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Oregon Water Data Portal Phase 2

Final Report and Portal Recommendations

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Executive summary

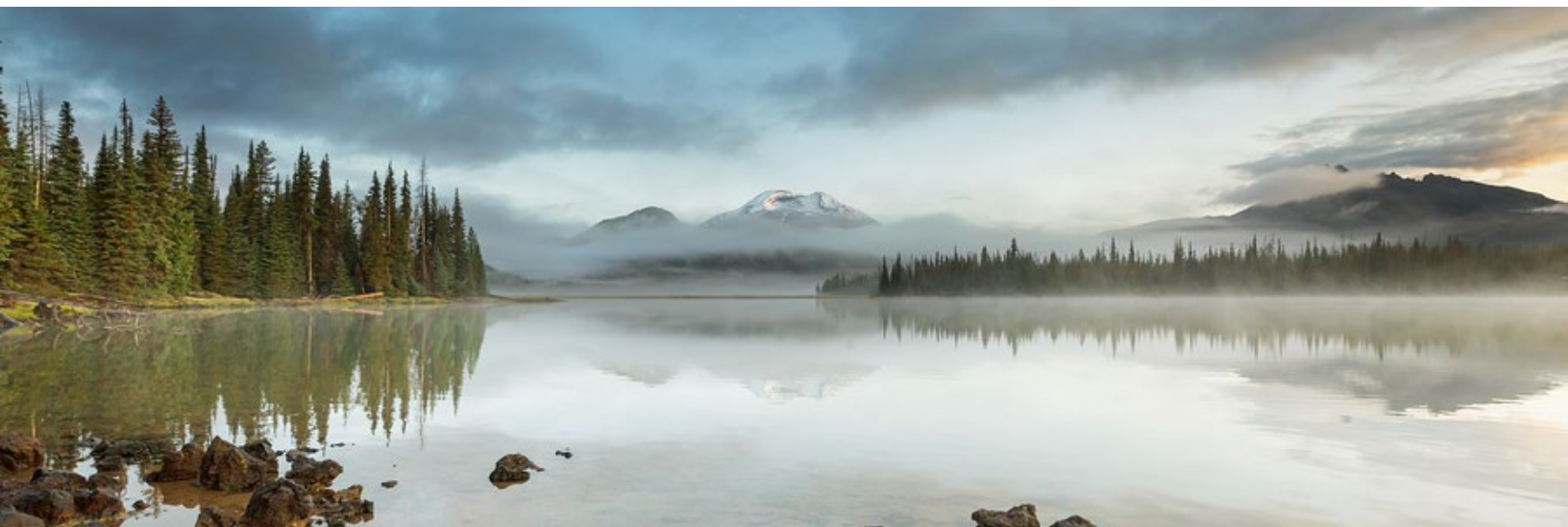
Water-related data collection in Oregon represents a valuable statewide asset that can deliver greater benefits through improved coordination and integration across agencies and organizations. The Oregon Water Data Portal demonstrates potential for making Oregon's water data accessible from a single platform. Centralized data will improve water management decision-making, support more efficient use of public funds, and help the state address current and pending water challenges and opportunities.

The portal project team has made significant progress over the last biennium. The pilot portal is already demonstrating substantial value by integrating datasets that were previously difficult to connect. Users can now explore relationships between data from multiple sources. The project has also fostered new collaboration between agencies, building relationships and trust across traditional boundaries. In the absence of dedicated funding during the 2025-27 biennium, project development progress will be paused while state agencies continue efforts to ensure that critical water data sets are collected and managed in a manner that will be compatible with a centralized data portal platform.

Phase 2 accomplishments (2023-2025)

The project team successfully delivered on the key objectives for the 2023-2025 biennium:

- **Launched the pilot portal** in January 2025, integrating 37 datasets, 49 tools, and 25 documents from five state agencies, Oregon State University, U.S. Geological Survey, and U.S. Environmental Protection Agency.
- **Developed a recommended governance plan** establishing roles, responsibilities, and decision-making processes for cross-agency collaboration, including recommended staffing structures and Tribal and interested party engagement strategies.
- **Supported participating agencies** through an interagency workshop, data standards guidebook, portal onboarding document, and updates and maintenance of the statewide data inventory initiated in Phase 1.
- **Conducted user testing and Tribal and interested party engagement**, including webinars and targeted usability sessions that validated the portal's value and identified specific improvements.



