



## Scope of Work - DRAFT

**To:** Tamra Mabbott, Morrow County  
Joe Fiumara, Umatilla County

**From:** Ronan Igloria, PE, GSI Water Solutions, Inc.

**Date:** March 6, 2024

**RE:** Morrow and Umatilla Counties: Drinking Water Investigation Initial Scope of Work Framework (DRAFT)

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GSI Water Solutions, Inc. (GSI), is pleased to present a draft scope of work (SOW) *framework* for the Drinking Water Investigation (DWI) project for discussion at the Morrow and Umatilla Counties (Counties) meeting on March 13, 2024. This draft framework is based on the “Project Approach and Workplan” included in GSI’s proposal for this project submitted to Morrow County on February 2, 2024. The GSI team was selected through a request for proposal (RFP) process as the most qualified team.

The *Project Approach and Workplan* from GSI’s proposal is included in Attachment A in its entirety. It addresses all of the tasks identified in the RFP scope of work. The SOW framework presented below presents the same approach and workplan from the proposal, but in a more traditional scope of work format and with additional detail for the earlier tasks (Stage 1 described below). We look forward to discussing the SOW framework and finalizing the contract scope of work with the Steering Committee for the project.

### Approach

The proposed approach is intended to streamline delivery of the scope of work included in the RFP. The approach proposes to complete four stages over the course of the two-and-a-half-year grant period, with activities in the stages occurring concurrently in some cases:

- Stage 1: Baseline Assessment and Prioritization
- Stage 2: Initial Sampling and Feasibility of Public Water System (PWS) connection
- Stage 3: Follow-up Sampling and Feasibility of Alternate Drinking Water Options
- Stage 4: Development of a Drinking Water Action Plan

Furthermore, GSI suggests finalizing a detailed scope of work and budget for Stage 1 at the start of the contract, while defining a more general scope of work and general budget allocation (“budget reserves”) for Stages 2-4. The Counties would restrict starting activities under Stages 2-4 tasks and using the budget reserves without explicit authorization. This would allow the Steering Committee and GSI to refine and adjust the tasks based on the outcome and findings from Stage 1. For example, findings from the assessment of public water systems and an initial review of existing water quality data will help determine the focus areas and the amount of additional sampling that would occur in Stage 2. The budget reserves may then need to be adjusted or reallocated accordingly. A description of each stage is provided below (as presented in the proposal).

## Stage 1: Baseline Assessment and Prioritization

**Objective:** Jump-start the project and define drinking water alternatives and priorities for data collection and analysis by early 3rd quarter of 2024.

**Description:** In Stage 1, we will complete multiple critical tasks concurrently during the first 6 months. This includes reviewing available water quality and hydrogeologic data and domestic well data (location and construction), completing detailed communications and database management workplans, assessing existing Public Water Systems (PWS), developing a Quality Assurance Project Plan (QAPP), and targeting well sampling locations. In addition to a project kick-off meeting, we will conduct a series of three workshops with the Steering Committee and stakeholders: data review and management workshop, communications workshop, and drinking water alternatives workshop.

### Key Outcomes:

- Data transfer and database management protocol.
- QAPP establishing consistent data quality objectives and methods.
- Implementation-ready communications and outreach plan with articulated roles and responsibilities.
- Identification of service extension areas that can potentially be served by existing PWS.

## Stage 2: Feasibility of Public Water System Connection

**Objective:** Delineate conceptual PWS service area extensions by 1st quarter of 2025.

**Description:** Stage 2 will target sampling and analysis of wells in potential service extension areas to complete the feasibility analysis for extending existing PWS service. This stage will also target sampling and analysis of wells in data gap areas where no previous samples have been collected or where the validity of the sample location is unknown. The communications team will conduct outreach and education activities prior to the planned field sampling period. Well sampling will be conducted in fall 2024 consistent with the QAPP. We will use sampling results to identify prioritized areas to be included in the feasibility analysis for connecting to the targeted PWSs. We will also complete a conceptual design for extending the system and preliminary review of implementation issues; this will include any data gaps remaining after Stage 2 sampling. The GSI team will then conduct a work session in January 2025 to update the Steering Committee and then stakeholders on the findings, recommendations, and implementation issues.

### Key Outcomes:

- Successful implementation of outreach plan and established network for ongoing outreach.
- Refined characterization of nitrate contamination.
- Completed water service extension feasibility study for target extension areas.

## Stage 3: Follow-Up Sampling and Feasibility of Alternate Water Supply Options

**Objective:** Complete preliminary concepts for alternate drinking water options (non-PWS) and complete data gap sampling by 1st quarter of 2026.

**Description:** In Stage 3, we will review the Stage 2 data gap area sampling results and identify service extension areas for the newly sampled areas that are near existing PWS and areas that may require an alternate (non-PWS) drinking water supply (e.g., deepening of well, treatment for existing or new well, creating a new PWS). We will then conduct follow-up sampling to refine the characterization of service extension areas and collect additional samples from data gap areas with increased participation. We will use the sampling results to complete a feasibility analysis for the alternate drinking water areas and review implementation issues, including data gaps remaining from Stage 3 sampling. The GSI team will then conduct a work session to update the Steering Committee and stakeholders on the findings, recommendations, and implementation issues.

### Key Outcomes:

- Well-refined characterization and completed feasibility assessments for proposed service extension areas.
- A completed feasibility assessment of alternate drinking water supply options for areas where connection to existing PWS is not reasonable.

## Stage 4: Development of Drinking Water Action Plans (DWAP)

**Objective:** Complete DWAP by 3rd quarter of 2026.

**Description:** Stage 4 includes development of a phased DWAP. The first iteration of the DWAP (by 1st quarter of 2025) focuses on recommendations and implementation needs for connecting wells to target PWS. The second iteration of the DWAP will refine the recommendations and conceptual designs based on follow-on sampling and analysis (from Stage 3). It will also include recommendations and implementation needs for the alternate drinking water options (not connecting to PWS). Through each iteration of the DWAP, GSI will review results with the Steering Committee for input on the recommended solutions/alternatives. The draft DWAP will be released to Counties, interested agencies, and key stakeholders for review before finalizing.

