



Oregon Water Data Portal

Second Annual Workshop

Hosted by the Internet of Water
Technology Adoption Program

APRIL 25, 2024 | THE GRAND HOTEL AT BRIDGEPORT

Contents

Introduction	3
Key Takeaways: Pre-workshop Dinner	4
Key Takeaways: Morning Session	4
Open Space Workshop: Pilot Portal User Interface & Use Cases	4
Key Takeaways: Afternoon Session	6
Roundtable: Long-term Sustainability & Lessons from Other States	6
Next Steps & Conclusion	8
Appendix 1 : OWDP Pre-Workshop Dinner & Discussion Agenda	9
Appendix 2: OWDP Workshop Agenda	10

Internet of Water Technology Adoption Program (TAP) is an in-situ training program for state agency leadership, IT staff, and subject matter experts involved in data modernization projects. TAP facilitates technological and organizational change through direct engagement, helping public agencies modernize how their water data are managed, shared, and deployed for decision-making. TAP is managed by the Water Policy Program at the Nicholas Institute for Energy, Environment & Sustainability at Duke University.



Introduction

In April 2024, the Internet of Water (IoW) hosted its second Technology Adoption Program (TAP) engagement in Oregon, aimed at advancing the Oregon Water Data Portal (OWDP), an initiative designed to establish a unified access point for all public water and infrastructure data in Oregon. Prior to the main sessions, a pre-workshop dinner was held, bringing together key project stakeholders and representatives from other states to foster an informal exchange of ideas and strengthen collaborations.

TAP, managed by the IoW team at Duke University, assists public agencies in modernizing how water data is managed, shared, and deployed. It employs participatory processes like the Open Space Technology method and roundtable discussions to encourage organizational and technological changes. The morning session concentrated on refining the portal's user interface and evaluating practical use cases, which are crucial for the portal's functionality and user engagement. The afternoon session broadened the scope to include lessons learned from similar data initiatives in other states, with contributions from participants from New Mexico, Texas, and Idaho, which enriched the discussions on long-term sustainability and strategic planning for the OWDP. The workshop wrapped up with targeted discussions on actionable steps to meet the goals set for this biennium.

These discussions not only highlighted collaborative efforts and shared challenges across state lines but also focused on addressing specific questions and formulating strategic solutions for the OWDP. With another TAP engagement planned for 2025, the OWDP project team is well-positioned to leverage these collaborative insights and continue refining the portal to meet the evolving needs of water management in Oregon.

Key Takeaways: Pre-workshop Dinner

During the pre-workshop dinner, OWDP project partners and representatives from data projects in New Mexico, Texas, and Idaho gathered to share lessons learned and discuss strategies for advancing the OWDP's development and long-term sustainability. The overarching goals of the dinner were to facilitate dialogue and knowledge sharing across different states and to identify key insights from other states' experiences that can be leveraged for the OWDP project.

- 1. Building trust and relationships is key to project success.** The discussion highlighted the effectiveness of building trust with other agencies, noting how such relationships have facilitated project success. The importance of helping other agencies secure funding was identified as critical for collaborative projects. This approach, focusing on mutual benefits and shared goals, should be a cornerstone of the strategy to engage stakeholders and facilitate inter-agency cooperation for the Oregon Water Data Portal.
- 2. Exploring diverse funding strategies could enhance project support.** OWDP project partners could investigate new funding strategies to expand opportunities to secure sustainable support for the portal and associated data projects. Innovative approaches such as leveraging grants that enable universities or other entities to contribute staffing to projects, or establishing a dedicated funding pool for water data that is not restricted to a specific state agency, were discussed as potential models. These methods could provide more flexible and resilient financial backing for ongoing data management efforts and project development.
- 3. Communicating the risks of inaction is imperative.** The pre-workshop dinner also brought to light the critical need to communicate the risks associated with not pursuing the OWDP project. Highlighting potential setbacks, such as lost opportunities for improved water management and the possible consequences of delayed response in times of water-related disasters, can help stakeholders and decision-makers understand the urgency and importance of the project. Effective communication of these risks is vital for securing the necessary buy-in and support for the project's continuation and success.

