



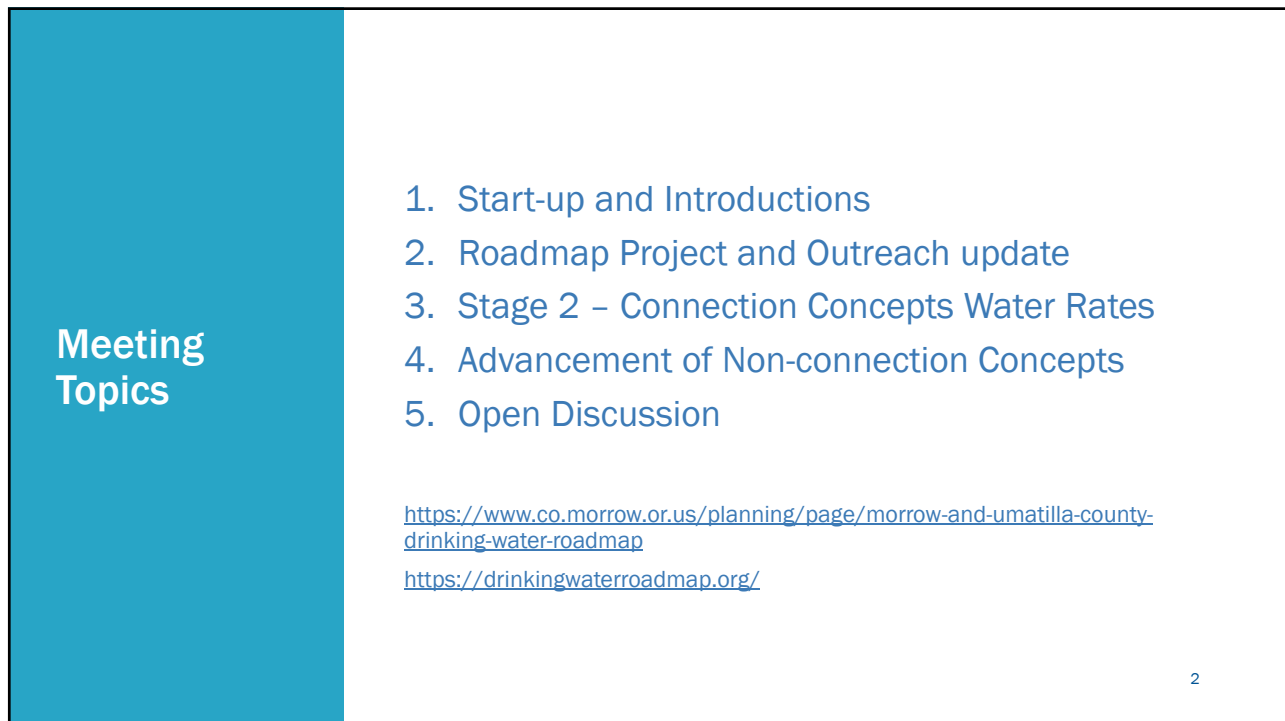
Steering Committee Meeting #8

Morrow and Umatilla County Drinking Water Investigation (Roadmap)

March 16, 2026



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Meeting Topics

1. Start-up and Introductions
2. Roadmap Project and Outreach update
3. Stage 2 – Connection Concepts Water Rates
4. Advancement of Non-connection Concepts
5. Open Discussion

<https://www.co.morrow.or.us/planning/page/morrow-and-umatilla-county-drinking-water-roadmap>