### Key Outcomes:

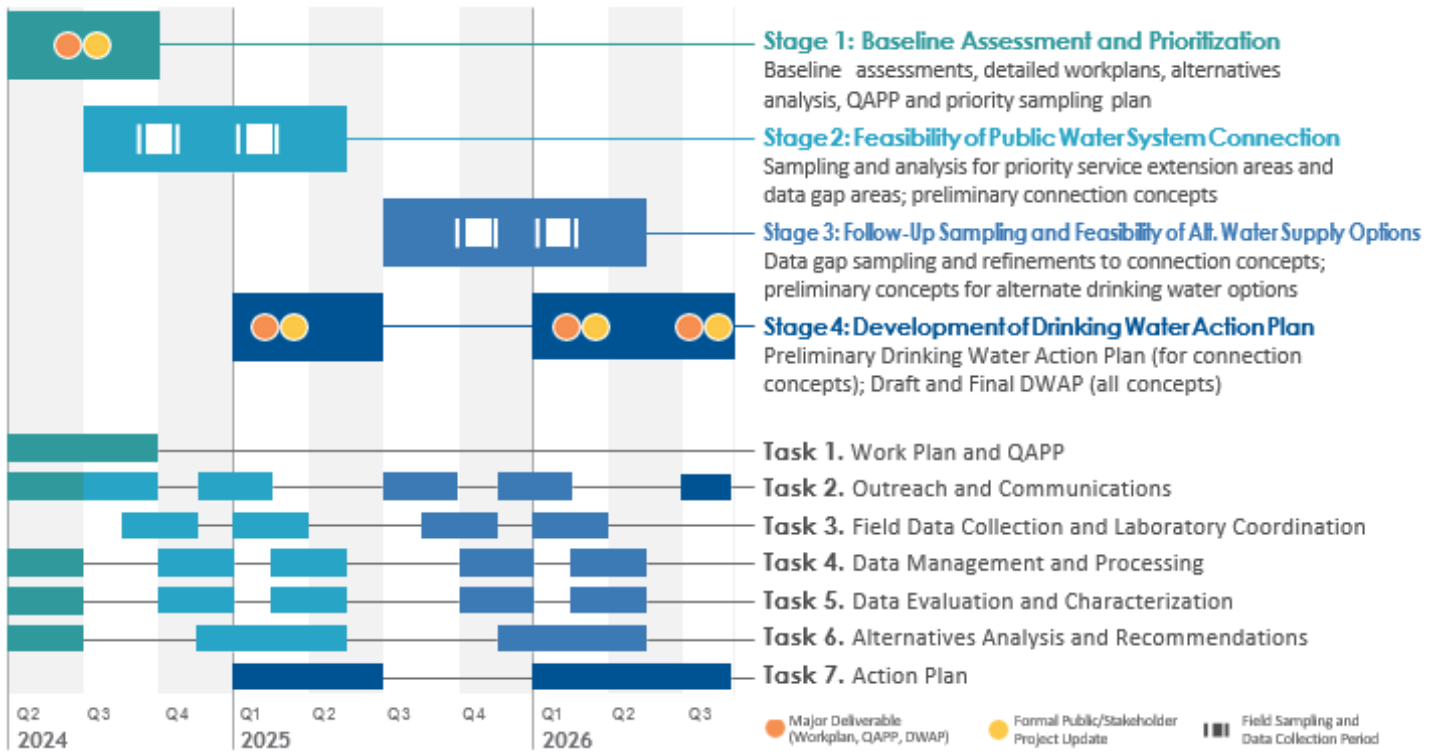
- DWAP vetted through the Steering Committee and public with implementation roadmap.
- DWAP positions the Counties to pursue funding for final design for highest priority areas and follow-up investigation for other areas.

## Schedule

The approach and workplan is based on a target completion of August 2026. The schedule is driven primarily by the timing of two sampling periods each for Stage 2 (2024/25) and Stage 3 (2025/26): a late summer sampling period that will occur mid-September to early October, and a winter sampling period that will occur mid-January to early February. The two sampling periods for each stage will help to assess seasonal impacts on water quality. The two-phased sampling approach also allows GSI and the Steering Committee to adjust the allocation of budget appropriately, as results of the late summer event will help prioritize and focus efforts of the winter event.

- **Stage 1** activities will begin upon notice-to-proceed from the contracting process, which is assumed to occur by April 1, 2024. Stage 1 activities are schedule to occur through the end of 3rd quarter of 2024 (end of September 2024).
- **Stage 2** activities are anticipated to occur from approximately July 2024 through May 2025.
- **Stage 3** activities are anticipated to occur from July 2025 through June 2026.
- **Stage 4** activities are anticipated to occur in two periods. The first is for a draft Preliminary Drinking Water Action Plan focused on options to connect to existing public water systems (January 2025 through June 2025). The second is for a Drinking Water Action Plan focused on non-connection options (January 2026 through August 2026). This second period will also be used to refine the DWAP for connection options.

A high-level illustration of the schedule is shown in the figure on the following page.



## Scope of Work Structure for Stage 1

The section includes a list of tasks to be completed under Stage 1. Once the Steering Committee approves the approach and tasks, GSI will develop a detailed work breakdown structure and fee estimate for Stage 1.

### Task 1.1 – Project Management

**Objective:** Establish project management tools to effectively manage the scope, schedule and budget through the duration of the project.

1. Project management and coordination with Morrow County project manager and subconsultants. This includes preparing a Project Management Plan for use and distribution to the Steering Committee and consultant team documenting team roles and responsibilities and contact information. This will be made available and updated on the project share site. Develop, maintain, and update project share site, decision log and project schedule.
2. Conduct an initial project kick-off meeting and bi-weekly update (virtual) meetings with Steering Committee for project updates and coordination. Meetings are assumed to be up to 1 hour duration and will focus on progress to date, near-term activities, pending decisions and input, and key technical issues and/or workplan changes. This does not include task-specific meetings or workshops called out in other tasks.
3. Prepare monthly invoicing and progress reports.

#### Deliverables:

- Project Management Plan.
- Project share site (maintained by GSI); with decision log and project schedule (updated as needed).
- Monthly invoices and progress reports.

## Task 1.2 – Data Management Framework

**Objective:** Establish the data management protocols including the database framework to integrate existing data and data collected from this project.

1. Prepare for and conduct a Data Review Workshop. GSI will conduct a half-day workshop with the Steering Committee and representatives from state agencies (OWRD, OHA, DEQ, ODA). Workshop will be used to select/assign “Agency Data Stewards” (from Counties, OWRD, OHA, DEQ and ODA) and decide on lead data management agency (including GSI as an option) to house all data associated with the project; outline data-sharing protocols. Decide whether to pursue Oregon Water Data Portal framework (<https://www.oregon.gov/deq/wq/Pages/owdp.aspx>) funding from the State to develop and or host the proposed information system.
2. Conduct meetings to review and share status and format of existing data and databases, and OHA voucher program and coordinate initial data transfers where appropriate. Coordinate with agencies on data transfer as applicable.
3. Prepare Data Management Project Plan (DMPP). Document the data descriptions, data sharing and management protocols, roles and responsibilities from the workshop and follow-up meetings agreed to by the Agency Data Stewards. The DMPP will be updated as necessary through the life of the project.

### Deliverables:

- Data Management Project Plan.

## Task 1.3 – Communications Framework

**Objective:** Establish the communications plan and develop the tools and materials for outreach, education and engagement that will facilitate the sampling activities and other later-stage project activities.