Key Takeaways: Morning Session

Open Space Workshop: Pilot Portal User Interface & Use Cases

During the morning session of the TAP engagement, stakeholders were presented with draft wireframes of the Oregon Water Data Portal (OWDP). After the presentation,

participants self-selected into four groups, each associated with a different persona. Tasked with navigating a use case focused on the temperature data theme, each group explored this scenario from their persona's unique perspective. This structured exercise provided critical insights into diverse user needs and preferences. The key takeaways below encapsulate these insights, offering strategies to enhance the portal's design and functionality to accommodate a wide range of users.

- 1. Personas are useful for conceptualizing usability but not for structuring the interface of the Oregon Water Data Portal (OWDP).** The workshop discussions revealed that while personas such as "Aubrey the A Student" or "Dave the Decision-maker" are valuable tools for considering different user needs during the design process, they are not as effective when used as the primary structuring element of the portal's interface. Users often do not identify with these predefined categories such as "students" or "decision-makers" and prefer a more flexible entry point that allows them to navigate based on specific tasks or queries. This insight emphasizes the importance of using personas as a background tool to enhance understanding of user interactions while providing a more intuitive interface that engages users around their needs.
- 2. The OWDP must clearly communicate data limitations and appropriate use to prevent misuse and misinterpretation.** A recurrent theme in the session was the critical need for clear metadata and disclaimers about data limitations and appropriate uses, particularly when the data is used for decision-making by non-experts. The portal must ensure that users understand the context and constraints of the data they are accessing to prevent errors and misinterpretation, which could lead to misinformed decisions. Providing this transparency is essential not only for user trust but also for the integrity of the data usage, fostering an informed and cautious approach to data interpretation.
- 3. Early engagement with tribal nations is critical for respecting data sovereignty and enhancing data inclusivity.** Engaging with tribal nations early in the development process is crucial to ensure that data sovereignty is respected and that culturally relevant and sensitive datasets are included in the OWDP. Approaches such as establishing Memorandums of Understanding (MOUs) can facilitate this engagement, although they represent just one of many possible methods. This proactive involvement supports the integration of tribal data in ways that are respectful and appropriate, enriching the portal's comprehensiveness and fostering trust among a broader spectrum of stakeholders.
- 4. The concept of 'graceful degradation' is crucial for ensuring the OWDP's accessibility across different devices, complemented by the development of predetermined or curated maps.** A significant takeaway from the session

was the need for the OWDP to implement 'graceful degradation', ensuring the portal remains functional and user-friendly across various devices, especially mobile phones. As part of enhancing usability, there was also a recognized need to develop predetermined or curated maps that can provide quick, easy-to-understand visualizations for common data inquiries. These maps would serve as a valuable tool for users who may not have the expertise or time to create custom visualizations, ensuring that essential information is accessible in a format that is immediately useful and engaging. This approach helps maintain a balance between comprehensive data display on desktops and a streamlined, accessible format on smaller screens, enhancing the overall user experience.