Phase 3 recommendations

During the 2025 legislative session, bills were considered regarding the project's future scope and resources. Based on current progress and assuming a project scope similar to what was proposed in [House Bill 3106-A](#) (which was introduced mid-session, but ultimately not enacted), the OWDP team developed the following recommendations:

1. Establish a sustainable governance structure and operational framework for the Oregon Water Data Portal project.
2. Develop a comprehensive plan for the development and implementation of the permanent portal.
3. Collaboratively develop and implement common data standards, protocols, and technical frameworks for the portal.
4. Enhance pilot portal functionality and usability through user engagement and iterative development
5. Partner with agencies to advance data readiness and strategic water initiatives.
6. Strengthen user engagement, build awareness, and improve pilot portal accessibility.

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Introduction

The opportunity for better water decision-making

Oregon's rich water resources support diverse ecosystems, communities, and economies. From the transboundary Columbia River to Crater Lake, from winter rains to mountain snowpack, these waters sustain our lives and livelihoods. Currently, the data that enables us to monitor the health of these valuable water resources and manage them effectively are scattered across more than seventeen state agencies. By centralizing and standardizing this information, Oregon can transform how water decisions are made.

Oregon has invested substantially in collecting water-related data. Yet the full value of this investment remains unrealized due to fragmentation and accessibility barriers. State and local governments could use these resources more effectively if the data were able to be accessed in one place and provided in standardized formats. This would save time and public funds, while improving outcomes. By making water data more accessible and interoperable, Oregon can empower decision-makers to better prioritize investments, help communities understand water quality and availability issues, and improve both short and long-term water management decisions.

Beyond improving decision-making capability, a unified water data system increases transparency with the public by making data available with appropriate context for interpretation. It also encourages better data management practices and business processes across agencies, creating a foundation for more efficient government operations. As Oregon continues to face mounting water challenges—from drought and water quality concerns to rising demand and aging infrastructure—the value of comprehensive, reliable water data continues to grow.

The Oregon Water Data Portal: A single point of access

The Oregon Water Data Portal will be a modernized, single point of access for public water and infrastructure data in Oregon. This innovative project makes data currently fragmented across many different agencies accessible on a single platform. It also provides analysis tools to help answer critical water management questions. When complete, the portal will integrate data relevant to water quality and quantity, habitat and ecosystems, and natural and built water infrastructure.

The pilot version of the OWDP, developed as part of Phase 2 of the project, is already demonstrating substantial value. It currently includes data from five Oregon state agencies, Oregon State University, and federal data from the USGS and EPA, allowing users to explore relationships between datasets that were previously difficult to connect. Early testers report that the portal is "pretty intuitive to use," with one describing it as "lovely, polished, and professional." The pilot also validates key technical approaches and data integration methods that will form the foundation for the full portal implementation.

Project history and legislative support

The need for this project has been articulated through several state initiatives, including the 2017 Integrated Water Resources Strategy and the 2020 100-Year Water Vision, which both identified improved data access and integration across agencies as critical for effective water management. In 2021, the Oregon Legislature responded by directing the Department of Environmental Quality and state water agencies to begin initial scoping and design of a water database framework through House Bill 5006.

Phase 1 of the OWDP project ran from 2021 to 2023. During this planning and scoping phase, the project team engaged 68 participants representing more than 40 state, local, and Tribal agencies, community organizations, and other interested groups. The team inventoried over 500 water-related datasets held by 17 state agencies, assessed their readiness for inclusion in the portal, and identified critical data needs. Based on this foundational work, the Legislature allocated \$1.24 million for Phase 2 (2023–2025), which focused on developing a pilot portal and governance framework.

This project is responsive to Recommendations A and B of the 2022 Report of the Work Group on State-Supported Regional Water Planning and Management and directly addresses concerns raised in the Secretary of State's 2023 Water Security Advisory Report. The momentum built through Phases 1 and 2 demonstrates Oregon's commitment to data-driven water management and positions the state to make increasingly informed decisions about its water future.

