Steering Committee Meeting #4

Morrow and Umatilla County Drinking Water Investigation

December 5, 2024

GSI Water Solutions, Inc.

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Meeting Topics

1. Project update (Stage 1 and Stage 2)
2. Update on field sampling effort
3. Update on PWS connection concept issues
4. Open discussion

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1. Project Update

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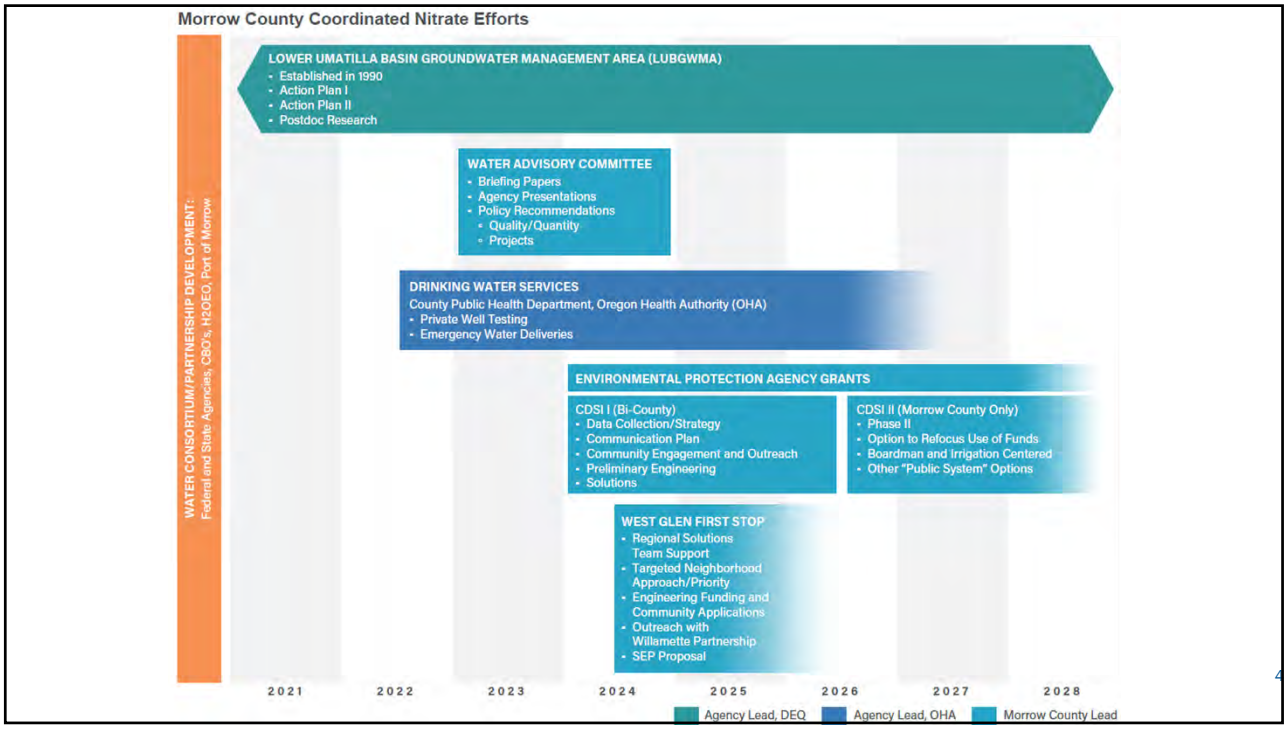
Morrow County Coordinated Nitrate Efforts
WATER CONSORTIUM/PARTNERSHIP DEVELOPMENT: Federal and State Agencies, CBO's, H2OEO, Port of Morrow
LOWER UMATILLA BASIN GROUNDWATER MANAGEMENT AREA (LUBGWMA)
Established in 1990
Action Plan I
Action Plan II
Postdoc Research
WATER ADVISORY COMMITTEE
Briefing Papers
Agency Presentations
Policy Recommendations
Quality/Quantity
Projects
DRINKING WATER SERVICES
County Public Health Department, Oregon Health Authority (OHA)
Private Well Testing
Emergency Water Deliveries
ENVIRONMENTAL PROTECTION AGENCY GRANTS
CDSI I (Bi-County)
Data Collection/Strategy
Communication Plan
Community Engagement and Outreach
Preliminary Engineering
Solutions
CDSI II (Morrow County Only)
Phase II
Option to Refocus Use of Funds
Boardman and Irrigation Centered
Other "Public System" Options
WEST GLEN FIRST STOP
Regional Solutions Team Support
Targeted Neighborhood Approach/Priority
Engineering Funding and Community Applications
Outreach with Willamette Partnership
SEP Proposal
2021
2022
2023
2024
2025
2026
2027
2028
Agency Lead, DEQ
Agency Lead, OHA
Morrow County Lead