1. Prepare for and conduct a communications workshop with the Steering Committee. The workshop will review current communications materials and resources that can be leveraged for this project; decide on the need for specific brand identity for this project; options for bringing in other “local” resources for on-the-ground outreach efforts.
2. Develop a Communications Workplan. This document will provide the following: an organizational chart for the communications team; an analysis of the potential benefits and challenges pertaining to rebranding; a summary of the project’s key messages; options for community outreach events; and a summary of best practices and guidance for the field teams/liasons.
3. Develop communication materials. The materials may include factsheets, FAQs, potential social media posts, website content, feedback forms/questionnaires, etc., as well as materials that field sampling teams will use for conversations with individual well users. These materials may be updated through the stages of the project.
4. Develop and maintain project website and public comment database. Coordinate with the Counties on the development of a project website (assume this will be hosted by Morrow County). A public comment database will be developed for internal tracking and will include all stakeholder/public interactions with the County and consultant team.
5. Training for liaisons. HDR will conduct coordinated training for the bilingual team of liaisons to effectively engage users and partner with the individuals performing the well sampling.

### Deliverables:

- Communications Workplan.
- Communications materials for use in outreach activities/events.
- Project website content/updates and public comment database.



## Task 1.4 – Data Review and Preliminary Characterization

**Objective:** Establish a baseline understanding of the hydrogeology and extent of nitrate in groundwater based on existing available data for use in QAPP development and prioritizing Stage 2 sampling activities. The focus for Stage 1 is on areas near existing PWS.

1. Compile readily available references, reports, studies for hydrogeology and water quality data from agency and County databases identified from Task 1.2.
2. Compile well construction data. Work with OWRD to link well construction data with sampled wells and identify domestic well locations that may not have been sampled to date. GSI will coordinate with OWRD to tie well data to confirmed locations of sampled domestic wells using a process already initiated by Morrow County.
3. Develop hydrogeologic conceptual model and preliminary mapping characterization of nitrate and other water quality parameters with a focus on the areas near existing PWS. Develop preliminary characterization of extent of nitrate in groundwater using existing data.
4. Prepare a Preliminary DWI Project Characterization Technical Memorandum presenting the conceptual understanding the hydrogeology, extent of nitrate conditions, and a preliminary data gap analysis.

### Deliverables:

- Preliminary DWI Project Characterization Tech Memo.

## Task 1.5 – Drinking Water Alternatives

**Objective:** Identify and assess a suite of reasonable alternatives for providing drinking water to domestic well users to prioritize Stage 2 sampling activities and select “preferred alternatives” for feasibility and implementation review in Stages 2 and 3.

1. Compile available data on all PWS in the study area (defined to be the LUBGWMA boundaries). Review water rights, water usage, system water quality data, condition of existing infrastructure, and system capacity limitations. The review will include interviews with individual PWS owner/manager/staff and site reconnaissance to ground-truth findings. This will include all public water systems registered to OHA within the LUBGWMA boundaries.
2. Develop drinking water options and planning criteria. Develop options for connection to PWS to provide drinking water to domestic wells users based on assessment of water system capacity and limitation; and develop non-connection options for other impacted areas not in proximity to PWS. Planning-level feasibility criteria will be defined for evaluating the options including cost and potential rate impacts, permitting requirements, natural resource impacts, right-of-way needs, land use requirements.
3. Prepare for and conduct a Drinking Water Alternatives Workshop (including nitrate treatment). Workshop will review options and concepts for connecting to existing PWS and will include a focused session on treatment options and their applications and limitations, specifically for rural, smaller system settings. The workshop will review what-if scenarios and develop operational concepts for consideration in the overall drinking water alternatives development. The workshop will also identify priority areas for sampling in Stage 2.
4. Prepare a Preliminary Assessment of Drinking Water Alternatives Technical Memorandum presenting the suite of options identified and the opportunities and constraints for implementation. The Tech Memo will identify priority PWS that may have the capacity for extending service for further evaluation in Stage 2, and areas where non-connection alternatives appear most feasible for further evaluation in Stage 3.

### Deliverables:

- Preliminary DWI Drinking Water Alternatives Tech Memo.

## Task 1.6 – Quality Assurance Project Plan

**Objective:** Develop a QAPP that addresses the data quality objectives for the project and meets EPA requirements in time to start Stage 2 sampling activities in early- to mid-Fall 2024. The QAPP will be later refined for Stage 3 sampling, if needed.

1. Develop an annotated outline for QAPP for review by the Steering Committee and agencies. Incorporate data gap analysis and data management workplan into the outline (from Tasks 1.2 and 1.3). Develop preliminary data quality objectives (DQO), sampling and analytical methods (aligned with EPA-approved methods and consistent with DQO), and general organization chart with roles and responsibilities.
2. Prepare for and conduct a QAPP meeting with agencies for input. The QAPP annotated outline will be presented and discussed with agencies (EPA, OHA, DEQ, OWRD) to obtain feedback before preparing the complete draft QAPP for formal review.
3. Develop the Draft QAPP based on input from agencies and submit to EPA for review; coordinate and follow-up with EPA to resolve comments.
4. Laboratory coordination and Field Team Coordination. Coordinate with analytical laboratory, Agency Data Stewards and data management team, and Field Sampling Team on draft QAPP requirements and protocols in preparation for Stage 2 sampling activities.
5. Revise the draft QAPP based on EPA comments and prepare final QAPP. The final QAPP will incorporate the priority areas for sampling identified under Tasks 1.4 and 1.5.

### Deliverables:

- Preliminary QAPP Outline.
- Draft and Final QAPP.

### Key Assumptions for Stage 1

- Contracting and scoping activities will be completed to allow work to begin in early April 2024.
- Steering Committee and agency staff (OWRD, OHA, DEQ, EPA) will be available for the approximate timing of meetings and workshops identified in the schedule.
- Agency staff will be available/willing to participate as “Data Agency Stewards” to assist in coordinating data sharing agreements and data transfers in a timely manner to meet the general proposed schedule.
- EPA (and other agencies) will be available to review the Draft QAPP in a timely manner to meet the general proposed schedule.
- With the exception of the QAPP, all deliverables will be submitted in Draft for Stage 1. Comments and input on the draft deliverables will be documented and incorporated into final versions where applicable or integrated into the DWAP in Stage 4.
- All workshops will be conducted in person in Irrigon or nearby location.
- The GSI team’s role in data management beyond Stage 1 will be finalized as part of Stage 2 scoping once the Data Management Project Plan is completed. This includes if/how the Oregon Water Data Portal framework will be used.

## Estimated Budget

The estimated budget for Stage 1 will be developed after the March 13, 2024 meeting to accommodate input and comments from the Steering Committee and meeting participants. At that time, GSI will also develop preliminary budget allocations for Stages 2 through 4 as “place-holders” to be authorized by the Morrow County project manager.

## Schedule for Stage 1

The proposed schedule below is for Stage 1 tasks described previously and occurs from April to October 2024.