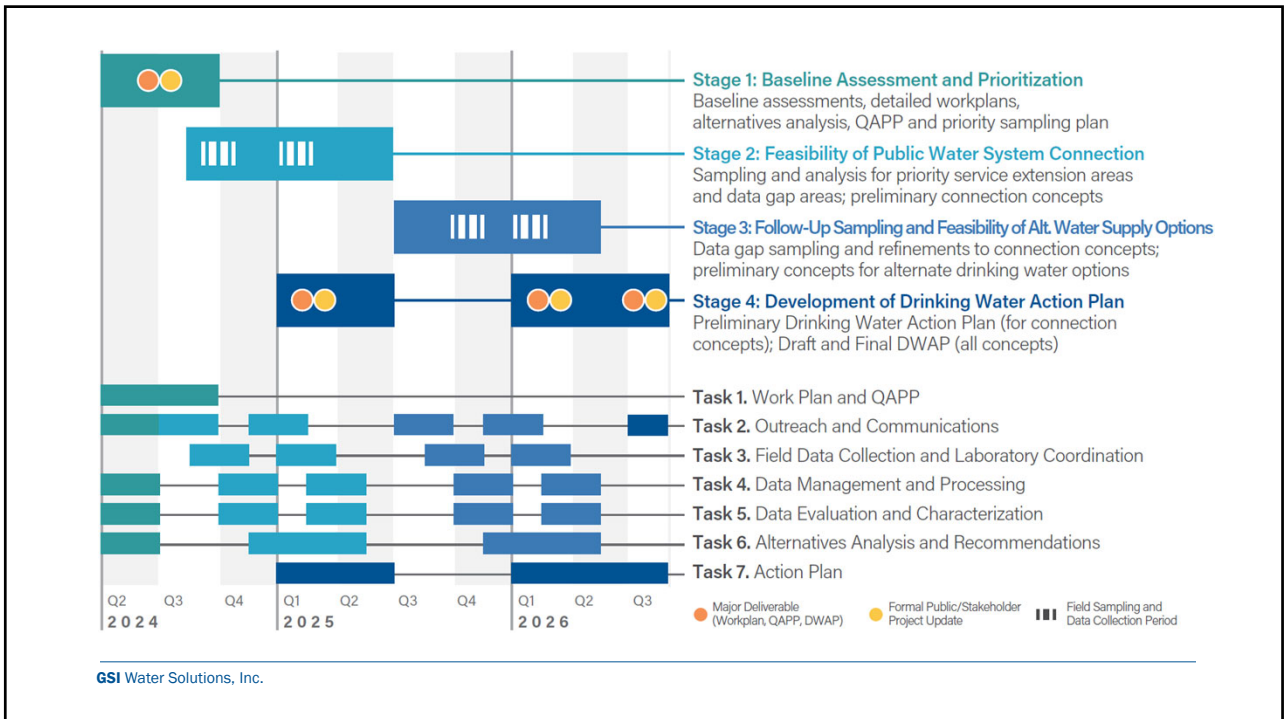
<https://drinkingwaterroadmap.org/>

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Roadmap-related Updates

- Clean Water Consortium
 - Community Initiated Projects (formerly “CDS”)
 - Morrow County New Water System Feasibility Project
 - Rural Residential Nitrate-Contaminated Drinking Water Solutions Pilot
- DHS-OREM Treatment Pilot Testing Project
 - Ion-exchange/Reverse Osmosis-type technology
 - Seeking volunteer homeowner participants
 - Contact: Shelley Wight; shelley.m.wight@odhs.oregon.gov

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Stage 3 Sampling Overview and Results

- Location of samples
 - Focus Area 1, 4, & 9
 - 7 samples collected
- Results (Nitrate)
 - Detected in 5 of 7 samples
 - Above MCL in 3 of 5 samples
- OHA data consistent with Roadmap samples



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Table 1. Summary of Nitrate Results, Stage 3 Sampling

Well ID	Location	Aquifer	Sample Date	Nitrate (mg/L)
32278	Focus Area 9	Unknown ¹	10/30/2025	5.07
MORR 671	Focus Area 1	Basalt	10/29/2025	25.3
MORR 665	Focus Area 1	Basalt	10/30/2025	34.9
MORR 52818	Focus Area 4	Basalt	10/29/2025	ND
MORR 51743	Focus Area 1	Basalt	10/29/2025	28.6
UMAT 54260	Focus Area 9	Basalt	10/30/2025	5.56
MORR 1243	Focus Area 4	Basalt	10/29/2025	ND

Notes

¹ Well has no associated OWRD Well ID.

ND = Not detected above referenced laboratory reporting limit

mg/L = milligrams per liter

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Communications and Outreach Update

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2026 | Drinking Water Roadmap

Final Survey Summary

Overview of well owner responses from all Focus Areas identified within the LUBGWMA region

Full report available online at Drinkingwaterroadmap.org

Final results from the Well Owner Survey

- Activated in April 2025 during Stage 2
- Survey active through Stage 3
- Offered via print and digital format
- Spanish & English language
- 151 responses to date – 64% increase from Stage 2
- Even distribution across Morrow and Umatilla Counties

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Respondent Profile

Most wells belonged to a single household. 84%

Well belongs to single household or shared?

Category	Percentage
Only household on the well	84.35%
Shared well with multiple households	13.61%
Not sure	2.04%

Most indicated familiarity with nitrate. 91%

How familiar are you with nitrates in drinking water?

Familiarity Level	Percentage
Very familiar	46.00%
Somewhat familiar	45.33%
Not familiar	4.67%
Not familiar at all	4.00%

County Health Department leads as main source for information on nitrate contamination. 70%

Followed by Online Sources (news, social media, websites) and the State of Oregon.