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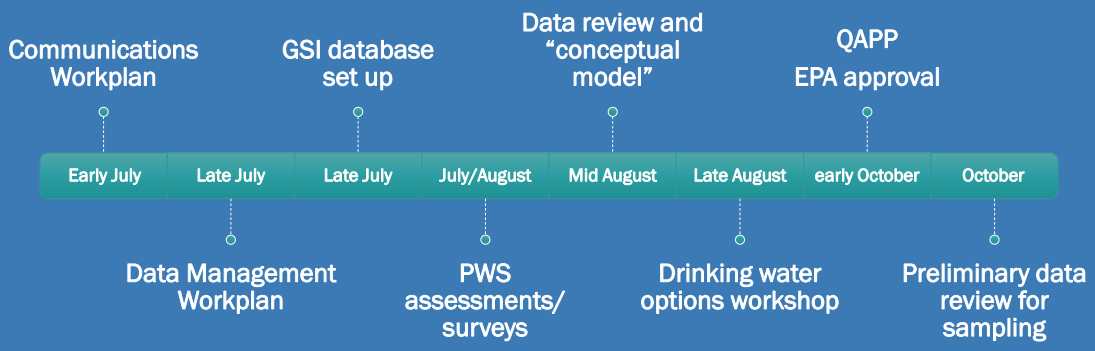
Stage 1 Status



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Stage 2 Scope

- Task 2.1 – Project Management
- Task 2.2 – Communications and Outreach
- Task 2.3 – Sampling and Data Management
- Task 2.4 – Data Review and Characterization
- Task 2.5 –Engineering Concepts and Feasibility
- Task 2.6 – EPA Grant Compliance

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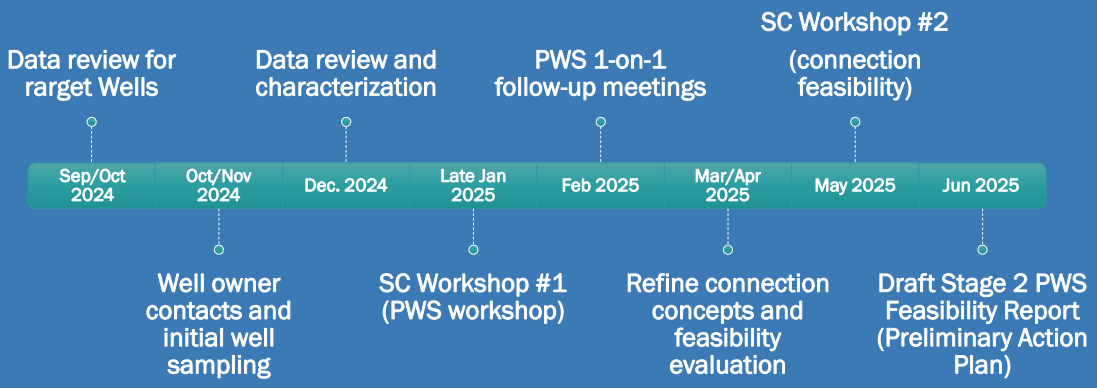
Stage 2 Schedule



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Update on Related Efforts

- West Glen Area
  - IFA/BizOR grant
  - SEP application
- Morrow County "Clean Water Consortium"
- EPA LUBGWMA data coordination

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Update on Field Sampling Efforts

- QAPP overview
- Focus area and target well identification
- Outreach/contacts coordination
- Status of sampling
- Challenges and resolution

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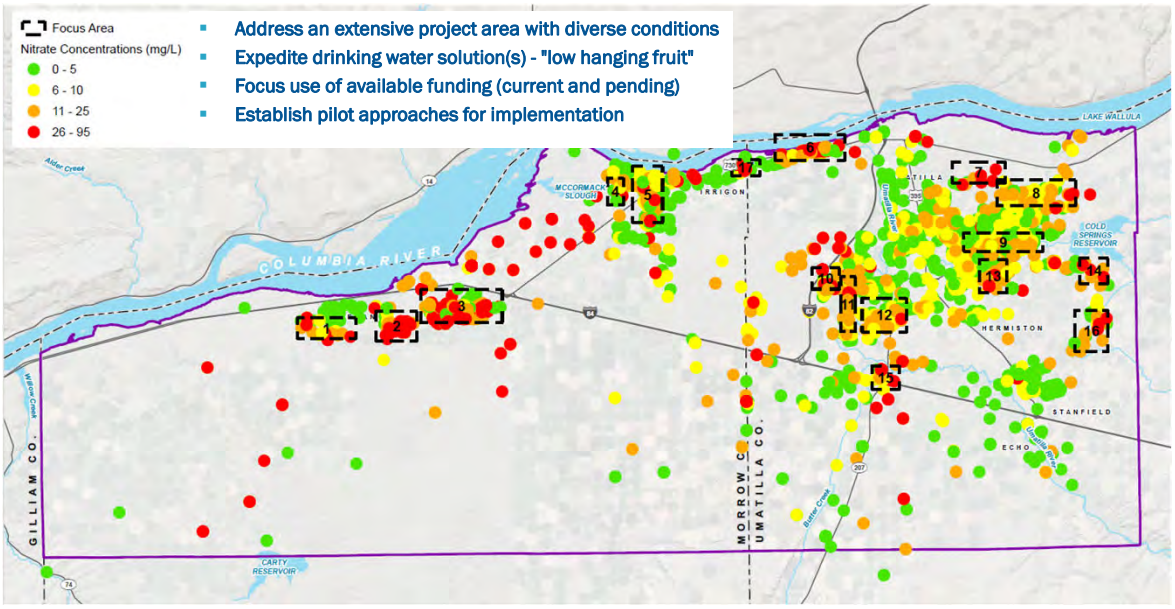
Quality Assurance Project Plan