Stage 1 Tasks	Apr 1 2024	Apr 15	Apr 29	May 13	May 27	Jun 10	Jun 24	Jul 8	Jul 22	Aug 5	Aug. 19	Sep 2	Sep 16	Sep 30		
<b>Stage 1 Tasks</b>																
<i>Assumed notice to proceed April 1, 2024 for Stage 1</i>																
● - Meeting/Workshop																
◆ - Formal deliverable (report/document)																
<b>Task 1.1 Project Management</b>																
1.1 - Project management and coordination; Project Mgmt.Plan	[Green bar]															
1.2 - Bi-weekly updates		●	●	●	●	●	●	●	●	●	●	●	●	●		
1.3 - Monthly invoice and progress report				●		●		●		●		●				
<b>Task 1.2 Data Management Framework</b>																
2.1 - Data Review Workshop		[Green bar]														
2.2 - Follow-up Meetings and Data Transfer				●	[Green bar]											
2.3 - Data Management Project Plan														◆		
<b>Task 1.3 Communications Framework</b>																
3.1 - Communications Workshop with Steering Committee		[Green bar]														
3.2 - Communications Workplan				◆	[Green bar]											
3.3 - Communications Materials; Participation in Outreach Events					●	[Green bar]										
3.4 - Project Website and Public Comments Database						●				●				●		
3.5 - Communications Training														[Green bar]		
<b>Task 1.4 Data Review and Preliminary Characterization</b>																
4.1 - Characterization References, Studies, and Data			[Green bar]													
4.2 - Well Construction Data			●	[Green bar]												
4.3 - Characterization and Assessment for Conceptual Model																
4.4 - Preliminary DWI Project Characterization Tech Memo														◆		
<b>Task 1.5 Drinking Water Alternatives</b>																
5.1 - Public Water Systems Data and Interviews			[Green bar]													
5.2 - Options and Assessment for PWS Connection					●		●	[Green bar]								
5.3 - Drinking Water Alternatives Workshop										●	[Green bar]					
5.4 - Preliminary Drinking Water Alternatives Tech Memo														◆		
<b>Task 1.6 Quality Assurance Project Plan</b>																
6.1 - QAPP Outline			[Green bar]													
6.2 - QAPP Agency Meetings					●		●	[Green bar]								
6.3 - Draft QAPP (Stage 1); and 1-month agency review										◆	[Grey bar]					
6.4 - Laboratory and Field Team Coordination																
6.5 - Final QAPP (Stage 1)														◆		



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**Attachment A**

**Project Approach and Workplan  
Taken from GSI Proposal to  
Morrow and Umatilla County Drinking Water Investigation**

## Project Approach and Workplan

Our approach to the DWI delivers a grant-compliant action plan to secure a safe and sustainable drinking water source for residents with domestic wells affected by elevated nitrate levels. Recognizing the community's growing concerns and call for action, we will deliver an action plan on schedule and on budget while also seeking opportunities to improve water quality in the region under LUBGWMA and related efforts.

### Overall Approach

Our approach and workplan streamlines delivery of the scope of work included in the RFP. We will complete the tasks in four stages over the course of the two-and-a-half-year grant period: (1) baseline assessment and prioritization, (2) feasibility of public water system (PWS) connection, (3) feasibility of alternate drinking water options, and (4) development of a DWAP. Activities within the stages occur concurrently in some cases.

### Stage 1: Baseline Assessment and Prioritization

In Stage 1, we will complete multiple critical tasks in parallel within the first 4 to 6 months of the start of the project. This includes reviewing available water quality and hydrogeologic data and domestic well data (location and construction), completing detailed communications and database management workplans, assessing existing PWSs, developing a QAPP, and targeting well sampling locations. In addition to a project kick-off meeting, we will conduct a series of three workshops with the Steering Committee that will be selected by the Counties: (1) data review and management, (2) project communications, and (3) drinking water alternatives (including nitrate treatment).

#### Objective:

Jump-start the project and define drinking water alternatives and priorities for data collection and analysis by the 3rd quarter of 2024.

#### Key outcomes:

- ✓ Data transfer and database management protocol
- ✓ QAPP establishing consistent data quality objectives and methods
- ✓ Implementation-ready communications and outreach plan with articulated roles and responsibilities
- ✓ Identification of service extension areas that can be served by existing PWSs and identification of priority data gap areas for targeted well sampling

### Stage 2: Feasibility of Public Water System Connection

Stage 2 will target sampling and analysis of wells in potential service extension areas to complete the feasibility analysis for extending existing PWS service. This stage will also target sampling and analysis of wells in data gap areas where no previous samples have been collected or where validity of the sample location is unknown. The communications team will conduct outreach and education activities prior to the planned field sampling period. Well sampling will be conducted in early fall 2024 consistent with the QAPP. We will use sampling results to identify prioritized areas to be included in the feasibility analysis for connecting to the targeted PWSs. We will also complete a conceptual design and preliminary review of implementation issues; this will include any data gaps remaining after Stage 2 sampling. The GSI team will then conduct a work session in January 2025 to update the Steering Committee and then stakeholders on the findings, recommendations, and implementation issues.

#### Objective:

Delineate conceptual PWS service area extensions by 1st quarter of 2025.

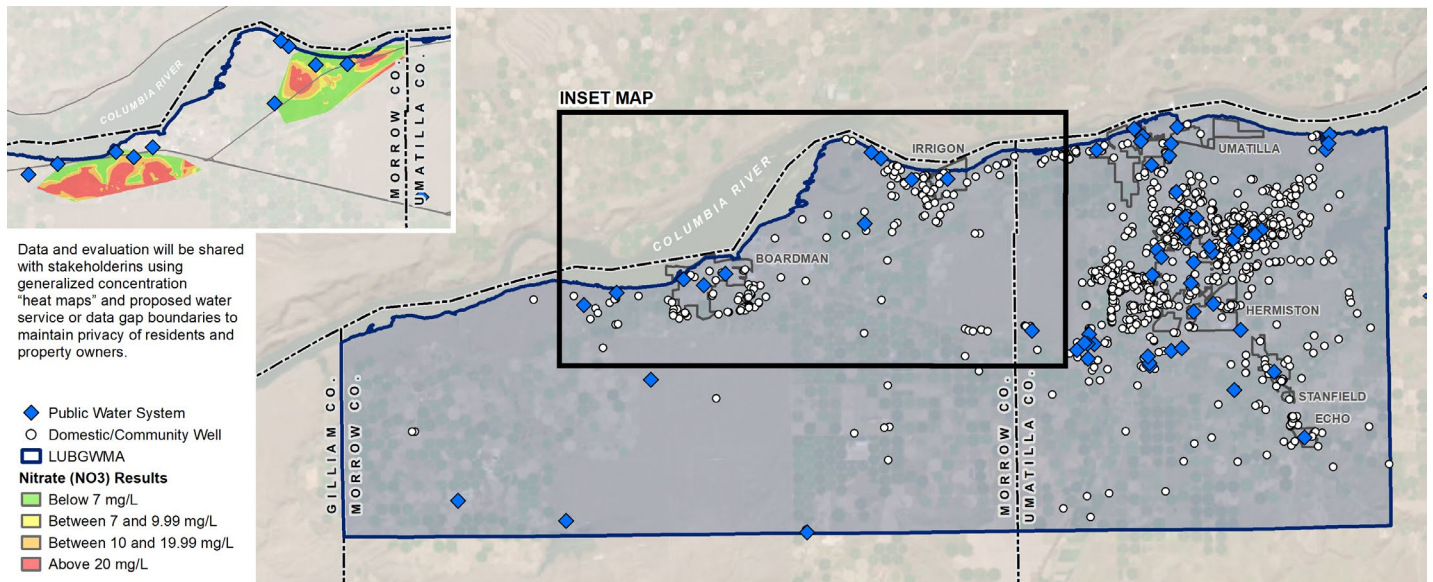
#### Key outcomes:

- ✓ Successful implementation of outreach plan and established network for ongoing outreach
- ✓ Refined characterization of nitrate contamination
- ✓ Completed water service extension feasibility study for target extension areas

### Benefits of GSI's Approach

- ✓ Meets EPA's requirements while effectively addressing on-the-ground needs and priorities.
- ✓ Builds public trust by completing multiple tasks and demonstrating quick progress early in the schedule.
- ✓ Uses funding efficiently with data collection and management that complements work already done.
- ✓ Yields broader benefits for long-term groundwater resource restoration work through our communications and engineering approach.

**Target areas for water service extension and data gap area sampling will be delineated by overlaying existing PWS service areas and limitations, domestic well locations, and available water quality data. Opportunities for connecting to Very Small and Non-Community Water Systems will also be evaluated.**



### Stage 3: Follow-Up Sampling and Feasibility of Alternate Water Supply Options

In Stage 3, we will review the Stage 2 data gap area sampling results and identify service extension areas for the newly sampled areas that are near existing PWSs, and alternate drinking water areas that may require an alternate (non-PWS) drinking water supply (e.g., deepening of well, treatment for existing or new well, creating a new PWS). We will then conduct follow-up sampling to refine the characterization of service extension areas and collect additional samples from data gap areas with increased participation. We will use the sampling results to complete a feasibility analysis for the alternate drinking water areas and review implementation issues, including any data gaps remaining from Stage 3 sampling. The GSI team will then conduct a work session to update the Steering Committee and outreach to stakeholders on the findings, recommendations, and implementation issues.

#### Objective:

Complete preliminary concepts for alternate drinking water options (non-PWS) and complete data gap sampling by 1st quarter of 2026.

#### Key outcomes:

- ✓ Well-refined characterization and completed feasibility assessments for proposed service extension areas
- ✓ A completed feasibility assessment of alternate drinking water supply options for areas where connection to existing PWS is not reasonable

### Stage 4: Development of DWAP

Stage 4 includes development of a phased DWAP. The first iteration of the DWAP (by 1st quarter of 2025) focuses on recommendations and implementation needs for connecting wells to target PWSs. The second iteration of the DWAP will refine the recommendations and conceptual designs based on follow-on sampling and analysis and will include recommendations and implementation needs for the alternate drinking water options (not connecting to PWS). Through each iteration of the DWAP, GSI will review results with the Steering Committee for input on the recommended solutions/alternatives. The draft DWAP will be released to Counties, interested agencies, and key stakeholders for review before finalizing.

#### Objective:

Complete DWAP by 3rd quarter of 2026.

#### Key outcomes:

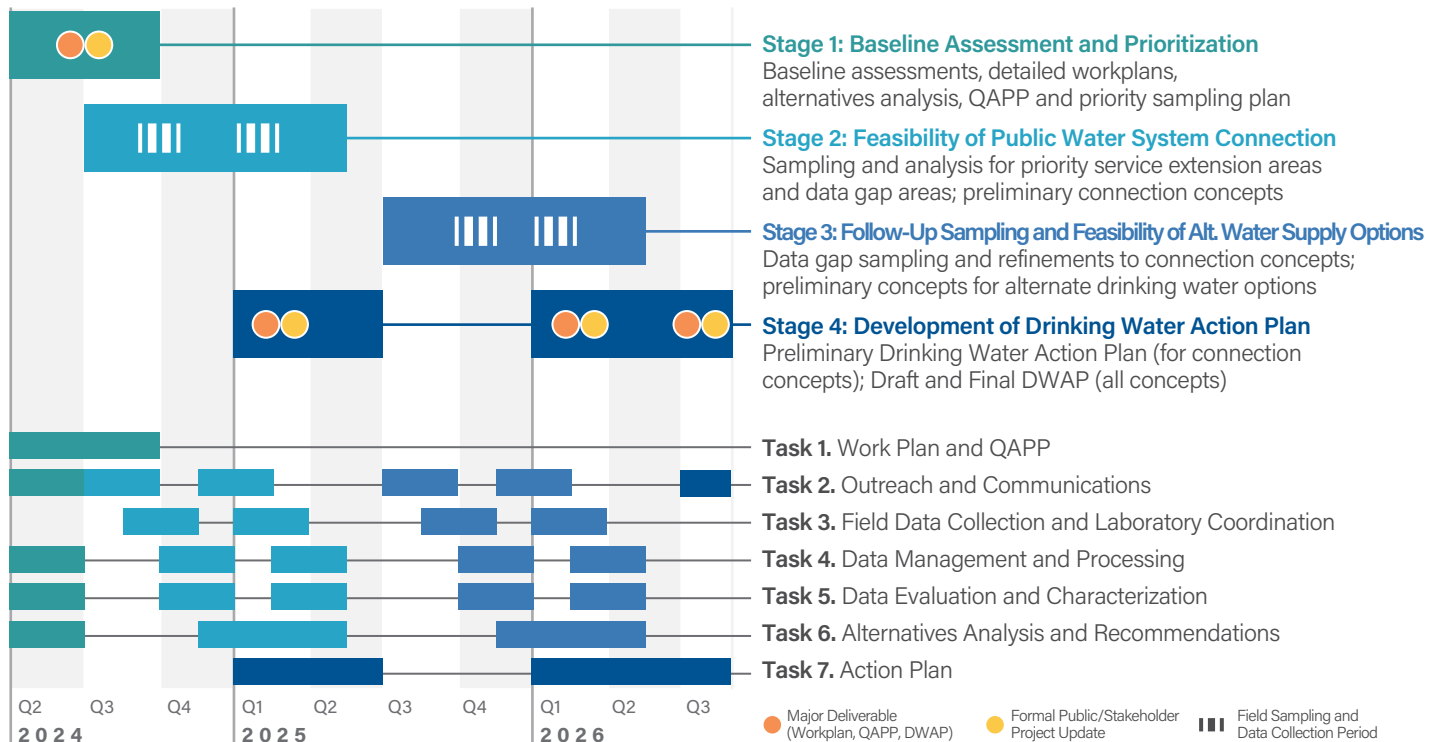
- ✓ DWAP that is vetted through the Steering Committee and public with implementation roadmap
- ✓ DWAP that positions the Counties to pursue funding for final design for highest priority areas and follow-up investigation for other areas

## Meeting the Schedule

We have designed our approach to complete the project by August 2026. The proposed schedule is driven primarily by the timing of two sampling periods for Stage 2 (2024) and Stage 3 (2025): a late summer sampling period that will occur mid-September to early October, and a winter sampling period that will occur mid-January to early February. The two sampling periods will help us assess seasonal impacts on water quality and avoid sampling when residents may be less available due to irrigation season activities. The two-phased sampling approach also allows GSI and the Steering Committee to adjust the allocation of budget appropriately, as results of the late summer event will help prioritize and focus efforts of the winter event. The schedule will support efficient delivery of the workplans developed early in the project and will be actively managed, updated, and shared with the Steering Committee and key stakeholders.