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Findings

Leading concerns across connection and non-connection options:

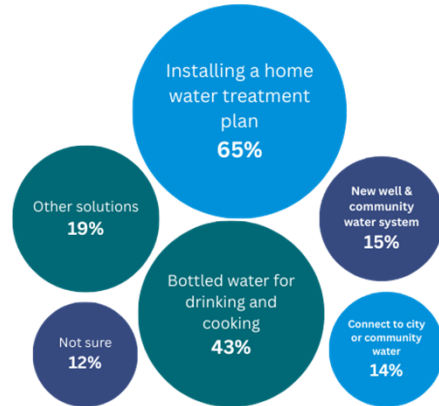
1. Cost
2. Ownership
3. Maintenance

"We would love soft sweet tasting water it would be healthier, but can it be done at a cost we can afford"

"Sharing a well is not a consideration for us"

"Do not want to rely on shared services or cost to maintain well"

Preferred solutions to addressing nitrate contamination:



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Highlights



Health Departments are the most trusted sources for information



Cost is the leading concern across all water solutions



Increased concerns about shared ownership of new treatment systems



Increased interest in the potential sources of contamination



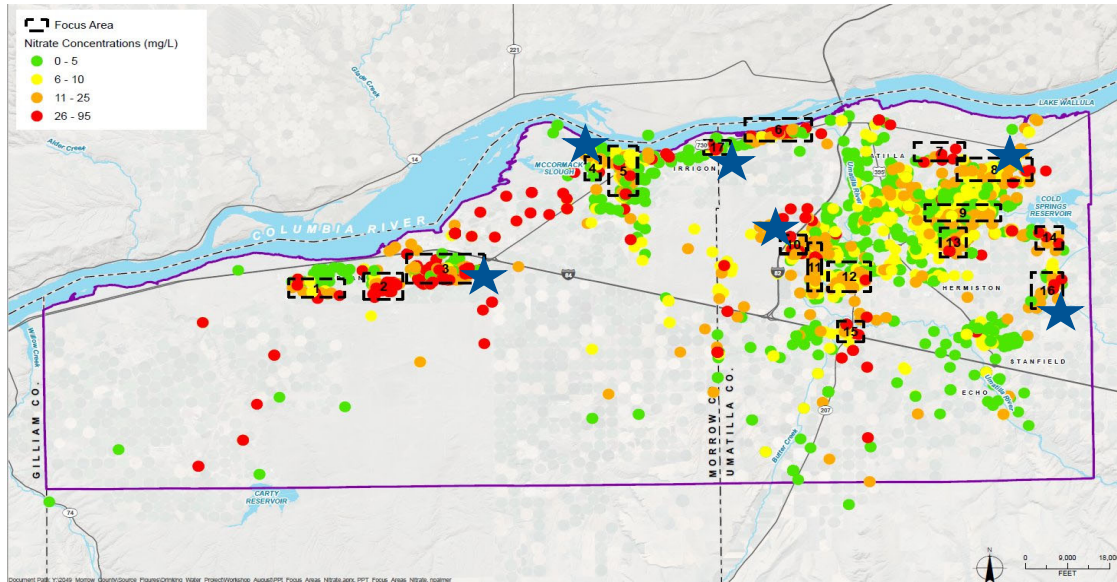
Strong desire for independence from City systems



Increased support for home treatment systems with many well owners wanting more information

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Follow-up Questionnaires at Potential Case Study Areas