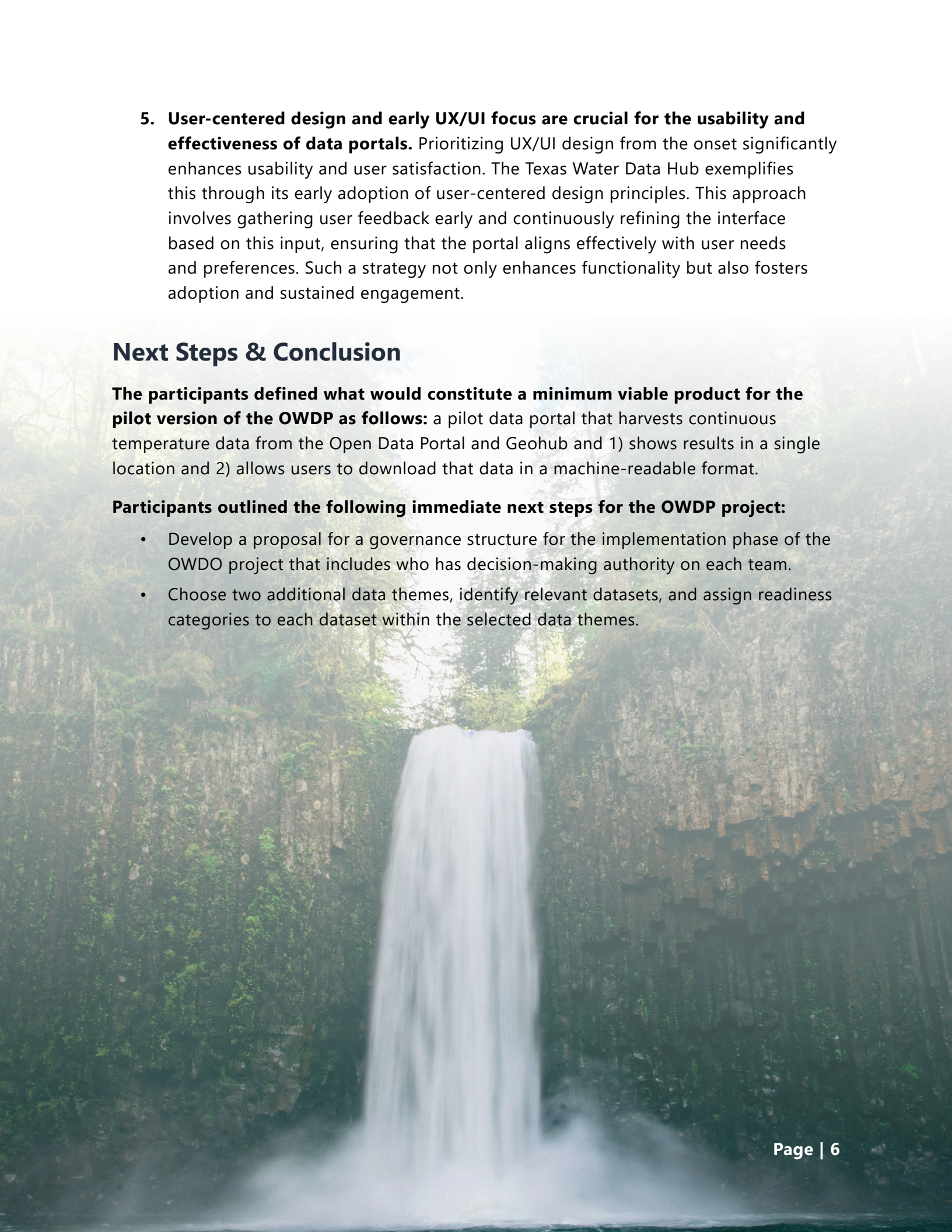
- 5. Integration of dynamic user feedback into the OWDP is essential for its continual improvement and relevance.** The ability for users to save searches, integrate other datasets, and manage version control and updates enhances the OWDP's functionality and fosters a feedback loop essential for continual improvement. Allowing users to save searches provides insights into popular data needs and patterns, which can guide future enhancements to the portal. The ability to integrate external datasets enriches the resources offered by the portal, enabling comprehensive and cross-disciplinary research and ensuring that the portal remains relevant as new external data sources become available. Effective version control and regular updates guarantee the reliability and current relevance of the data, maintaining user trust and portal integrity. Collectively, these features not only improve individual user experiences but also inform ongoing development strategies, ensuring the portal remains a dynamic and responsive resource for water management data.