Cross-agency collaboration

The OWDP project exemplifies cross-agency collaboration. All 17 Oregon state agencies with water-related missions or functions have participated in some capacity. Nine agency leaders regularly engage in the project through the Steering Committee, while staff from multiple agencies directly contribute to the project's development. This collaborative approach delivers value beyond the portal itself. It creates a template for future cross-agency initiatives in Oregon. The governance structures, data-sharing arrangements, and interagency workflows developed

for the OWDP can be adapted for other statewide projects. Agencies are building relationships and trust across traditional boundaries, which could accelerate other collaborative efforts.

The project benefits from strong partnerships with Oregon State University. Its Center for Applied Systems and Software has provided critical project management support and technical expertise, while its Institute for Natural Resources has contributed valuable technical leadership and extensive experience working with Oregon's public data systems. These partners strengthen the project's connection to Oregon's academic research community. Additionally, the Internet of Water Coalition brings insights from similar water data modernization initiatives in states like Texas, New Mexico, and California. This cross-state knowledge exchange allows Oregon to learn from others' experiences, anticipate common challenges, and streamline progress toward successful implementation.

As Oregon faces a future of water challenges and opportunities, the OWDP stands as a proactive step toward more effective, data-driven water governance. By investing in this shared resource, Oregon positions itself as a leader in water management.

Accomplishments to date

During the 2023-2025 biennium (Phase 2), OWDP development focused on transforming the foundational work from Phase 1 into tangible deliverables that demonstrate the portal's value and establish sustainable operations. This phase involved collaboration across participating state agencies and continued engagement with tribes, stakeholders, and interested parties to build upon the planning and scoping achievements of the previous biennium. The OWDP project team successfully delivered on the key objectives outlined in the OWDP's Funding Level and Authorization for the 2023-2025 biennium:

1. A pilot-level portal with enough state tabular and geospatial data to demonstrate its value.
2. A plan to govern and maintain the OWDP and uplift state agency business processes to enable consistent and automated management of interoperable data and improve the effectiveness of OWDP data for water decision-making.
3. Support for participating agencies as they modernize their data and organizational processes and prioritize data for inclusion in the portal in the short and long term.
4. An assessment of the pilot portal's performance with interested parties, drawing from insights gained during initial scoping from 2021 to 2023 (Phase 1) and previous work.

Pilot-level portal

The [pilot OWDP](#) demonstrates the transformative value of centralized water data access by integrating datasets from multiple state and federal agencies into a single, user-friendly platform. Built on Oregon's existing ArcGIS Hub Infrastructure, the pilot portal provides access to 37 datasets, 49 tools, and 25 documents. The datasets include stream gage flow and temperature data from OWRD, water quality parameters from DEQ's AWQMS database, and USGS stream gage information. Users can dynamically view and interact with this data on a map using the portal's OWDP Atlas feature.

The pilot portal was collaboratively developed by INR, the IoW Coalition, and the OWDP project team, including input from multiple state agencies and interested parties, and was publicly launched in January 2025. After evaluating several platform options, the team selected ArcGIS Hub as the primary infrastructure. This choice leveraged existing enterprise software and staff expertise and allowed the team to seamlessly provide access to multiple authoritative datasets from the State's GeoHUB, built with the same ArcGIS Hub platform. In addition, datasets from OWRD and DEQ were harvested into the Internet of Water's Data Integration server, which provides an automated data pipeline, enabling near-real-time data processing via a standards-based API.

By strategically building on existing software systems and established geospatial infrastructure, the pilot portal demonstrates its core value proposition: providing efficient, centralized access to Oregon's water resources data while supporting informed decision-making across agencies and user communities. The automated integration processes and scalable cloud-native architecture establish a strong foundation for future expansion and long-term sustainability.

More details on the development of the pilot portal are available in the Oregon Water Data Technical Team Final Report (Appendix E).