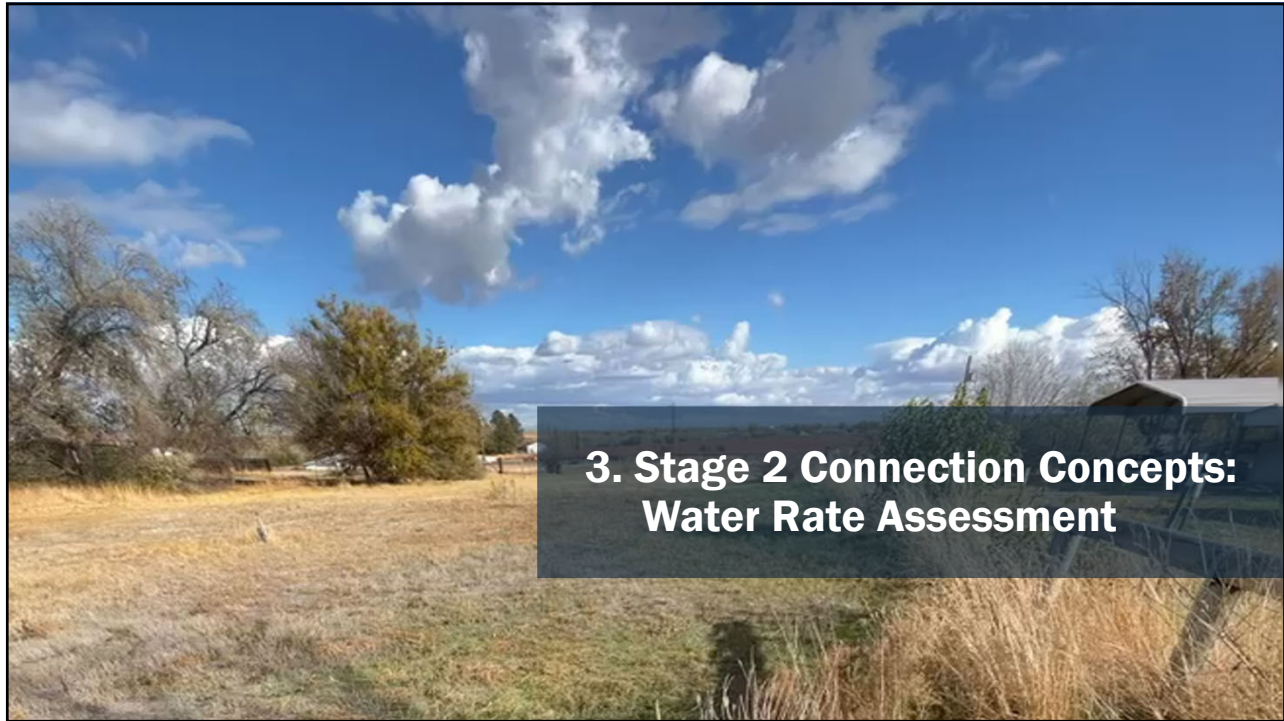
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Questionnaire Responses

- Activated January
- Two rounds of mailings
- 30% response rate of target group (21 participants)
- Spanish/English format
- Focus Areas 3, 4, 10



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Monthly Water Rates

- Designed to fund the day-to-day operations expenses of the utility, the debt service for the construction costs, and future renewal and replacement
- Assessment is a *high-level analysis* for water rates as a reference for affordability comparison
- Rates can be refined through further evaluation of project design, financing approach, operations & maintenance costs, and future replacement funding

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Financial Drivers for Water Rates

- Number of New Customers
- Construction Cost
- Construction Financing or Grant
- Operations and Maintenance Costs
- Replacement and Renewal Fund

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Key Rate Calculation Data

Table 1 Number of Customers				
	Boardman	Hermiston	Irrigon	Umatilla
Current	241	252	281	170
Projected (2047)	359	339	417	229

Table 2 Annual O&M Cost per Customers Assumptions				
	Boardman	Hermiston	Irrigon	Umatilla
FY 2026 O&M/Cust/Yr	\$1,231	\$957	\$749	\$1,369

Table 3 Capital Improvement Cost by City				
	Boardman	Hermiston	Irrigon	Umatilla
Capital Costs	\$37,341,250	\$39,613,750	\$21,725,625	\$20,262,500

Table 4 Debt Service Cost by City				
	Boardman	Hermiston	Irrigon	Umatilla
Debt Costs / Year	\$2,996,359	\$3,178,710	\$1,743,320	\$1,625,915

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Comparative Water Rates

- Initial monthly rates are on the order of:
 - Financed: \$600–\$1,000/month
 - Grant-funded capital: \$100–\$160/month
- Rate factors include:
 - Debt service (constant for financed option)
 - Total O&M cost (drives rate escalation)
 - Rate funded capital
 - Reserve funding

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Non-Connection Evaluation Approach

- System concepts
 - Oregon Very Small System (OVS), Community Water System (CWS)
- Shared well
 - New well or well improvements assumed with treatment
- Treatment options
 - Point of use vs. centralized
 - Infrastructure, O&M, costs, resident preferences
 - Waste stream, residuals

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Type of Water System

- Oregon Very Small System
 - 4 to 14 connections
- Community Water System
 - 15 or more connections or 25+ people year-round
- Requirements differ for:
 - Source protection, water treatment, distribution system, monitoring and reporting, operator certification

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Evaluation of Non-Connection Options

- Develop non-connection concepts to evaluate general implementation issues and case studies for evaluation
 - Implementation factors
 - Conceptual design and costs (capital, O&M)
- Conduct outreach and follow-up with well owners to identify potential case study areas (*recently completed – see above*)

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Water Rights and Water Uses

- Opportunity with SB 1154:
 - Critical groundwater area; no new groundwater permits
 - A new water right can be issued in an amount equal to the water formerly supplied by domestic well that will be abandoned when a customer connects to a *public water system*
- ... with remaining constraints
 - All domestic wells on properties served by the system must also be abandoned
 - Residents generally prefer to retain domestic wells for irrigation
 - Irrigation is a very large volume of water to treat and creates large volume of waste discharge

