and the evaluation of existing infrastructure will be critical to meet current and future demands for water.

Oregon's Integrated Water Resources Strategy (IWRS) identifies the need to improve access to built storage (Recommended Action #10B) through: development of below-ground storage sites; construction of above-ground, off-channel storage sites; rehabilitation of existing storage infrastructure; re-allocation of water in federal reservoir systems; and authorizing the State to invest in and purchase water from stored water facilities.

#### II. Background

In 1992, the Water Resources Commission adopted the state's water storage policy, identifying water storage options as an integral part of Oregon's strategy to enhance instream and out-of-stream public and private benefits from use of the state's water resources. In 1993, the Oregon Legislature codified the state's policy of 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.

In Oregon today, there are more than 15,000 water rights authorizing the storage of surface water. Most water rights are for small ponds or reservoirs storing less than 9.2 acre-feet, although there are more than 60 reservoirs with capacities exceeding 5,000 acre-feet each. The largest project is the U.S. Bureau of Reclamation's Owyhee Reservoir in southeastern Oregon with more than 1 million acre-feet (0.3 cubic miles) of storage. The locations and volumes of large federal storage projects are shown on the map on the next page.



### III. Discussion

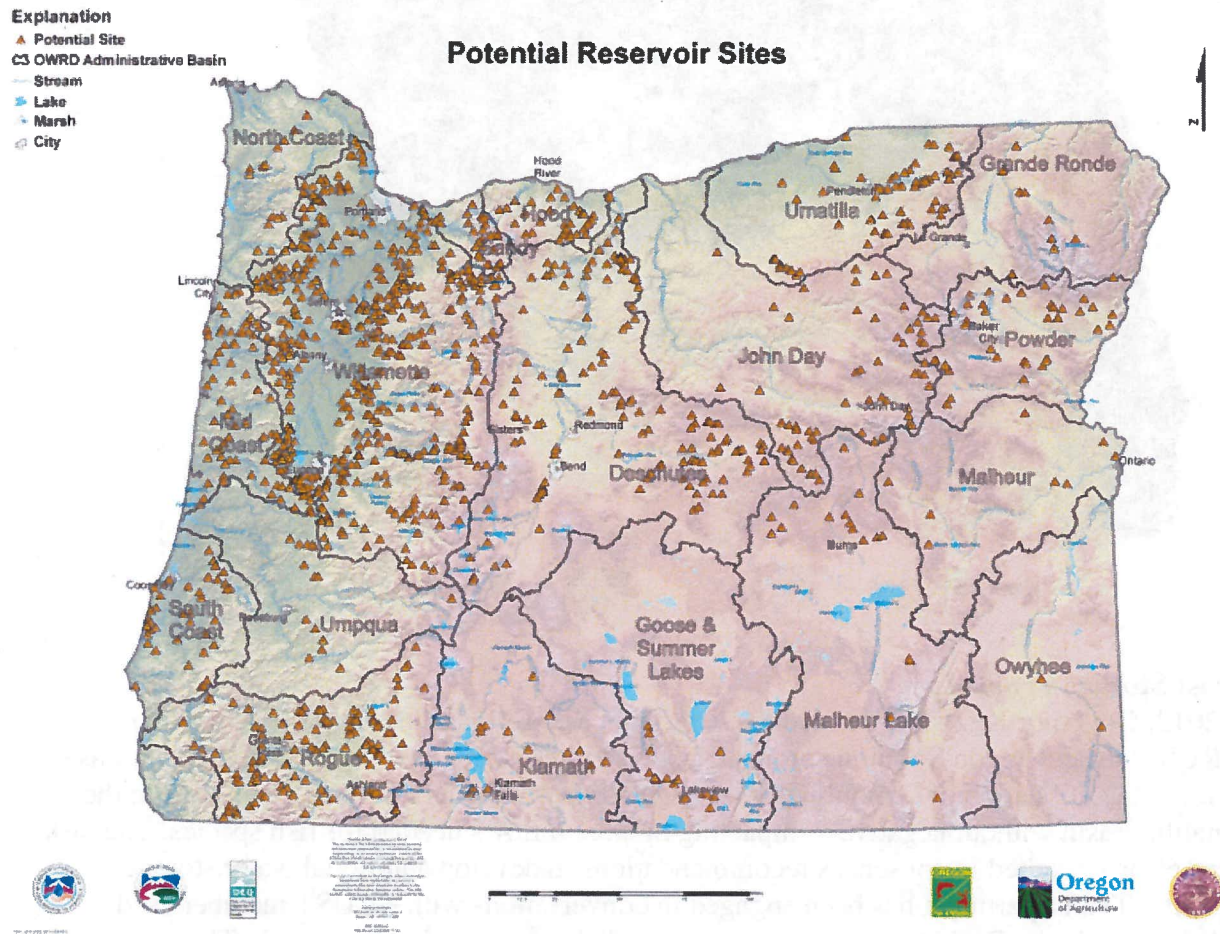
#### Tools for Understanding Storage: the Oregon Water Supply and Conservation Initiative