Plan to govern and maintain the OWDP

The OWDP project team developed a recommended governance plan to address the unique challenges of managing a cross-agency data integration initiative. This plan was developed through a collaborative process that brought together representatives from DEQ, INR, OSU, OWRD, DLCD, DGMI, and CASS across four virtual roundtable discussions facilitated by the IoW Coalition. The planning process was strengthened by insights from the New Mexico Water Data Initiative and incorporates recommendations from an outside consultant (Olympic Performance), along with lessons learned from other interagency projects in Oregon and other states. This

approach ensures the governance structure incorporates diverse perspectives and proven practices from similar efforts.

The resulting recommended governance plan establishes clear roles, responsibilities, and decision-making processes essential for sustaining the OWDP over the long term. Key components include recommended staffing for the lead agency, a project team structure with four distinct project teams (Technical Implementation, Administration and Outreach, Integrated Water Data, and Executive Steering Committee) and strategic task forces, and a decision authority matrix. The plan also includes an engagement strategy, including annual Tribal and interested party engagements, targeted usability testing, and interagency convenings to ensure ongoing stakeholder input and project responsiveness.

This governance framework tackles the complex challenge of managing water data integration across multiple agencies with different missions, priorities, and data management practices. This clear but flexible structure will enable the project to evolve from the planning and prototyping phase to full implementation.

The Recommended OWDP Governance Plan is provided in Appendix A.

Support for participating agencies

The OWDP project team worked to support partner agencies throughout the biennium in a variety of ways, including hosting an interagency workshop, developing data standards and OWDP participation guidebooks, and maintaining and updating the Oregon water data inventory.

In April 2024, the IoW Coalition facilitated Oregon's second Technology Adoption Program workshop. This workshop brought together leadership and technical staff from Oregon's key water management agencies alongside representatives from New Mexico and Texas who have successfully launched their own water data portals. This multi-state, collaborative workshop created a unique environment where Oregon's agencies could benefit directly from their peers' experiences and insights, fostering trust between agencies and ensuring that the development and design of the pilot portal aligned with agency needs and expectations.

The report from the 2024 Oregon Technology Adoption Program Workshop is provided in Appendix D.

The project team also developed guidance materials to assist agencies in modernizing their data management practices and contributing data to the pilot portal. The [Water Data Standards Guidebook](#) provides detailed recommendations for creating interoperability between diverse water datasets and offers guidance on recommended elements for data and metadata. The

team also developed an OWDP Onboarding Document that includes information about data verification processes, classification guidelines, metadata application instructions, and both template-based and API-based submission options for the pilot OWDP.

The [Water Data Standards Guidebook for the Oregon Water Data Portal](#) is provided in Appendix H.

The OWDP Onboarding Document is provided in Appendix G.

During the 2021-2023 biennium, the OWDP project team cataloged over 500 distinct datasets from 15 agencies and assessed their readiness for inclusion in the OWDP. Building on that prior work, the project team enhanced data set inventory consistency during this biennium through targeted meetings with DEQ, WRD, OWEB, ODFW, and ODF. These sessions focused on standardizing descriptions, improving metadata quality, and incorporating new dataset entries that were not previously represented in the original catalog. This work resulted in a centralized inventory that functions as a comprehensive spreadsheet of water data resources, tools, and systems used by agencies across the state.

These activities directly benefited participating agencies by providing guidance and support for data modernization that could improve agencies' data capabilities while supporting broader OWDP goals. The TAP workshop gave agencies an opportunity to learn from proven approaches and build interagency relationships, while the standards and participation guidebooks offered technical guidance for ensuring data compatibility across agency systems. The inventory work helped agencies understand their data assets and identify collaboration opportunities, while agency-level data projects created pathways for data infrastructure improvements.

The 2025 Oregon Water Data Inventory is provided in Appendix K.

Assessment of the pilot portal's performance

The OWDP project team conducted multiple engagements at different points in the project timeline to enable user feedback to inform design decisions. The November 2024 Interested Parties Engagement drew over 100 participants for a webinar demonstration of the draft pilot portal, prior to its public release. This early engagement broadened awareness of the project and allowed stakeholders to see the portal's capabilities firsthand and provide initial feedback on its design and functionality. Additionally, the Natural Resources Working Group facilitated a state and Tribal government engagement session for the project that gave participants an opportunity to learn more about the portal's development, ask questions in a smaller group setting, and offer input on how it could better serve their water data needs.