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Small System Concepts (Revised)

- General Concept:
 - Eliminate the need for a new water right (SB 1154)
 - Select an *exempt well* to serve group only domestic water demands
 - Assume 200 gpd/residence
- Features
 - Water system will have a shared well, treatment, small storage, and distribution system sized to meet domestic water demands
 - Non-public system (1-3 homes; 600 gpd)
 - Oregon Very Small System (4-14 connections; 2800 gpd)
 - Existing exempt domestic wells are retained for irrigation use

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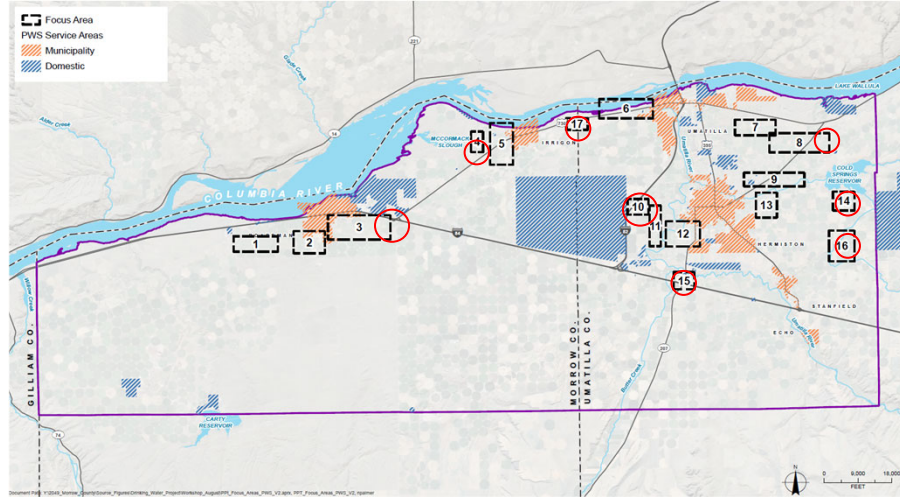
Land Use Permitting for OVS

- Requirement depends on location and zoning
 - Structure size (e.g.. pump house, storage tank)
 - System within/crossing EFU
- Opportunities:
 - Locate service lines with the road right-of-way
 - Water infrastructure/utility is allowed outright use

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Stage 3 Non- Connection Potential Case Study Areas