The Oregon Water Resources Commission and Water Resources Department have long recognized the need for data to help better understand, manage, and plan Oregon's water resources. The Oregon Water Supply and Conservation Initiative, approved by the 2007 Oregon Legislature, resulted in several tools that provide a way to assess potential storage opportunities in Oregon. The "Above Ground Storage Site Search" and the "Below Ground Storage Site Search" are available on the Department's website, providing site specific identification of potential storage opportunities in Oregon.

The Oregon Water Supply and Conservation Initiative page and tools can be found at:  
[http://www.oregon.gov/owrd/Pages/LAW/owsci\\_info.aspx](http://www.oregon.gov/owrd/Pages/LAW/owsci_info.aspx).

### Above-Ground Storage

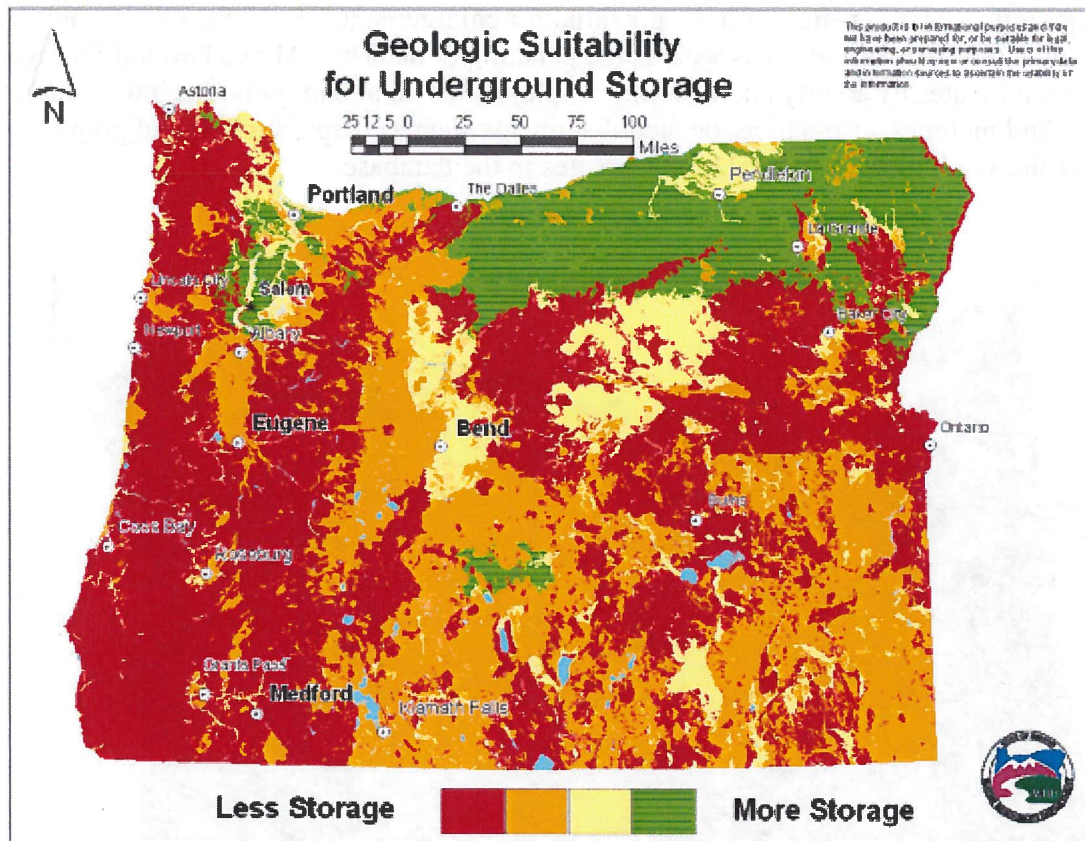
To date, the Department has mapped the location of more than 1,200 potential above-ground storage sites, as well as existing sites with the potential for enlargement. This information came from state, local, and federal agencies, as well as the general public. The “Above Ground Storage Site Search” tool lists sites by county and/or basin, displays sites on a map, provides information about each site, and includes access to associated documents such as maps, studies, and graphs. The map below shows all of the potential reservoir sites in the database.