Key Takeaways: Afternoon Session

Roundtable: Long-term Sustainability & Lessons from Other States

During the afternoon session of the TAP engagement, stakeholders participated in a roundtable discussion that began with representatives from New Mexico and Texas providing an overview of their respective work on the New Mexico and Texas Water Data Hubs. An open discussion followed, offering participants the opportunity to ask questions directly to the representatives from New Mexico and Texas, as well as to engage in broader strategic conversations about the long-term sustainability of the OWDP. The session concluded with a focused discussion on the immediate next steps for the OWDP project. The following key takeaways distill the essential points from these discussions, aimed at guiding the ongoing development and successful implementation of the OWDP.

- 1. Standardized, machine-readable data formats are essential for effective cross-agency data integration and accessibility.** The roundtable discussion emphasized the critical need for standardized data architectures, such as APIs, to ensure data interoperability and accessibility across various agencies. This strategy allows stakeholders to access and utilize data efficiently, promoting transparency without centralizing data storage. New Mexico's successful use of these formats demonstrates how they enable seamless data sharing and broad engagement among diverse stakeholders. This methodology not only improves transparency but also significantly increases the utility of data in public decision-making.
- 2. Clear governance structures are crucial for both long-term data management and short-term project implementation.** The roundtable discussion emphasized the need to establish clear governance structures that define roles and responsibilities, which are vital for effectively managing complex data environments. This clarity not only supports long-term data management strategies but is also critical for the successful development of the OWDP pilot portal. Participants noted that role ambiguity and a lack of decision-making authority have impeded progress in phase two of the project. Implementing a clear decision-making framework would enhance accountability, facilitate conflict resolution, and drive efficient project advancement.
- 3. Cultural and operational shifts in agencies require time, consistent messaging, and decisive leadership.** It often takes years to build the momentum agencies need to transform their data culture. This gradual progression highlights the importance of persistent and targeted efforts to educate and engage all levels of an organization. Direct communication and strong leadership are crucial for securing stakeholder buy-in and necessary funding. Participants from other states recommended regular training sessions and workshops to enhance data literacy and clear communication about the benefits and operational changes associated with new data management practices. These strategies help cultivate a supportive environment that accelerates the rapid adoption of new practices and technologies.
- 4. Data privacy and security are paramount in the design and operation of data portals.** Agencies are particularly concerned about protecting sensitive information and maintaining trust, which underscores the necessity of integrating robust data privacy and security measures early in the development process. Starting with a secure foundation prevents the complexities and costs associated with later modifications. Features like encryption, secure access protocols, and authentication should be core components of the portal's architecture. Early integration of these elements ensures data integrity, safeguarding the portal against breaches and building its credibility.

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5. **User-centered design and early UX/UI focus are crucial for the usability and effectiveness of data portals.** Prioritizing UX/UI design from the onset significantly enhances usability and user satisfaction. The Texas Water Data Hub exemplifies this through its early adoption of user-centered design principles. This approach involves gathering user feedback early and continuously refining the interface based on this input, ensuring that the portal aligns effectively with user needs and preferences. Such a strategy not only enhances functionality but also fosters adoption and sustained engagement.

Next Steps & Conclusion

The participants defined what would constitute a minimum viable product for the pilot version of the OWDP as follows: a pilot data portal that harvests continuous temperature data from the Open Data Portal and Geohub and 1) shows results in a single location and 2) allows users to download that data in a machine-readable format.

Participants outlined the following immediate next steps for the OWDP project:

- Develop a proposal for a governance structure for the implementation phase of the OWDO project that includes who has decision-making authority on each team.
- Choose two additional data themes, identify relevant datasets, and assign readiness categories to each dataset within the selected data themes.

Appendix 1

OWDP Pre-Workshop Dinner & Discussion Agenda

APRIL 24, 2024 | MCCORMICK & SCHMICK'S | 17015 SW 72ND AVE, TIGARD, OR 97224

The 2021 Oregon Legislature directed the Department of Environmental Quality (DEQ) and state water agencies to initiate the scoping and design of a “water database framework.” This is envisioned as a single point of access for public water and infrastructure data to inform water resource decisions in Oregon. In response, DEQ, in collaboration with other state water agencies, launched the Oregon Water Data Portal (OWDP) project. The first phase of the OWDP, spanning from 2021 to 2023, established the project’s scope and methodology. The second phase is currently underway and will include the development of a prototype water data portal.