Follow-up outreach to evaluate interests and concerns

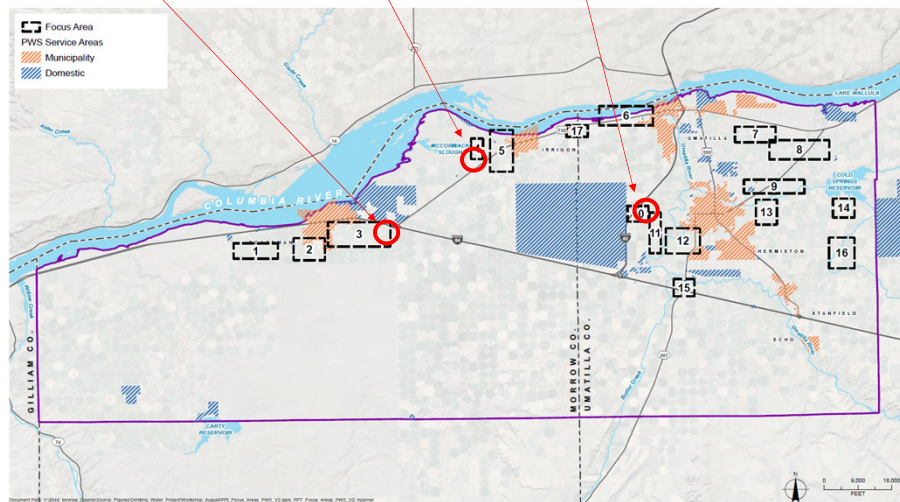


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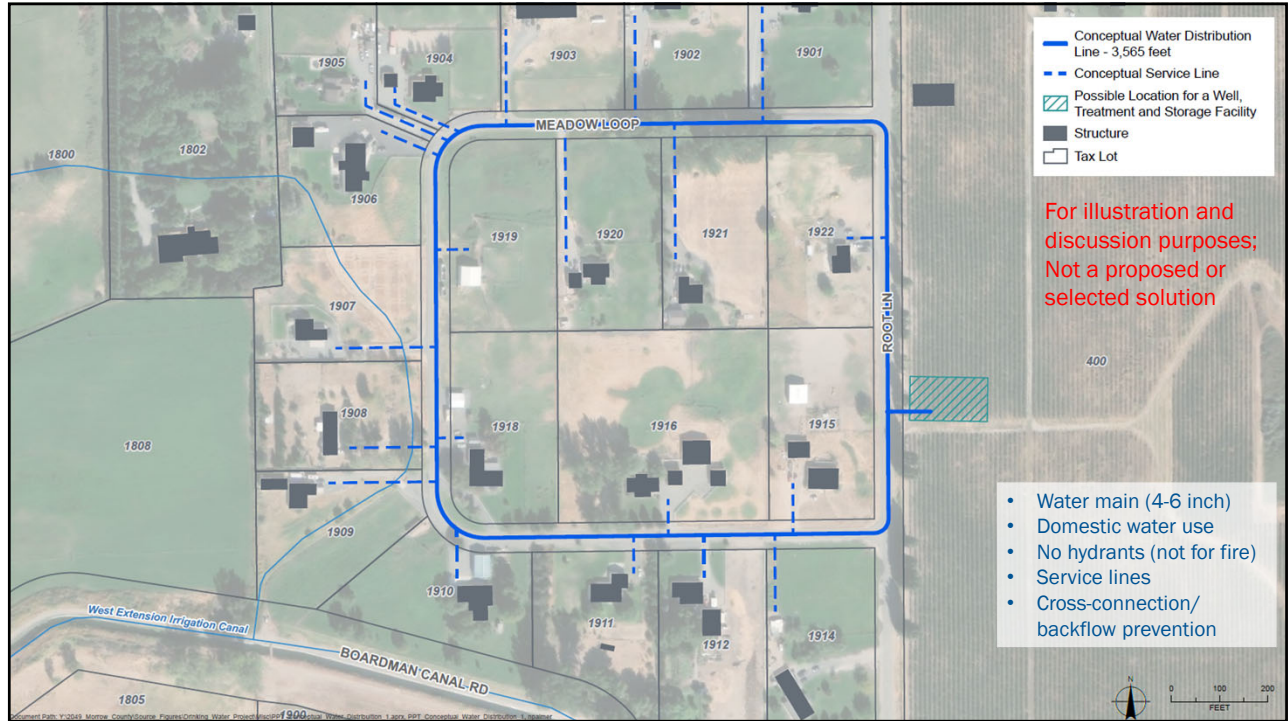
Selected Case Study Areas

FA-3 (Boardman); FA-4 (Irrigon); FA-10 (Hermiston)