**Our team is structured to achieve multiple tasks and objectives concurrently and deliver a sound action plan as expeditiously as possible.** The other factor in meeting the schedule is effective coordination and collaboration with the Steering Committee and engaged agencies. GSI will work closely with the Steering Committee to accommodate agency staff schedules and other demands by: (1) establishing a defined team from each organization, (2) setting reasonable meeting schedules in advance with clear agendas and goals, and (3) accounting for needed agency review times.

**We have seamlessly linked the four stages of our project-delivery approach to expedite delivery of the tasks presented in the RFP and have identified key milestones to support on-time delivery of the DWAP:**



## Project Management and Customer Support

Understanding that the Counties are resource constrained, GSI will manage the project as a “Program Manager,” allowing the Counties to lean on our team to actively drive the project deliverables and schedule and lead facilitation of Steering Committee meetings and public outreach activities. GSI will maintain consistent communications by conducting biweekly check-in meetings with the Counties and Steering Committee. The check-in meetings will focus on progress to date, near-term activities, pending decisions and input, and key technical issues and/or workplan changes. Ronan is also available for ad-hoc collaboration with the Counties outside of scheduled check-ins. Ronan will also be closely tracking scope, schedule, and budget and ensuring technical integrity. GSI will establish a shared project site to support effective collaboration, maintain adherence to the master schedule, house key documents, protect sensitive data, and maintain a decision log.



## Features of Our Team’s Approach

The following sections provide additional details for key aspects of our approach described above: (1) baseline assessments to develop the drinking water alternatives and target areas, (2) communication strategy and leveraging local liaisons, (3) data review and QAPP development, and (4) data management decisions.

### Baseline Assessments to Develop Drinking Water Alternatives and Target Areas

The baseline assessments conducted in the first few months of the project (Stage 1) will set the foundation for the field sampling priorities and target areas (service extension areas and data gap areas) and the drinking water supply alternatives available for these areas. Our technical team from GSI, HDR, and Carollo is broad and deep with expertise in municipal engineering, water treatment, hydrogeology, and water quality assessment. The GSI team will complete the following activities:

- **Conduct a Data Review Workshop** to kick off the data review process, which includes identifying, compiling, and reviewing the available data to characterize the nitrate hot spots (based on sampled wells), and delineating data gaps for areas where there are existing domestic wells with poor quality or no information.
- **Work with OWRD to link well construction data with sampled wells** and identify domestic well locations that may not have been sampled to date. GSI’s approach includes coordination with OWRD to tie well data to confirmed locations of sampled domestic wells using a process already initiated by Morrow County.
- **Develop planning criteria and compile available data on all PWSs** in the study area to identify opportunities and constraints for serving affected domestic well users. This includes a review of water rights, water usage, system water quality data, condition of existing infrastructure, and system capacity limitations. The review will include interviews with individual PWS staff and site reconnaissance to ground-truth findings.
- **Conduct a Drinking Water Alternatives Workshop** to present findings of the PWS reviews and preliminary options to serve domestic wells from existing PWSs. This workshop will also present other drinking water concepts (see table below) and a review of evaluation criteria (e.g., lifecycle costs, scheduling/timing, resiliency/reliability, land use consistency).

**We will complete a preliminary alternatives analysis during Stage 1 to identify priorities for engineering analysis and sampling. The evaluation will be updated as new data is collected and applied to the DWAP.**

Drinking Water Alternative Concepts	Key Considerations for Applicability	Key Feasibility Factors for Extending PWS
<ul style="list-style-type: none"> <li>• Connect to existing PWS</li> <li>• Connect to existing well (no well improvements)</li> <li>• Connect to existing well (well deepening)</li> <li>• Connect to new community system well (new PWS)</li> <li>• Connect to new individual domestic well(s)</li> <li>• Individual in-home treatment</li> <li>• Surface water source</li> <li>• Managed aquifer recharge</li> </ul>	<ul style="list-style-type: none"> <li>• Municipalities may provide supply to water districts as wholesale customers</li> <li>• May need private agreements or form water district when connecting to existing wells</li> <li>• Exempt use of groundwater may accommodate a number of service connections (15,000 gallons per day)</li> <li>• Useful life of existing domestic supply wells</li> <li>• Water rights constraints due to critical groundwater area designation and mitigation requirements for Columbia River supply</li> <li>• OWRD rulemaking will likely result in new proposed wells being considered hydraulically connected to the Columbia River or other surface water bodies</li> <li>• Challenges of retaining staff to operate complex water systems</li> </ul>	<ul style="list-style-type: none"> <li>• Current geographic extent of the water system</li> <li>• Current and future capacity of the existing water treatment and distribution system</li> <li>• Capacity of the water source or water rights</li> <li>• Water quality and effectiveness of the existing water treatment system</li> <li>• Condition, serviceability, and expandability of the existing system (storage and distribution)</li> <li>• Geographic distance to impacted domestic well users</li> <li>• Availability of land, power, and telemetry for pump stations or water storage facilities</li> <li>• Availability of public rights-of-way for extensions of water transmission mains</li> <li>• Land use constraints, specifically related to expansion of wastewater treatment</li> </ul>

## Communications Strategy and Leveraging Local Liaisons

The community outreach needs and timeframe for this project demand early engagement to build momentum, reinforce or establish trust among local users and stakeholders, and achieve the Counties' objectives. Led by Jonathan Hutchison with HDR, our communications team is backed by national-level expertise and will leverage **staff with local roots and regional resources to support on-the-ground activities**. Our team will incorporate feedback from community engagement activities into the project activities. The communications team will complete the following activities:

- **Conduct a Communications Workshop** with the Steering Committee at the start of the project. The workshop will help our team assess how current communications materials can be leveraged for this project's objectives. The workshop will also seek feedback from the Committee on whether a specific brand identity would help build awareness, improve participation, and set appropriate expectations for this project.
- **Develop a Communications Workplan** that will guide development of multilingual engagement and communication materials (factsheets, FAQs, social media posts, website content, ArcGIS story map, etc.); and identify and guide participation at community events and sites (e.g., Irrigon Watermelon Festival, Umatilla Landing Days, Grange visits, food distribution sites, etc.).