- Document that guides QA/QC elements of project – "living document"
- Establishes Data Objectives:
  - Confirmation of OHA sampling results (tap vs. fully purged wells)
  - Fill data gaps within "focus areas"
  - Inform development and evaluation of drinking water options at select focus areas:
    - Vertical and horizontal distribution of nitrate
    - Geochemical conditions to inform treatment options
    - Well construction elements

Quality Assurance Project Plan

- Well sampling at first available sampling location upstream of any treatment component (e.g., wellhead faucet bib or the drain valve at the pressure tank).
- Purge well; collect field parameters; collect sample; data validation; maintain chain-of-custody
- Laboratories certified under ORELAP
- Coordinate with OWRD on well geophysical data collection

Potential Focus Areas



- Address an extensive project area with diverse conditions
- Expedite drinking water solution(s) - "low hanging fruit"
- Focus use of available funding (current and pending)
- Establish pilot approaches for implementation

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Well Owner Communications Coordination

- Coordination with agencies and counties for contact information
- Collaboration and clarification of roles/programs among the agencies
- Information to well owners:
  - Purpose of well sampling for this project
  - Sampling process
  - Access acknowledgements

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Sample Collection Update

- November 2024: Initial Sampling Effort
  - Subset of wells in Focus Areas 2 & 3
- Nine wells purged and sampled
- Preliminary data for 6 of the 9 samples received
  - Data analysis ongoing
  - Initial data interpretations

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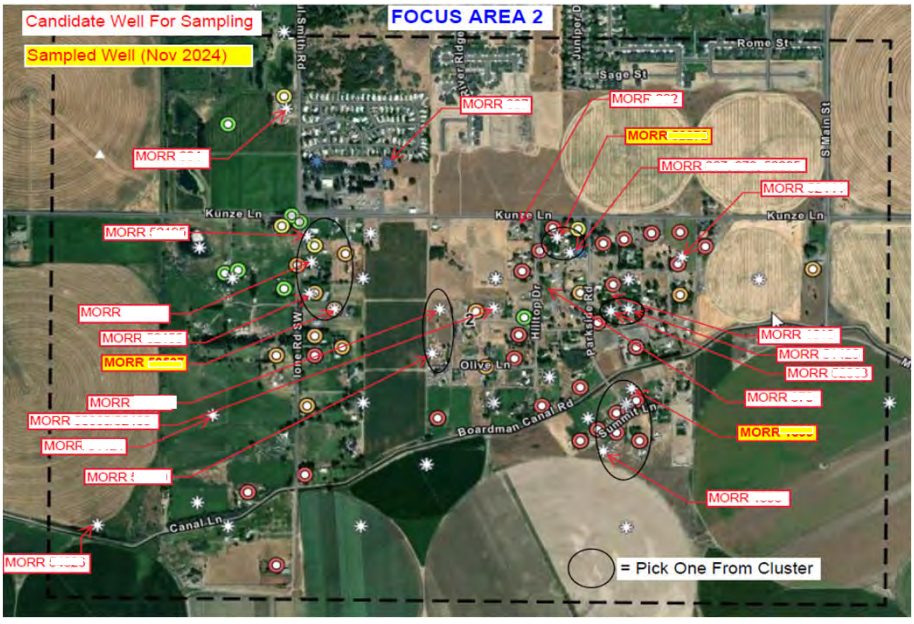
Sample Collection Update: Focus Area 2



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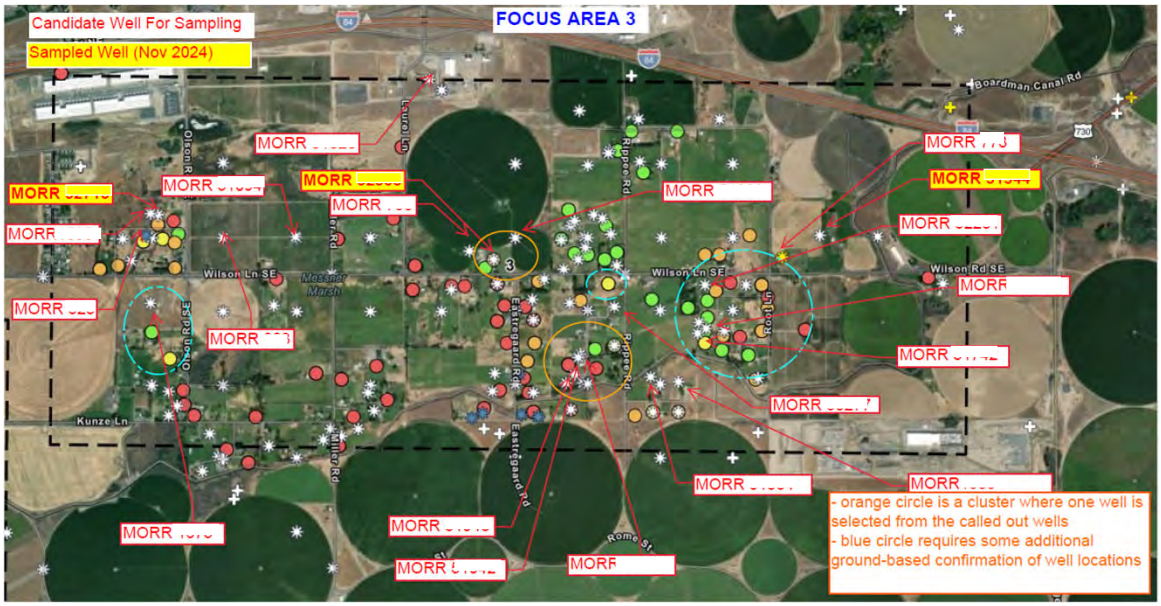
Sample Collection Update: Focus Area 3