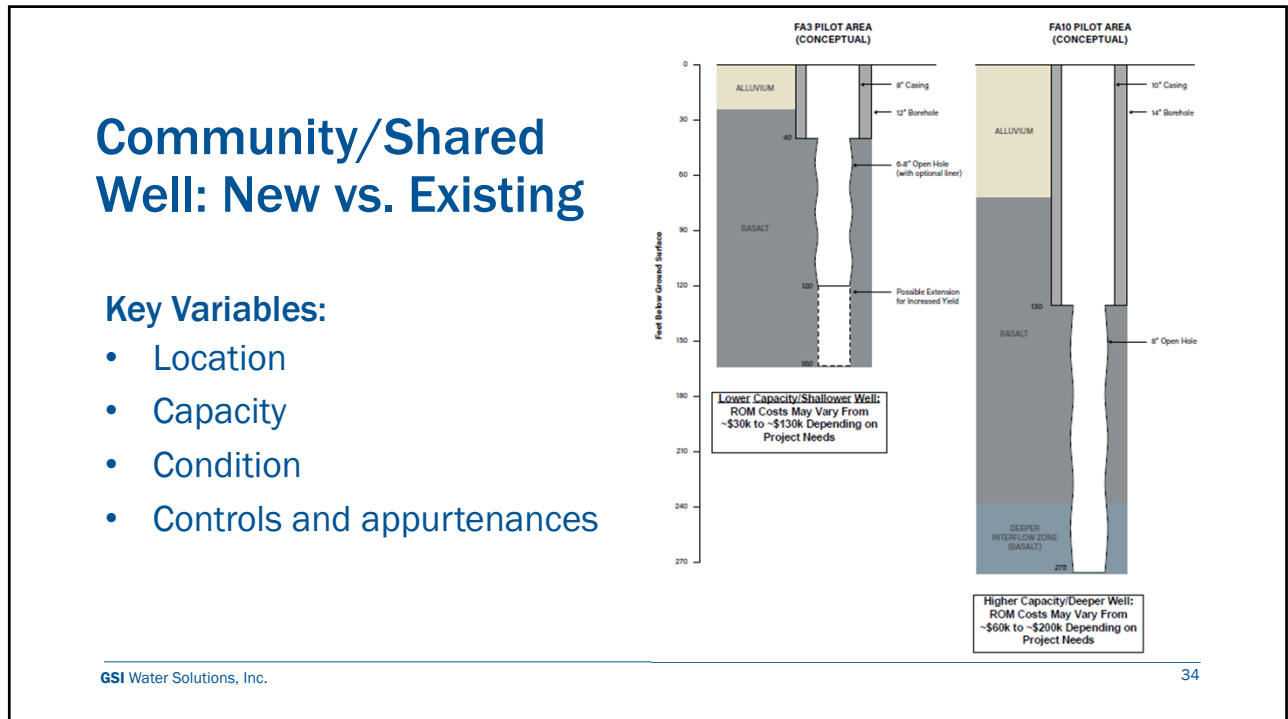


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Community/Shared Well: New vs. Existing

- Testing
 - Production and Sustainable Yield
 - Geochemistry & Nitrates
 - Alignment, Camera, Disinfection
- Commissioning
 - Wellhead, Enclosures Control Panels
 - Utility Tie-In and Infrastructure
 - Startup, O&M and Testing Requirements
 - Documentation



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Typical Source Well Improvements and Costs

System Component	Cost (Typical)	Remarks
Remove pump, limited redevelopment (airlift debris, clean hole, disinfect)	~\$16,000	Assumes "typical" well conditions: 130' deep, basalt, WBZ 80-130; 40 gpm unknown drawdown.
Camera Survey	~\$1,500	Well video to establish "baseline" well condition following pump removal/redevelopment.
Pumping Test	~\$5,000	Assumes basic 4-hr test per OWRD Pump Test requirements. Includes consultant oversight
New Submersible Pump	~\$5,500	Includes new pump column, labor, top-end fittings tied into wellhead manifold
Pressure Transducer Datalogger, Cable, Comm Device	~\$2,500	Cost includes some telemetry capability
Flow Meter (wellhead)	~\$2,000	McCrometer type (turbine; instantaneous & totalizer; no digital/data storage)
Wellhead Modifications (minor)	~\$4,000	Reconfigure sanitary seal (cap) to fit transducer, misc. fittings

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Non-Connection Treatment Evaluation: Concept Advances

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Review: Nitrate Treatment Alternatives



Ion Exchange

- Requires media regeneration
- Disposal of concentrated waste (brine)
- Adds chloride to the finished water



Reverse Osmosis

- High energy use
- Concentrated waste stream

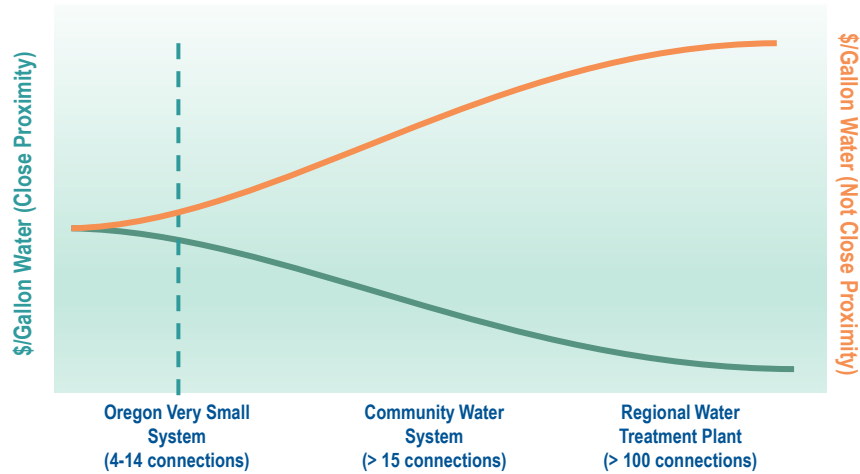


Biological Reduction

- Low energy use
- No concentrated waste stream

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Economies of Scale for Centralized Treatment Can Vary

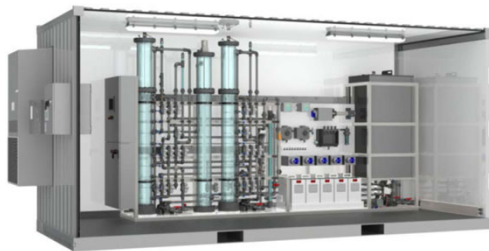


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Key Considerations for Centralized Treatment (For < 15 connections)



Governance

Infrastructure

Operations

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Governance

Governance: Key Considerations

- Creating a water district
- Water rights
- System operation, maintenance management
- Decision-making authority
- Fee structure and billing strategy
- Other considerations...