As a component of this initiative, Internet of Water is hosting an annual Technology Adoption Program Workshop for OWDP project partners. This year’s event will also convene key OWDP project partners and representatives from other states engaged in the development or planning of similar water data portals for a pre-workshop dinner and discussion.

The overarching goals of this dinner are to:

1. Facilitate dialogue and knowledge sharing across different states.
2. Identify key insights from other states’ experiences that can be leveraged for the OWDP project.

Dinner Agenda

6:00 pm – 6:30 pm Welcome and Introductions

Icebreaker question: Name, Agency, We are all writing and reading something right now, a paper, a proposal, a book. When you are at work next week, what will you be writing or reading about?

6:30 pm – 8:00 pm Guiding questions for discussion:

- What motivated your state to develop a water data portal?
- What strategies for generating buy-in have you found to be most successful?
- How do you manage long-term administration and updates?
Do external organizations such as nonprofits, universities, or extension services play a role?

- What are the primary sources of funding for your state's water data portal or hub?
- Does your state maintain an "open data" portal? If so, how does it interact with the water data portal?
- What are the biggest challenges your state has faced? What creative strategies have you developed to overcome these obstacles?

8:00 pm – 8:30 pm Dessert and Wrap Up

What was your takeaway from this evening? Share a follow-up, a new discovery or insight, or something that you were inspired or challenged by.

Appendix 2

OWDP Workshop Agenda

APRIL 25, 2024 | THE GRAND HOTEL AT BRIDGEPORT, THE BRIDGEPORT ROOM

Morning Session

Open Space Workshop: Pilot Portal User Interface and Use Cases

9:00am – 9:15am Welcome, Breakfast, and Introductions, *Josh Weber*

9:15am – 9:25am Review of the Open Space process for engagements, *Ashley Ward*

9:25am – 9:55am Share OWDP Wireframes, *Carrie Hertel and Sarah Mattecheck*

9:55am – 10:15am Open Market Space: Update list of use cases and personas, *Ashley Ward*

10:15am – 10:30am Break (Select Breakout Group)

10:30am – 11:30am Breakout Group Activity and Discussion

- Activity: Each group will run their use case/persona through the wireframe (How would this person go through the portal to answer their question?)
- Discussion: What worked well? What barriers did you encounter while trying to answer your question? What features or

functionality could improve the user experience for your persona?

- 11:30 am – 12:15 pm Presentations from each Breakout Group
- 12:15 pm – 12:30 pm Summary and Wrap-up, *Ashley Ward*
- **12:30 pm – 1:30 pm Lunch**

Afternoon Session

Roundtable: Long-term Sustainability of the OWDP

1:30 pm – 1:40 pm Introduction and Review of Roundtable Process, *Ashley Ward*

1:40 pm – 1:45 pm Discussant: *Stacy Timmons*, Associate Director for Hydrology Programs, New Mexico Bureau of Geology and Mineral Resources (NM Water Data Initiative)

1:45 pm – 1:50 pm Discussant: *Sam Marie Hermitte*, Assistant Deputy Executive Administrator of Water Science & Conservation, Texas Water Development Board (TX Water Data Hub)

1:50 pm – 3:20 pm Open Discussion

How can we apply lessons learned from other states to generate creative solutions to get the work done, build and maintain the people network, and get people excited about the project and the possibilities it will create?

3:20 pm – 3:30pm Break

Discussion Summary and Next Steps

3:30pm – 4:00pm Facilitated Discussion, *Ashley Ward*

What are the specific next steps for the Oregon Water Data Portal? What outputs are achievable by June 2025? What milestones do we expect to achieve in the 2025-27 biennium? How can agency representatives/teams engage?