### Below Ground Storage – Aquifer Storage and Recovery and Artificial Recharge

Underground storage can be a useful tool that lends flexibility to water supply timing and availability. Current techniques include injection of treated surface water into aquifers and surface water spreading that allows infiltration down to the water table. The water can later be recovered for municipal or agricultural use, or it may be left to move through the aquifer and discharge to the surface to enhance stream flow.

In 2008, the Water Resources Department evaluated 54 groundwater aquifers within Oregon to identify potential sites for underground storage. The “Below Ground Storage Site Search” tool identifies both existing and potential sites for underground storage projects, as well as links to maps and associated documents. As shown on the map on the next page, the most suitable locations for underground storage are in the northern portion of Oregon.



### Crust Storage Projects

In 2012, Governor Kitzhaber formed the Columbia River-Umatilla Solutions Taskforce (CRUST) as an Oregon Solutions project. The taskforce's objective was to identify options to increase the utilization of Columbia River water for in-stream and out-of-stream uses in the Umatilla Basin without negatively impacting in-stream flows needed for fish species. The task force efforts resulted in consensus recommendations to develop additional water storage capacity. The Department has been engaged in conversations with CRUST members and stakeholders in the Basin to assist as necessary to help move projects forward. The consensus recommendations related to storage are as follows:

#### Testing and Completion of the Stage I Umatilla Basin Aquifer Recovery Project

The State of Oregon has invested \$3 million to facilitate the preliminary design and build out of the first Columbia River recharge project. The project was designed to recharge the Ordance Alluvial Aquifer. During the 2013-15 Biennium the Department received funding to construct 3-5 additional monitoring wells. These wells will allow for a greater understanding of aquifer characteristics.

#### Wallowa Lake Dam Repair

The Wallowa Lake Dam, owned by the Associated Ditch Company (ADC), is an old concrete dam in poor condition. For safety reasons, water levels in the lake have been significantly

reduced. Repair of the dam could increase the amount of water that could be stored and later released during the irrigation season. The Department has met with ADC and will provide assistance as needed. ADC is currently working on a plan to fund the rehabilitation of the dam.

#### Juniper Canyon Reservoir

The Juniper Canyon Project is a proposed dam in Juniper Canyon on an intermittent stream approximately 25 miles northwest of Pendleton and one mile upstream from the Columbia River. The potential storage reservoir could store an estimated 49,000 acre-feet of water, which would be pumped from the Columbia during winter months. The Department has been engaged with stakeholders in the basin to determine how to move this project forward.

#### Similkameen Project

The CRUST also recommended the development of a stronger interstate approach to Columbia River Water through joint investment or joint utilization of water storage sites. In conjunction with Washington, the Department is working with Fortis, Inc. to investigate the possibility of state investment in a hydroelectric dam on the Similkameen River in Canada, which could provide stored water for mitigation of Columbia River withdrawals in the summer.

#### **Other Effects to Improve Access to Storage**

In addition to CRUST efforts, the Department is engaged in the Willamette Basin Reservoir Study, which is examining the potential for Army Corps dams in the Willamette Valley Project to meet a broader range of beneficial uses. The Department is also supportive of the proposed Deschutes Basin WaterSMART Study which will evaluate water imbalances in the basin in the face of changing realities. The study will identify strategies to meet future water needs, which could include new storage. Finally, the Department continues to provide funding and technical assistance for new storage projects through the Water Conservation, Reuse, and Storage Feasibility Grant Program, and expects that the Department will continue to be engaged in storage projects upon full implementation of the Water Supply Development Initiative.

#### **IV. Conclusion**

Improving access to stored water will help meet future demand and provide greater security to water users in years when precipitation and annual snowpack are insufficient to meet needs. The State of Oregon can play a key role in the realization of storage opportunities by maintaining an inventory of potential storage projects, providing technical assistance, and funding the development and construction of projects.

#### **V. Alternatives**

The Commission may consider the following alternatives:

1. Direct the Department to continue efforts to support the development of water storage projects consistent with the IWRS recommended action of improving access to built storage.
2. Request the Department staff to return with more information.

## **VI. Recommendations**

The Director recommends Alternative 1, to direct the Department to continue efforts to support the development of water storage projects consistent with the IWRS recommended action of improving access to built storage.

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