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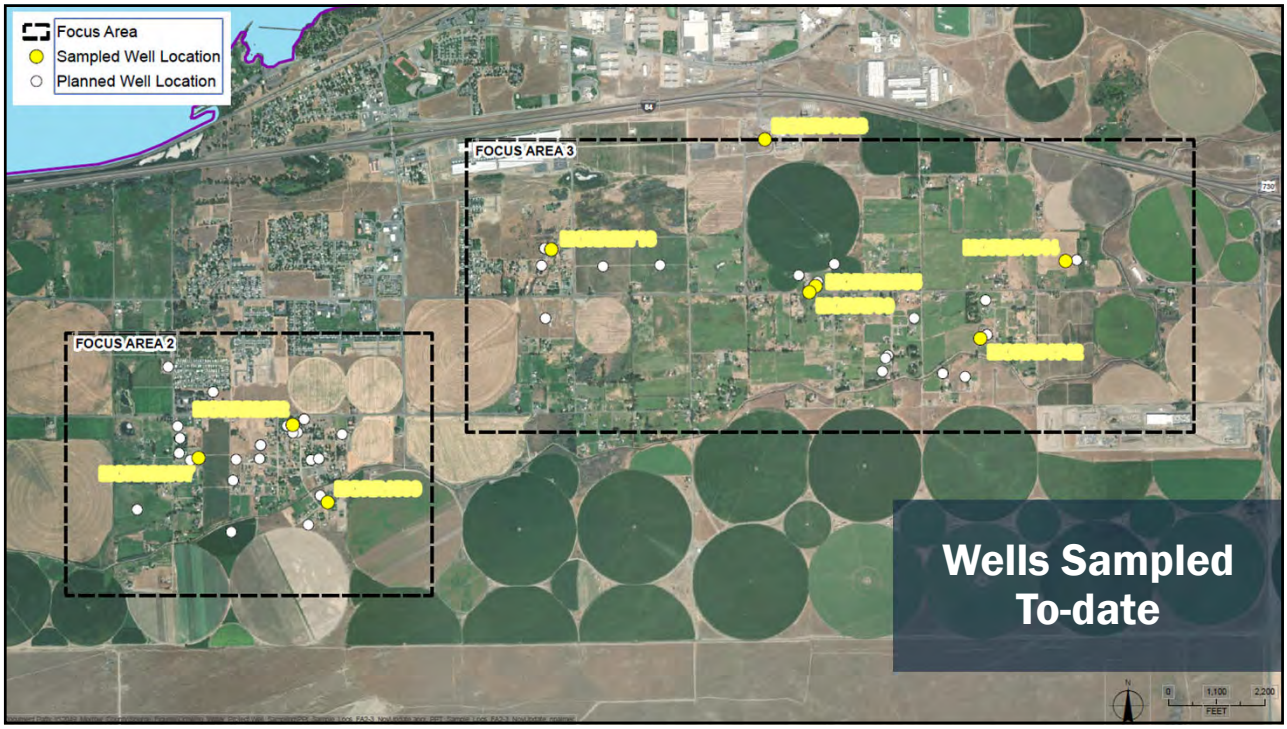

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Preliminary Results of Initial Sampling