The team conducted more targeted one-on-one evaluations through two structured user testing sessions conducted in January and May 2025. Staff from the Oregon Water Resources Department, Jackson Soil and Water Conservation District, Farmer Conservation Alliance, and the Columbia River Inter-Tribal Fish Commission provided detailed feedback on specific portal features and usability. The testing confirmed that users found the portal's purpose clear and appreciated its potential value, though they recommended simplifying data access pathways, enhancing the visibility of download functions, and adding more plain-language alternatives to the keywords.

The combined feedback from these engagement activities validated the portal's core concept while highlighting specific technical and organizational improvements. User recommendations led to immediate adjustments, including adding embedded help features for data downloads and reorganizing water category information for better consistency. This iterative feedback process demonstrated the value of continuous stakeholder engagement in refining the portal to meet user expectations and needs.

More details on these engagements are available in the OWDP 2023-2025 Engagement Summary Report (Appendix C).

Recommendations for Phase 3

Based on the project learnings from Phase 2, the Project Team has developed high-level recommendations to foster the continued success of the OWDP project in Phase 3, as well as specific tasks to effectively implement those recommendations. These recommendations assume a scope similar to what was proposed, though not enacted, in [House Bill 3106-A](#) and are presented with acknowledgement that the OWDP project teams, under the approved governance plan, will ultimately decide which activities to pursue and how to approach them.

Recommendation 1: Establish a sustainable governance structure and operational framework for the OWDP project.

- Task 1.1: Implement a governance structure through memorandums of agreement or other binding mechanisms, building on the Governance Plan developed in Phase 2.
- Task 1.2: Maintain and enhance interagency coordination activities related to water data collection and use across partner agencies.

- Task 1.3: Develop a funding strategy that incorporates state appropriations, federal and philanthropic grants, and other funding sources to support ongoing data infrastructure improvements across agencies and continuous enhancement of portal capabilities.
- Task 1.4: Develop a plan for the administration of the Integrated Water Data Account¹, in consultation with representatives from participating agencies.

Recommendation 2: Develop a comprehensive plan for the development and implementation of the permanent portal.

- **Task 2.1:** Complete a comprehensive assessment of the pilot portal through user engagement sessions and usability testing with diverse user groups.
- **Task 2.2:** Develop requirements for the permanent portal based on the comprehensive assessment.
- **Task 2.3:** Based on requirements, develop a technical architecture to support the permanent portal.
- **Task 2.4:** Document in a detailed plan the permanent portal requirements, technical architecture, etc., and begin the Oregon IT Investment Oversight [Stage Gate](#) process.

Recommendation 3: Collaboratively develop and implement common data standards, protocols, and technical frameworks for Oregon's Water Data Portal.

- Task 3.1: Develop, update, and maintain protocols and common water data standards to support the discoverability, accessibility, interoperability, and reuse of Oregon's water data. To the extent possible, this work should be guided by existing protocols and standards.
- Task 3.2: Promote adoption and adherence to protocols and common water data standards within participating agencies through technical guidance and training.

¹ The Integrated Water Data Account proposed in Oregon [HB 3106](#) is a separate treasury fund managed by the Lead Agency, continuously appropriated for water data management. Funding sources include legislative appropriations, grants, private donations, and account earnings. Expenditures are restricted to developing the integrated water data portal, implementing Integrated Water Data Team actions, distributing funds to participating state agencies, and providing grants to other entities for water data collection and management supporting the portal. The legislation specifies that the Lead Agency may establish administrative rules as needed.

- Task 3.3: Update and maintain documentation and guidance for pilot portal data submission and maintenance procedures.

Recommendation 4: Enhance pilot portal functionality and usability through user engagement and iterative development.

- Task 4.1: Based on user feedback gathered in Phase 2, add additional datasets and usability enhancements to the pilot portal based on analysis of user needs and feedback from the pilot portal assessment.
- Task 4.2: Test and refine new pilot portal features through iterative development cycles, incorporating user feedback.