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Infrastructure

Infrastructure: Key System Components



Example: Containerized Biological Treatment System

- **Centralized treatment for < 15 connections (OVSS)**
 - Containerized skid shipped and installed outdoors at project site
 - Chemical storage and delivery
- **Other ancillary facilities**
 - Requires raw and finished water storage (~3 days)
 - Potential improvements to existing well pumps
 - Finished water pumping
 - Yard piping and site work
 - Residuals handling
 - Site security and safety
 - Power supply and meter (backup power needs?)
 - Other site-specific needs

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Infrastructure

Infrastructure: Direct and Indirect Costs

Direct Cost Factors	Indirect Cost Factors
<ul style="list-style-type: none"> • Treatment Skid Equipment • Well Pump Improvements • Site Work • Yard Piping & Valves • Finished Water Pumping • Site Complexity • Installation • Electrical/ Electrical Supply Improvements • Conceptual Level Design Contingency 	<ul style="list-style-type: none"> • General Conditions, Overhead, Profit & Risk • Bonds & Insurance • Shipping • Sales Tax

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Operations

Operations: Key General Considerations

- Intermittent vs continuous operations
 - Intermittent requires more **infrastructure**
 - Continuous requires more **operations support**
- On-site vs off-site residuals management
 - On-site requires more **infrastructure, permitting, and associated monitoring**
 - Off-site requires more **operations support**
- Operations and maintenance staffing
 - Regulatory compliance reporting
- Consumables and power

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Operations: Additional Considerations for High Nitrate Conditions

- Increased chemical consumption and deliveries
- Increased regeneration or backwash frequency
- Faster equipment wear + increased maintenance (replacement frequency)
 - Increased downtime = need for redundant equipment
- Difficult to operate system remotely



Operations: Fixed and Variable Costs

Fixed Costs	Variable Costs
<ul style="list-style-type: none"> • Labor • Facility maintenance • Sewer and stormwater fees • Outside lab services • Administrative support • Vehicles and staff transportation • Miscellaneous expenses 	<ul style="list-style-type: none"> • Power • Chemicals • Membrane/media replacement • Residuals disposal

Other Non-Connection Options

- If point of use treatment or community water systems aren't feasible (or preferred):
 - Water delivery
 - Water solar harvesting
 - Rainwater harvesting
 - Aquifer recharge

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Non-viable Options for Household Supply

- **Community fill stations:** requires frequent resident hauling trips
- **Water by rail:** major infrastructure and logistics barriers
- **Atmospheric water generation:** low output for household demand
- **Rainwater harvesting/recharge:** low precipitation; regulatory/technical hurdles

Conclusion: provides niche or emergency uses, but not broadly practical for whole-house supply

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Potentially Viable Non-system Option

- Cisterns with hauled potable water for whole-house supply
 - Household cistern: 2,500–6,000 gallons
 - Shared cistern (2–3 homes): 10,000–30,000 gallons
- Key constraint: limited regional potable water hauling capacity
- Scaling service to multiple households may be constrained by truck availability, driver availability, and refill logistics
- As a result, cisterns may be feasible for some households, but harder to implement broadly

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Bulk Water Delivery (Cistern/Tank)

- Concept:
 - Funding used to purchase equipment and set up a program within one or more of the cities and/or with private company to deliver water
- Opportunities:
 - Boardman, Umatilla, and Hermiston do not have code restrictions
- Considerations:
 - Hydrant meter vs. permanent filling station
 - Water rate: inside vs. outside city limit; retail vs. bulk rate
 - Long-term certainty (no property interests)

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Cistern/Delivery Costs Considerations

- **Household cisterns:** Commercial 5000-gallon tanks (~\$1.00/gallon)
 - Pump/pressure tank (if needed) and plumbing costs are additional
- **Shared cisterns (2–3 homes):** 10,000–30,000 gallons (~\$1.50/gallon)
 - Larger shared tanks may be available in plastic, fiberglass, or metal, but material choice can significantly affect tank cost, freight, and installation
- **Water cost examples:**
 - Delivery costs could vary by distance, routing, and refill frequency
 - ~\$2,200/day for a 4,000-gallon potable water truck under a 2025 Oregon fire-season contract
 - City of Umatilla: \$300/month hydrant meter rental; \$285 per 7,000 gallons

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Next Steps

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Next (Final) Steps

- Refine non-connection concepts for selected case study areas (costs and implementation review)
- Prepare Draft Action Plan and conduct action plan workshop
- Prepare for and conduct public meeting #2 and final public meeting

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Stage 4 Schedule Milestones (2026)



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Discussion

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Thank you!

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