Analyte	Regulatory Standard	Units	Standard Type	MORR [redacted] (Focus Area 3)	MORR [redacted] (Focus Area 3)		MORR [redacted] (78626 Parkside) (Focus Area 2)		MORR [redacted] (Focus Area 3)	MORR [redacted] (Focus Area 2)				MORR [redacted] (Focus Area 2)		
				Sample Date 11/05/24	Sample Date 09/07/23	Sample Date 11/04/24	Sample Date (Unknown)	Sample Date 11/05/24	Sample Date 11/05/24	Sample Date 03/14/23	Sample Date 07/18/24	Sample Date 08/01/24	Sample Date 11/06/24	Sample Date 08/31/23	Sample Date 09/07/23	Sample Date 11/06/24
Temperature	--	°C	--	15.65		15.17		16.87	15.51				15.9			15.4
Specific Conductivity	--	uS/cm	--	687		871		1,069	818				1,357			734
Dissolved Oxygen	--	mg/L	--	2.97		2.79		1.15	3.90				2.87			2.42
pH	6.5 - 8.5	SU	SMCL	7.67		7.49		7.67	7.51				7.63			7.69
Oxidation-Reduction Potential	--	mV	--	-190.4		-107.6		-188.0	-173.4				105.2			89.1
Turbidity	--	NTU	--	0.02		0.07		0.02	0.02				0.02			0.02
Volume Purged	--	gal	--	497		411		665	680				425			536
Nitrate as N	**10**	**mg/L**	**MCL**	**17.8**	**11.0**	**25.4**	**9.0**	**30.7**	**12.1**	**37.9**	**45.0**	**44.5**	**47.6**	**19.0**	**19.0**	**23.5**

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Sampling Challenges and Resolution

- Coordinating schedules with well owners
- Sampling access challenges and system setup with some wells
- Water management
- "Pause" and reset for early spring sampling

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Next Sampling Round (Spring 2025)

- Tasks:
  - Finish detailed analysis of November 2024 data and adjust sampling approach/expectations accordingly
  - Identify target wells for other Focus Area groups
  - Collaborate with DEQ & OWRD for geophysical surveys and synoptic event
  - Repeat outreach/communications/coordination
  - Re-mobilize and sample
  - Update data interpretation & analysis

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Update on PWS Connection Concept Issues

- Review of PWS information collection
- Preliminary connection concepts for Focus Areas
- Feasibility criteria (infrastructure/non-infrastructure)

Summary of Drinking Water Options

1a. Connection to existing PWS

1b. Connection to existing PWS + treatment

2. Connection to Regional Water System

3. Existing well with improvements/treatment*

4a. New well (deeper/not impacted)*

4b. New well with treatment*

5. Point-of-use treatment

6. Aquifer storage and recovery/Aquifer recharge

**Sub-options for #2, 3, 4: with or without extensive distribution system requiring local improvement or special district.*

Focus Areas with PWS Extension

FA	County	PWS Extension	Regional	Remote-Small	Remote-Very Small
1	Morrow	?	−	+	+
2	Morrow	+	−	+	−
3	Morrow	+	−	+	−
4	Morrow	?	−	−	+
5	Morrow	+	−	+	−
6	Umatilla	+	−	+	−
7	Umatilla	−	−	−	+
8	Umatilla	−	−	+	−
9	Umatilla	?	?	+	−
10	Umatilla	?	?	+	−
11	Umatilla	?	?	+	−
12	Umatilla	+	+	+	−
13	Umatilla	?	?	+	−
14	Umatilla	−	−	−	+
15	Umatilla	?	?	−	+
16	Umatilla	−	−	+	−
17	Morrow	?	−	−	+

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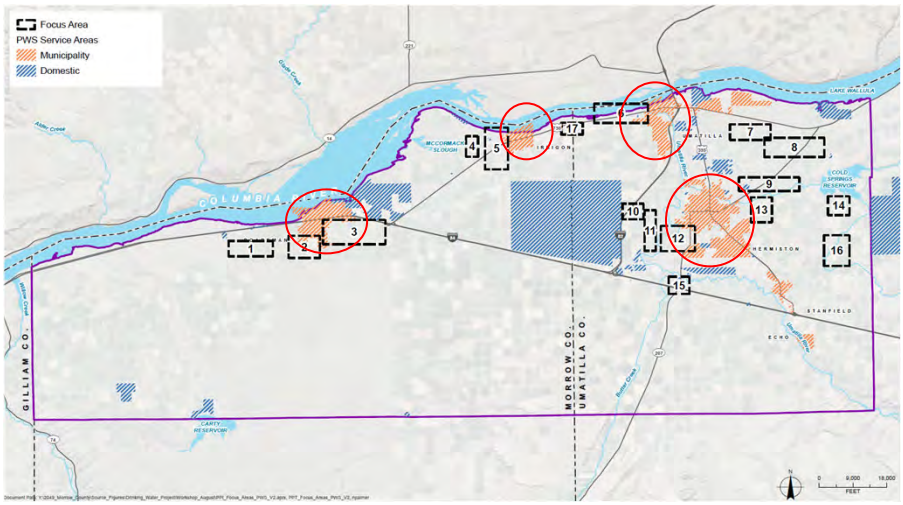
Concepts for PWS Extension

Focus Areas with municipal system opportunities



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Information Gathering for PWS

- Approach
  - OHA Summary
  - Online Research for Published Documents
  - Survey and Interview
  - Masterplan and Document Review
  - Team Collaboration and Nitrate Mapping

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Municipal Systems Survey

City	Population	Water Source(s)	# Wells	Willing to Expand (Y/N)	Able to Expand (Y/N)[1]
Hermiston	19,354	Groundwater, Surface Water	4	Y	Y
Umatilla	7,363	Groundwater	4	Y	Y
Boardman	3,828	Groundwater	3	Y	Y
Stanfield	2,144	Groundwater	3	Y	Y
Irrigon	2,011	Groundwater	---	---	---
Echo	632	Groundwater	4	Y	Y