Recommendation 5: Partner with agencies to advance data readiness and strategic water initiatives.

- Task 5.1: Continue to maintain and update the statewide water data inventory to track available datasets and readiness levels.
- Task 5.2: Develop and support processes within each participating agency to strategically sequence water data sets for inclusion in the OWDP.
- Task 5.3: Support the development and implementation of agency-specific projects that address statewide data needs, including requirements for Oregon's Integrated Water Resources Strategy (ORS 536.220) and the Oregon Plan for Salmon and Watersheds (ORS 541.972).
- Task 5.4: Provide technical assistance to agencies throughout the data preparation and ingestion process.

Recommendation 6: Strengthen user engagement, build awareness, and improve pilot portal accessibility.

- Task 6.1: Implement strategic outreach and communication plans to ensure broad awareness and adoption of portal resources and ensure thorough engagement with underserved communities throughout portal development.
- Task 6.2: Consult and collaborate with diverse water data providers and users to gather input on portal development priorities and increase accessibility of water data over time.

- Task 6.3: Host webinars and training sessions to increase awareness and use of the pilot portal among target user communities.

Conclusion

The next phase of the Oregon Water Data Portal project will be contingent upon future funding and legislative direction. [House Bill 3106-A](#) (2025) proposed, a trajectory for this initiative for the 2025-2027 biennium and beyond, including a proposed lead agency, scope of work and ongoing governance structure. However, the bill did not receive funding support from the Joint Committee on Ways and Means and therefore was not enacted.

The recommendations outlined in this report assume a project scope similar to what is proposed in HB 3106-A. However, future legislative direction, and engagement from involved agencies, will ultimately determine specific activities and implementation efforts to further develop the OWDP.

The OWDP project has already delivered meaningful benefits to Oregon's water management community. It has created new pathways for collaboration between agencies and demonstrated the value of integrated water data. With continued support and investment, this project can help Oregon better understand and manage its water resources. The pilot portal has shown what's possible when agencies work together to share data and expertise. With this foundation in place, and pending resource availability, Oregon is well-positioned to take the next step toward modern water data management and more informed decision-making.

Appendices

[Appendix A: Recommended Governance Plan](#)

[Appendix B: Supplemental Governance Documents](#)

[Appendix C: 2023 – 2025 Oregon Water Data Portal Tribal and Interested Party Engagements](#)

[Appendix D: Oregon Water Data Portal Technology Adoption Program Engagement 2024](#)

[Appendix E: Summary of Technical Work Completed for the Oregon Water Data Portal Phase 2](#)

[Appendix F: Beta Pilot Portal User Testing](#)

[Appendix G: Oregon Water Data Portal Onboarding Document](#)

[Appendix H: Water Data Standards Guidebook for the Oregon Water Data Portal](#)

[Appendix I: Data Modernization Guidance for Water Sector Public Agencies](#)

[Appendix J: Data Processing Tools Inventory](#)

[Appendix K: Oregon Water Data Portal Working Dataset Inventory as of June 2025](#)

[Appendix L: Long-Term Agency-Level Oregon Water Data Portal Projects](#)

[Appendix M: Oregon Water Data Portal 2024 Status Report \(per 2023 HB 5018 Budget Note\)](#)

[Appendix N: Project Questions, Issues and Risks - Updated June 2025](#)

[Appendix O: White Paper: OWDP, Supporting and Maturing the Basis for Better Water Decision Making](#)

[Appendix P: Oregon Water Data Portal Phase 2 Project Management Review and Recommendations](#)

[Appendix Q: Oregon Water Data Portal Phase 2 Project Documents](#)

[Appendix R: Making a Water Data System Responsive to Information Needs of Decision Makers](#)

[Appendix S: Evaluation of Oregon Water Data Portal Project: Phase 2](#)

[Appendix T: Lessons Learned](#)

[Appendix U: Oregon Water Data Portal Project Considerations - Moving Forward](#)

[Appendix V: Oregon Water Data Portal Project 2025-2027 Biennium Options](#)

[Appendix W: Oregon Water Data Portal – Working Glossary of Project Terms](#)