*Conсор developed this mailer in Spanish to raise awareness about lead in drinking water.*

## Data Review and QAPP Development

A significant amount of water quality data has been collected in the region over the past 30 years with varied methodologies and parameters. A shared understanding of the limitations and applicability of this data and the data quality objectives for the DWI project is necessary to optimize use of this funding for drinking water solutions rather than collection of data for non-essential reasons. GSI's experience in developing EPA-compliant QAPPs and our technical advisors' familiarity and history with the data will allow us to efficiently develop a QAPP that focuses on data quality objectives. The GSI team will complete the following activities:

- **Conduct a Data Review Workshop** (described above) with the Steering Committee and regulatory agency representatives (including OHA, DEQ, ODA, EPA, and OWRD) to discuss the status of the data collected to date and a streamlined data transfer process that is consistent with the data management plan. The workshop will also identify a sub-team comprised of GSI team members and agency data stewards (from OHA, DEQ, and OWRD) to facilitate data sharing and review.
- **Develop a QAPP** based on the findings of the data review and baseline assessment of drinking water alternatives. The findings will be used to define the data quality objectives needed to evaluate the feasibility of the alternatives and establish the parameters and methods necessary to evaluate effectiveness of treatment considering other contaminants and corrosion control in the distribution system.

## Data Management Decision Framework

There are three primary state agency data sets relevant to the DWI project (DEQ, OHA, and OWRD). GSI's data management team will work closely with the agency data stewards to complete the following activities:

- **Lead a data-sharing discussion during the Data Review Workshop** (described above) to confirm the status of the datasets, discuss details of any data-sharing agreements, and report on progress to date between the Counties and agencies on the data-sharing agreements and any transfer of data that has already occurred.
- **Develop and implement a Data Management Workplan** based on the factors and input from the workshop. The workplan will define formal data use agreements, data/well identifiers, (federal) data standards, data quality and validation (for primary/QAPP and secondary/non-QAPP data), data privacy and security protocols, and data management contingencies (e.g., alternative data hosting, data backup, documentation/training).



**Our team’s familiarity with the existing data will facilitate the efficient sharing/transfer, comprehensive planning, and effective management of data for this project and long-term data collaboration.**

Agency	Purpose of Data	Data Platform and Format	Accessibility and Quality
<b>DEQ</b>	LUBGWMA monitoring network of domestic wells to regularly characterize water quality status and trends	Commercial off-the-shelf product called AQWMS; database compliant with the EPA Water Quality Exchange data standard	Publicly available on website; governed by a QAPP
<b>OHA</b>	Understand public health concerns under Domestic Well Testing Act; LUBGWMA data to determine households needing safe drinking water	In-house Domestic Well Safety Information System; roughly compliant with the EPA Water Quality Exchange data standard	Not available on a website but could be made available upon request. Data was not collected under an EPA compliant QAPP
<b>OWRD</b>	Well logs with information on well location, construction, depth, flow, screened intervals, and lithography	WRD developed a database with well logs presented as .pdf documents	Publicly available on website; completed by well drilling professionals but quality is variable.

### Estimated Project Budget Breakdown

Morrow County has secured approximately \$1.3M of funding for this project. Costs associated with the field sampling and data management pose the most uncertainty and flexibility because OHA continues to collect data under the voucher program and there may be opportunities to leverage DEQ’s Supplemental Environmental Projects (SEP)-funded data collection efforts awarded to OHA.

GSI will remain attentive for opportunities to reallocate budget to respond to evolving project needs or priorities as they inevitably arise. We propose a median budget allocation that targets ~33 percent of the available budget for additional sampling, with a low and high range of 25 to 40 percent. In terms of time, the additional field sampling (labor only) would be approximately 20 percent (low), 25 percent (median), and 30 percent (high) of the estimated labor budget. If the Counties are able to leverage SEP-funded sampling efforts, this would make a larger portion of the budget available for more detailed engineering or action plan development. Alternatively, if the Stage 1 data review and alternatives analysis result in the need for more sampling for this project, then less of the budget would be available for preliminary engineering. Preliminary engineering would then need to be identified in the DWAP implementation plan and included in the pursuit of subsequent funding. The following table shows three budget allocation scenarios representing median (target) level of field sampling, less data collection, and more data collection. The final budget allocation would be refined and finalized as part of the scoping process if GSI is selected for the project.

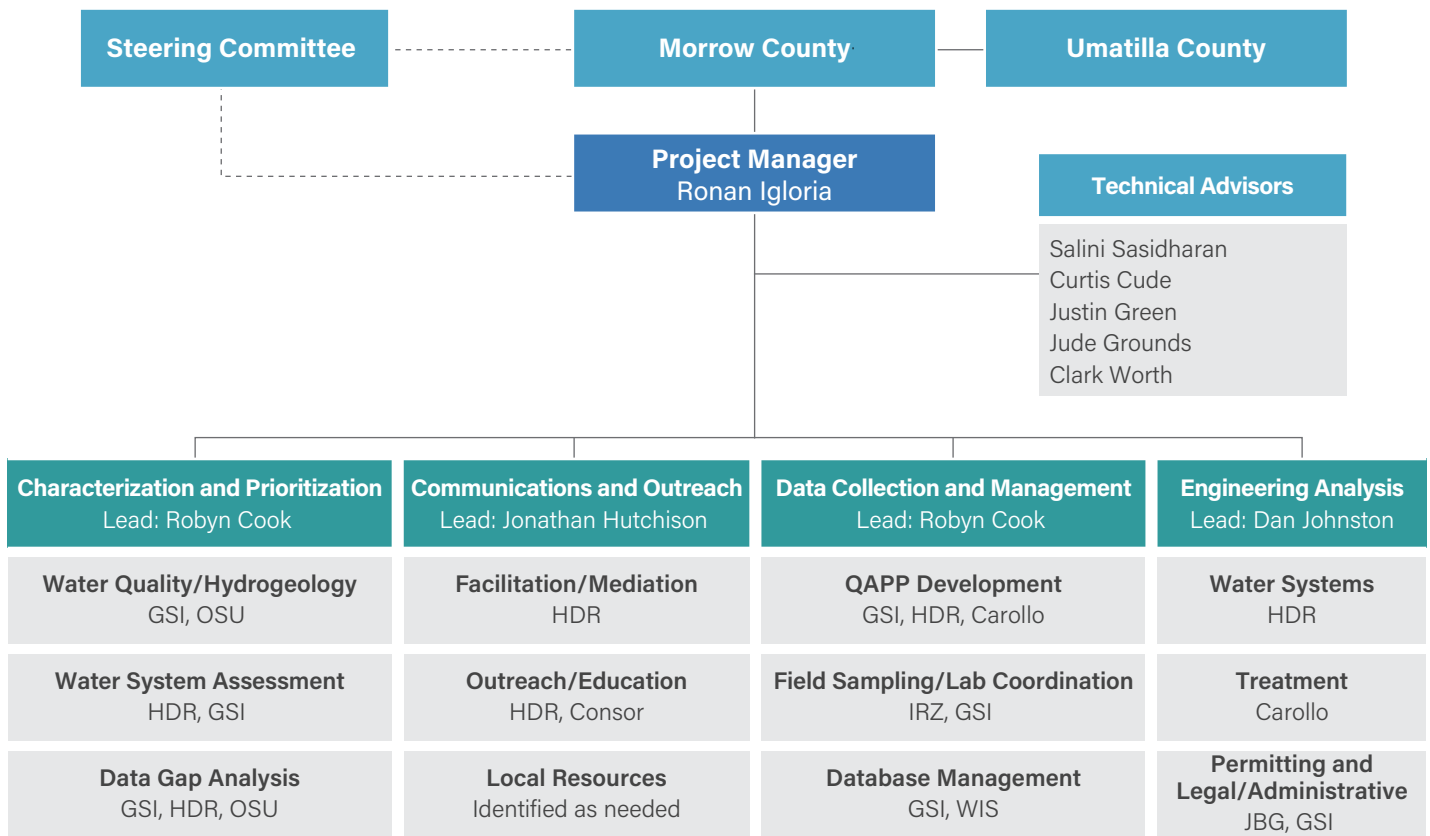
Time Allocation (Labor Only) by Task	Less Data Collection	Median Data Collection	More Data Collection
<b>Task 1. Workplan and QAPP</b>	9%	<b>9%</b>	9%
<b>Task 2. Outreach and Communications</b>	7%	<b>7%</b>	7%
<b>Task 3. Field Data Collection and Laboratory Coordination</b>	20%	<b>25%</b>	30%
<b>Task 4. Data Management and Processing</b>	10%	<b>9%</b>	12%
<b>Task 5. Data Evaluation and Characterization</b>	16%	<b>15%</b>	18%
<b>Task 6. Alternatives Analysis and Recommendations</b>	15%	<b>14%</b>	8%
<b>Task 7. Action Plan</b>	13%	<b>12%</b>	6%
<b>Task 8. Program Management</b>	10%	<b>10%</b>	10%
	<b>100%</b>	<b>100%</b>	<b>100%</b>