1 Based on opinion of expansion and does not consider any potential political and/or legal hurdles.

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Small PWS Survey Results

- Overall low interest from small PWS to expand
- Concerns
  - Funding required for expansion
  - Lack of system capacity
  - Distance from cities

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PWS Data

PWS**	Year of Data	Total Groundwater Rights (GPM)	Total Surface Water Rights (GPM)	Current Capacity (GPM)	Current Ave Day Demand (GPM)	Current Peak Day Demand (GPM)
Hermiston	2019	9,785	6,500	8,780	3,108	7,222
Umatilla	2022	10,551	10,322	4,638	986	1,590
Boardman	2015	16,773	0	12,000	2,000	4,384
Stanfield	2018	-	-	-	406	980
Irrigon	-	-	-	-	-	-
Echo	2022	3,980	0	965	91	274
RWS	2019	0	27,000	12,935	-	-

** Data is unconfirmed and only for reference. Each data point represents many complexities that cannot be illustrated in this table.

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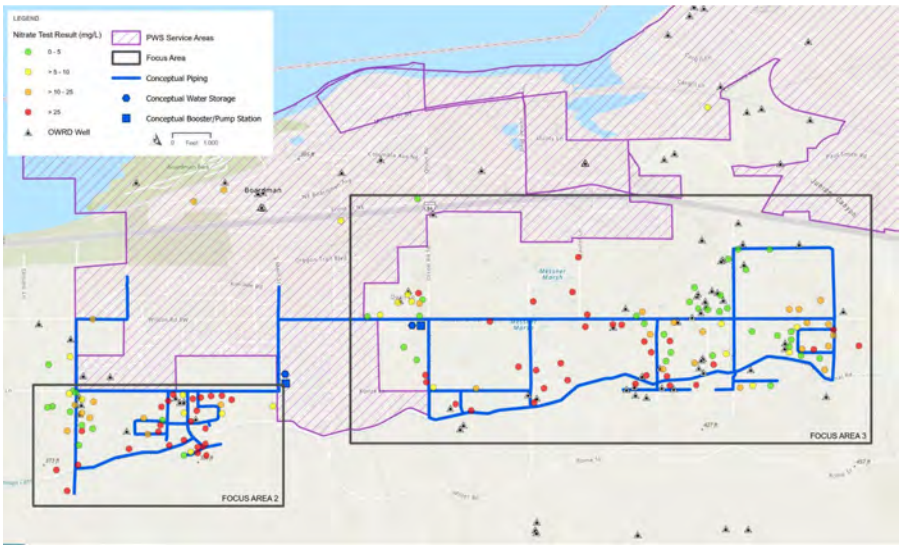
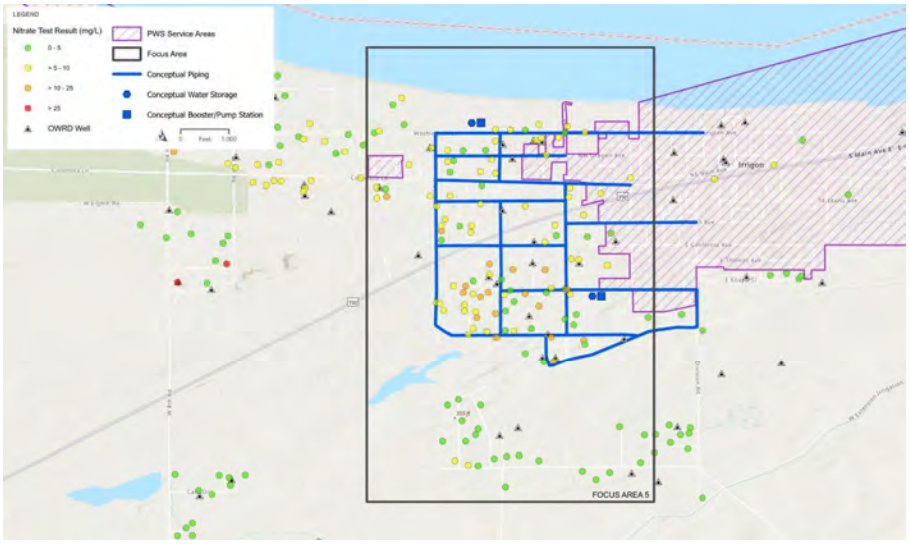
Existing Regional Water System (RWS)

- Largely Industrial Purpose
- Serves Portion of Drinking Water for Hermiston
- Source of Raw Water and Drinking Water
- Provides Another Option for PWS Expansion

Connection Concepts - Boardman



Connection Concepts - Irrigon



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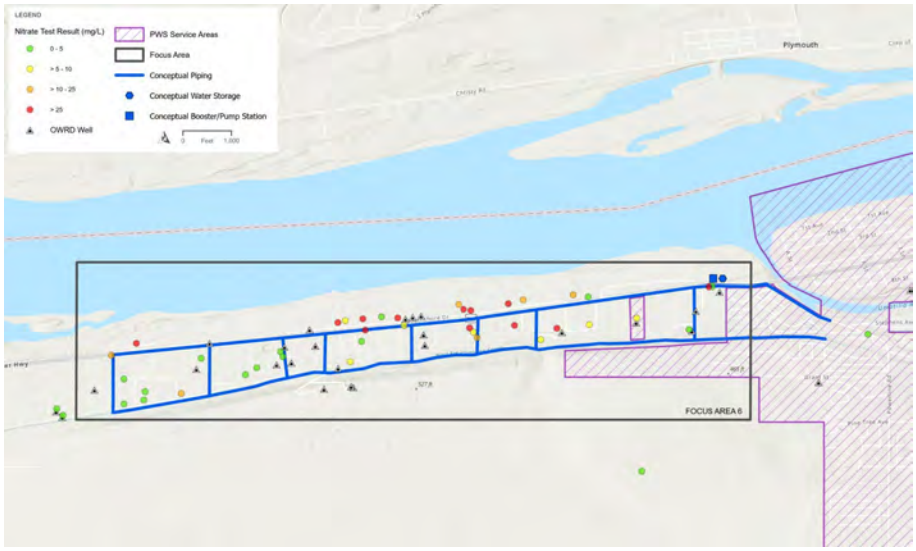
Connection Concepts - Umatilla



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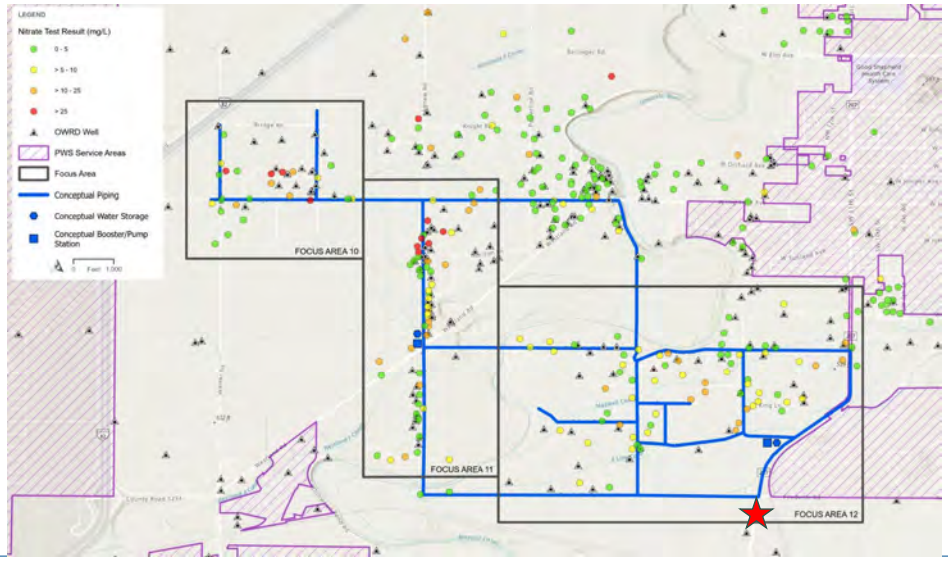
Connection Concepts – Hermiston



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Infrastructure Criteria

- Water Master Planning – updates likely needed
- Water Supply Capacity
  - Meet max day demand (MDD) and fire flows
  - Peak hourly demands (PHD) typically absorbed by water storage
- Water Treatment and Aging
  - Determine minimum chlorine residuals based on water chemistry
  - Determine level-of-service (LOS) for water aesthetics (taste and odor) and target maximum system turnover time

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Infrastructure Criteria

- Water System Hydraulics
  - Determine adjustments to existing and potentially new pressure zones
  - Determine LOS for system pressures (typically 40-80 psi) and verify fire flows at min pressures
- Water System Storage
  - Determine LOS for water storage such as having 48 hours at average-day-demand (ADD) for emergency storage
  - Consider water system resilience factors

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Non-Infrastructure Criteria

- Willingness/Incentives
  - Local support, infrastructure upgrades
- Policy
  - UGB, Annexation, Land-use, Other
- Financials
  - Cost, Funding sources (grant/loan), Districts, Rates/SDCs, Financial Sustainability
- Regulatory and Permitting
  - Local, County, State, Federal

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Cost Considerations

- City of Boardman Example – *Rough Order of Magnitude*
  - 75,000 LF Water Main - ~$23M
  - 2 Water Storage Tanks - ~$6M
  - 2 Booster Pump Stations - ~$3M
- Other Cost Considerations
  - Potential City Infrastructure Investment: Water Supply, Water Treatment, Pump Stations, Water Storage, Water Mains

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Financial Considerations

- Debt Service Coverage Ratio – For any borrowing, the rate study needs to demonstrate that the construction/O&M/replacement costs are covered
- Lending agency likely wants to know if people will be required to connect
- Grants are typically necessary to make rates feasible, especially for low density areas
- Can run scenarios to illustrate rate impacts based on grant or loan ratios
- People may not want to pay an SDC when they have “good wells”