## Ability to Complete All Tasks

As described previously, we structured our approach in four stages with some activities occurring in parallel to streamline delivery of the scope of work.

Accordingly, our team is structured to complete the work synchronously, as illustrated in the team organization chart below. We have designated technical leads in key disciplines with corresponding technical advisors with specific expertise and/or region-specific knowledge. We also have a deep bench of staff for field support, outreach, and engineering analysis.

The task leads and key staff from each of the team partners are committed to the project and will be supported by local resources from IRZ. In addition, both HDR and Carollo, as premier national-level engineering firms, provide a deep bench of staff for any additional resource or specialized expertise needs that may arise.



**Additional details and features not previously described in the approach section** are presented below to address how our team will accomplish the four tasks and activities called out in the RFP.

### Spanish-Language Field and Document Translation

- **Use bilingual field sampling team members for direct communication** with residents and property owners during sampling activities. Spanish-speaking staff from GSI (Rodrigo Prugue) and IRZ (Janet Perez Ramirez) are available to lead the field work in the region. Additionally, communications team member Isaac Estrada (Consor) also speaks Spanish and grew up in Irrigon (with family on a domestic well still in the area). His direct experience in the area will further enhance communications efforts.
- **Integrate education/outreach with site visits for field sampling** to capitalize on face time with residents for holistic conversations about the project and the issue of local nitrate pollution. The outreach team and field sampling crew will coordinate and partner during pre-sampling outreach and during the sampling activities to allow for a discussion of the project’s goals and obtain feedback.

- **Recruit locally known public-facing individuals and community-based organizations to support outreach activities.** In conversations with Morrow County, we have identified potential local/regional groups that have additional resources, relationships, and established networks with the Spanish-speaking community. With authorization from the Counties/Steering Committee, our team can outsource targeted activities for these groups to enhance engagement and support from residents and domestic well owners.

## Developing the QAPP

- **Leverage the collective experience and deep knowledge of the data** from GSI's technical advisors (Curtis Cude, Justin Green, and Salini Sasidharan). Our team will use their technical knowledge of the data to inform and guide development of clear data quality objectives and identify data gaps for the QAPP.
- **Develop a Final QAPP that is agency-approved but adaptable to evolving project needs.** Agencies will be engaged at the start of QAPP development to confirm reasonable and responsive input/review windows. The QAPP will also be structured to be adaptable, particularly in response to any changes to data quality objectives between Stage 2 and 3.

## Data Collection and Data Management

- **Select the data management agency early (during Stage 1)** based on agreed-upon criteria established during the data review workshop. GSI's data management team and technical advisors will work with the agency data stewards to facilitate the development of data-sharing protocols with the engaged agencies.
- **Explore a pilot approach with the Oregon Water Data Portal framework.** We propose tracking this effort and establishing the DWI's data integration and standardization in alignment with the Oregon Water Data Portal framework (<https://www.oregon.gov/deq/wq/Pages/owdp.aspx>). It is possible that state funding could become available to develop and or host the proposed information system, either hosted by the GSI team or at a state agency site in the future.
- **Evaluate use of portable spectrophotometer for well testing.** The QAPP will consider applicability of a field spectrophotometer (e.g., Hach DR1900) as a lower-cost option for potential field screening and/or confirmation testing for nitrate and other parameters over time.

## Alternatives Analysis and Preliminary Engineering

- **Conduct a nitrate treatment workshop (led by Carollo)** to explore options and applicability throughout the LUBGWMA. Carollo has an innovative nitrate treatment technology that has the potential to improve existing water treatment systems, or used with new, small water delivery systems that may need to be developed in areas located further away from existing water systems. Our team members from Carollo will use a customized decision support system tool to quickly evaluate what-if scenarios during the workshop and develop operational strategies and capital cost estimates to support sound decision making. This workshop will consider different treatment options and their applications and limitations, especially in rural, smaller system settings.

Treatment Option	Potential Effectiveness and Limitations
Reverse Osmosis	<ul style="list-style-type: none"> <li>▪ Effective in removing nitrate from source water</li> <li>▪ Creates a waste stream requiring disposal and permitting</li> <li>▪ Reduces net well production from waste stream generation</li> </ul>
Ion Exchange	<ul style="list-style-type: none"> <li>▪ Effective in removing nitrate from source water</li> <li>▪ Media regeneration results in a salt solution requiring disposal and permitting</li> </ul>
Biological Treatment	<ul style="list-style-type: none"> <li>▪ Fully removes and destroys nitrate</li> <li>▪ Not widely used technology and may require more buy-in from OHA</li> </ul>

## COBID Status

GSI is not COBID certified, although we got our start as a certified ESB. We understand the importance of this certification in advancing equity in public contracting and we are committed to seeking out and partnering with COBID-certified firms whenever possible. For this project, we are proud to be partnered with the following certified firms: **WIS** (ESB and SDVBE, #14531) and **JBG** (ESB #14443).