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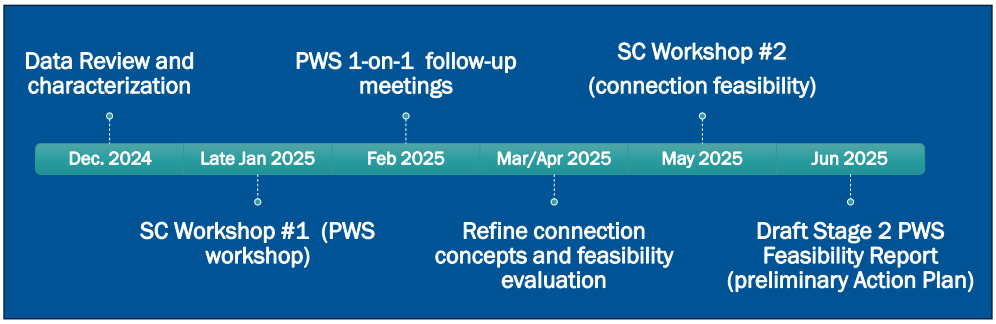
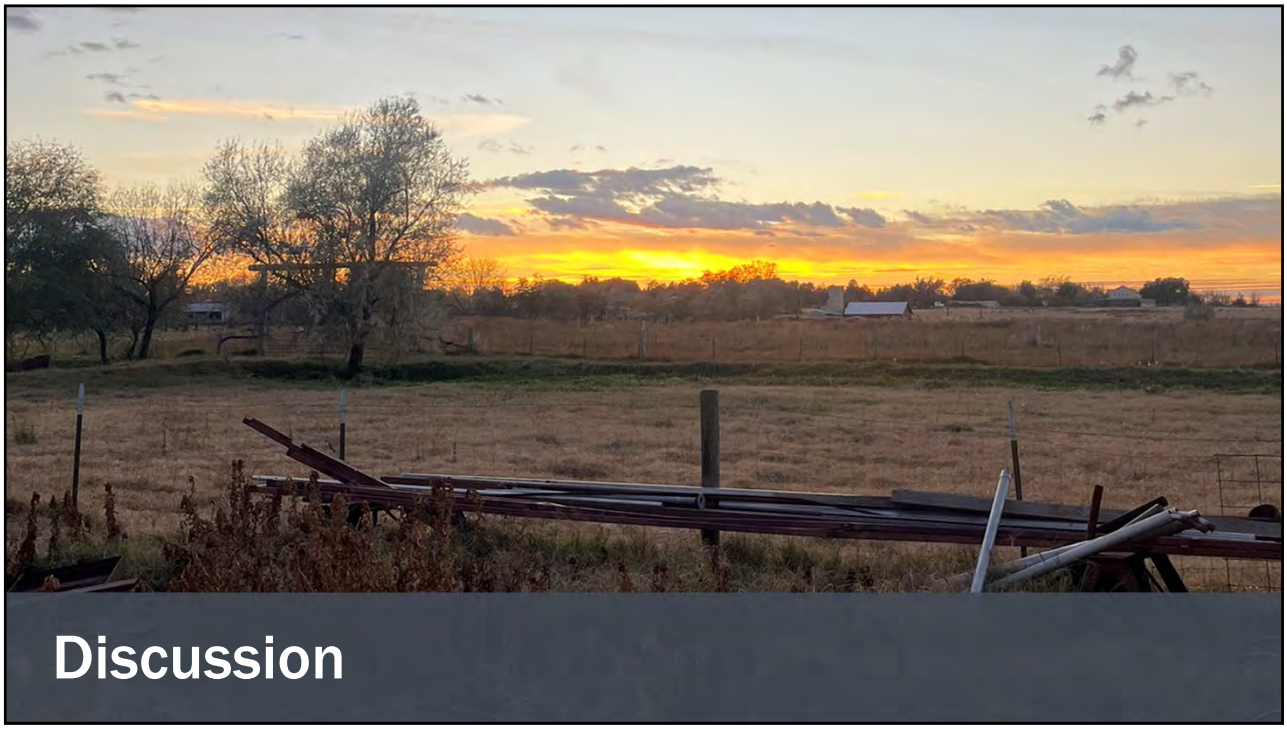
Regulatory and Permitting

- **Federal:** NEPA (if Federally funded), Section 7 Endangered Species (USFWS), Wetlands and Waters (USFWS), Section 106 Historic and Cultural Resources (SHPO)
- **State:** OHA Design Approval, OHA Well Drilling Plan, OHA Disinfection Profile, Lead and Copper Rule, NPDES/WPCF WTP Discharge, NPDES 1200C Stormwater, Hazardous Materials (DEQ)
- **County:** Conditional Use Permit, Rights-of-way, Water District Formation, Annexation, Zoning
- **Local:** UGB and Annexation, Policy Modification, Rights-of-way, Water Rates and SDC Modification, Public Funding, Building Permit

(Near-term) Next Steps

- Schedule PWS Workshop (Steering Committee Meeting #5) – late January 2025
- Continue initial sampling data review and Stage 2 follow-up sampling coordination
- Continue development and evaluation of connection concepts





Discussion

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Thank you!

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